



THE  
QUEENSLAND  
OFFICIAL YEAR BOOK.

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1901.



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THE  
QUEENSLAND  
OFFICIAL YEAR BOOK,  
1901.

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COMPILED FROM OFFICIAL SOURCES,

AND

PUBLISHED UNDER GOVERNMENT AUTHORITY,

BY

J. HUGHES,

REGISTRAR-GENERAL.



BY AUTHORITY:

GEORGE ARTHUR VAUGHAN, Acting Government Printer, William street, Brisbane.

## P R E F A C E .

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THIS, the first publication of The Official Year Book of Queensland, has been compiled under instructions from the Honourable J. F. G. Foxton, M.L.A., Home Secretary.

In presenting it, I wish to thank the Under Secretaries of the various State Departments for their assistance, and the Experts of those Departments for their valuable and interesting contributions on the subjects upon which they are specially qualified to write.

The object of the book principally is, to present a fairly exhaustive and accurate picture of the Queensland of to-day, incidentally contrasting it with that of forty years ago. Many of the subjects are treated more popularly than statistically, since the most accurate and exhaustive statistics can be obtained from the Statistical Register, and it was not desired to reproduce that work in these pages.

My best thanks are due to my Office Staff for their loyal assistance, and especially so to Mr. Thornhill Weedon, F.S.S., Compiler of Statistics.

I shall be glad to have any errors which may have crept in, pointed out to me.

J. HUGHES,  
Registrar-General.

Brisbane, Queensland,  
23rd December, 1901.

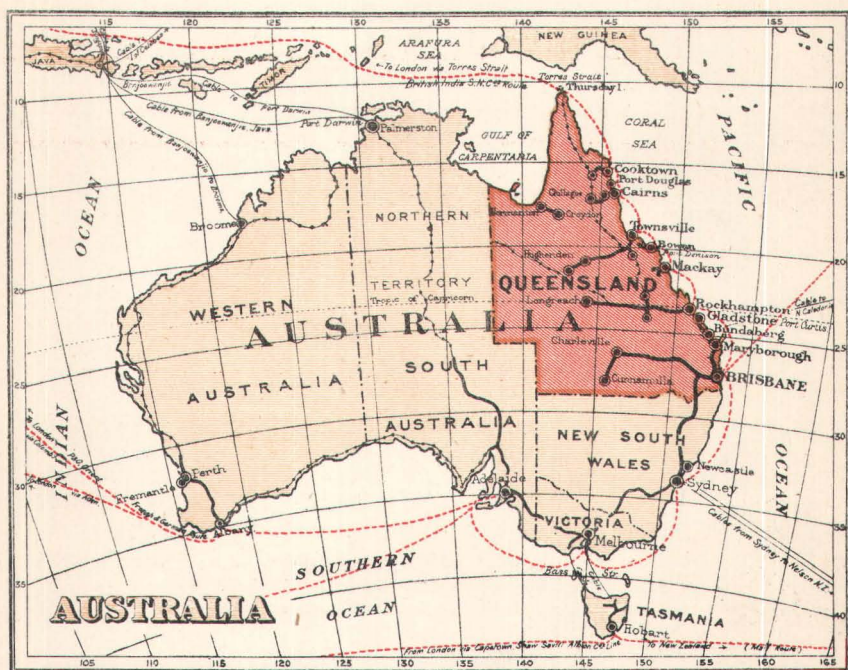
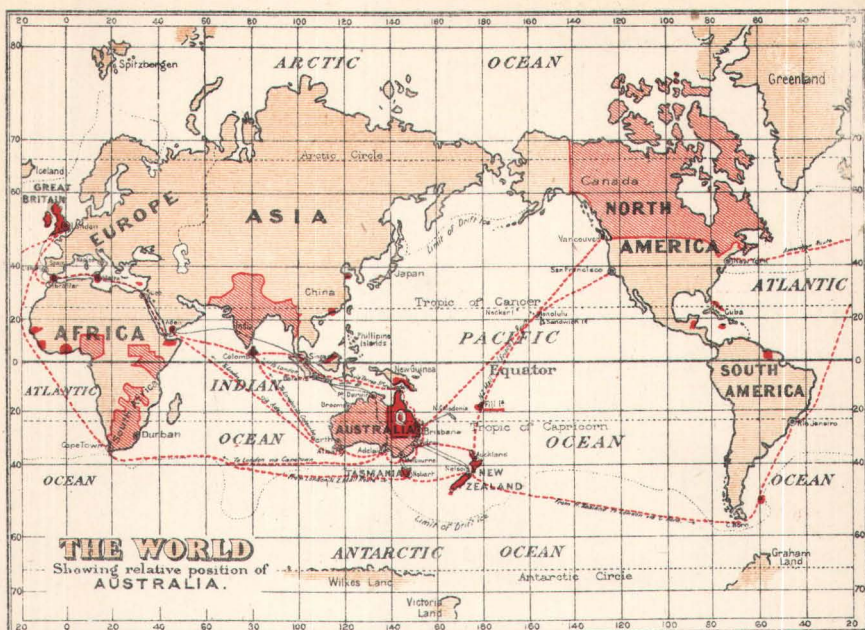
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## Part I.

# GEOGRAPHY.

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### PHYSICAL FEATURES.

THE coast line of Queensland, commencing at Point Danger, being the north-eastern point of New South Wales, at latitude 28 degrees 9 minutes, longitude 153 degrees 33 minutes, extends northerly and north-westerly to Cape York at the extreme north in latitude 10 degrees 41 minutes, longitude 142 degrees 32 minutes; thence southerly and westerly along the shores of the Gulf of Carpentaria to the north-east corner of South Australia, longitude 138 degrees, latitude 16 degrees 32 minutes, and has a coast line extending (reckoning indentations) of about 3,000 miles. The northern portion of South Australia forms the western boundary by the 138th meridian of longitude as far south as the 26th parallel of south latitude; thence easterly to the 141st meridian of east longitude; thence by that meridian south to the northern boundary of New South Wales. From this point easterly the northern boundary of New South Wales forms the southern boundary of Queensland.

The distance from the south to the north of the mainland is nearly 18 degrees of latitude or about 1,200 miles, whilst the maritime boundary extends 60 miles further north and includes several islands close to the mainland of New Guinea.

On the eastern coast there are the following ports:—Brisbane, Maryborough, Bundaberg, Gladstone, Rockhampton, St. Lawrence, Mackay, Bowen, Townsville, Lucinda, Geraldton, Cairns, Port Douglas, Cooktown, and at the extreme north Thursday Island. In the Gulf of Carpentaria there are two established ports, Normanton and Burketown. In addition to these there are all along the coast good anchorages and shelters for vessels, many of the numerous islands affording capital shelter against wind and sea.

Besides the numerous islands, the reefs, and notably the Great Barrier Reef, break the force of the sea to a great extent and tend to afford smooth water to the voyager passing up or down the coast.

The coast throughout is well marked and lighted, and seamen find powerful and well kept lights at all the critical places in their voyage. From Keppel Bay northwards the mountain range is in close proximity to the coast, and the passengers on coasting steamers have the tedium of their voyage broken by splendid views of mountain scenery and wooded islands of great number and beauty. From Mackay northwards towards Bowen, Whitsunday Passage affords some magnificent views of islands, whose wooded heights rise from waters of the deepest blue, and mountain chains springing precipitously from the margin of the ocean. An inner passage exists here called the Mole Passage, whose whole length is a panorama of extreme beauty.

From Lucinda Point again northwards Hinchinbrook Passage may be seen by those who avail themselves of steamers calling at Lucinda and Cardwell, the larger steamers taking the shorter but less picturesque course outside Hinchinbrook Island.

For wild and natural beauty this passage cannot be surpassed, especially in autumn, when waterfalls may be seen on many of the mountain sides setting off the rugged and wild appearance of the hills and flashing like silver in the sunlight. The mountain chain, which forms the centre of the island, has in its length Mount Bowen, 3,650 feet high; Mount Pitt, 3,250 feet; and Mount Diamantina, 3,160 feet; and others of less altitude. On the top of one of the peaks at the southern end of the island a small lake or waterhole exists, from which in ordinary seasons water constantly overflows and forms cataracts and waterfalls of great beauty.

The coast from Rockingham Bay northwards is bold and picturesque in the extreme, the mountains being high with steep sides clothed for the most part in thick scrub and other vegetation to their summits, the average height of the range being about 2,000 feet, whilst the peaks rise much higher. The highest, Mount Bartle Frere, is 5,438 feet, and is the highest mountain in Queensland. Some of the other peaks are—Central Peak, 5,400 feet; North and South Peaks, each over 5,000 feet; Mount Sophia, 4,253 feet; Mount Harold, 4,150 feet; Mount Massie, 4,100 feet; and Walsh's Pyramid, 3,016 feet.

Many tourists now make the voyage along the coast as far north as Cairns, where they land and proceed by railway to visit the celebrated Barron Falls.

The rivers on the eastern coast usually rise in the coast range, and their course is therefore short, and for the most part rapid, and they are not available for any great distance for purposes of navigation. Much has been done on the Brisbane, Mary, Burnett, and Fitzroy, to artificially deepen the channels and render it possible for larger vessels to go up to the towns than could be done before; but this only applies to the tidal waters of these rivers—as fresh-water streams they are of no practical value for the carriage of goods.

The rivers on the western side of this range, however, are much longer, but, useful as they are for water supply, they offer no facilities for carriage. A project has been put forward for utilising the Condamine River by means of locks, but the expense and doubtful gain is against its being tried.

The principal coastal rivers of Southern Queensland are the Logan, Brisbane, and Pine Rivers, falling into Moreton Bay; Caboolture River into Deception Bay; Mary and Burrum Rivers into Wide Bay; Burnett, Kolan, and Elliott Rivers into Hervey's Bay.

Then, in Central Queensland, the Calliope and Boyne Rivers into Port Curtis; Fitzroy River, which receives the Dee, Dawson, Mackenzie, and Isaac Rivers, and, with its tributaries, drains an area of no less than 55,603 square miles, falls into Keppel Bay.

In the Northern portion of Queensland the Pioneer River enters the sea at Mackay; the Don River at Bowen; the Burdekin River, which drains a vast extent of country (53,529 square miles), and receives as affluents the Bogie, Bowen, Belyando, and Suttor, Cape, Campaspie, Basalt, Clarke, and Star Rivers, discharges into Upstart Bay; the Ross River into Cleveland Bay; the Herbert at Lucinda Point; the Tully River into Kennedy Bay; the Moresby River into Mourilyan Harbour; the Johnstone River into Gladys's Inlet; the Russell and Mulgrave Rivers at Bramston Point; the Barron River near Cairns (the celebrated

Barron Falls are where this river leaps from the high tableland west of Cairns a depth of 830 feet, and thence rushes down its deep and stony bed to the sea. This drop occurs in a distance of 50 chains by a series of falls and rapids. The main fall is 370 feet); the Mosman and Daintree Rivers near Port Douglas; the Bloomfield into Weary Bay; the Annan River near Monkhouse Point; the Endeavour River at Cooktown; the Normanby, North Kennedy, Saltwater, Annie, and Stewart's Rivers into Princess Charlotte Bay; the Lockhart River into Lloyd's Bay; Pascoe River into Weymouth Bay; the Kennedy River into Newcastle Bay.

Of all the coastal rivers of Queensland the greatest is the Burdekin, which, within a few miles of its mouth, has a large running stream of fresh water, even in the driest seasons. This probably prevents the formation of a defined bar close to its mouth, as exists in other rivers, and is the cause of the large sandbanks lying for some distance outside without any defined channel being formed or maintained. In flood time many of the adjacent creeks become mouths of this river, the country being flat for many miles, and assist in discharging the enormous quantities of water brought down in times of flood.

The next river in point of size on the eastern coast is the Fitzroy, which, however, is tidal for many miles, and allows of navigation by large vessels as far as Rockhampton.

Several of the rivers falling into the Gulf are fine streams with great possibilities for navigation whenever a population requires a service of this kind; at present, with the exception of the Norman and Albert Rivers, the capabilities of the rivers remain unutilised.

The rivers falling into the Gulf of Carpentaria are the Jardine, Ducie, Batavia, Pennefather, Archer, Lendale, Leekin, Edward, Colman, Mitchell (receiving the Alice), Staaten, Gilbert, Norman, Bynoe, Flinders, Leichhardt, and Albert Rivers.

The rivers rising on the western side of the Great Dividing Range are the Macintyre or Barwon, which receives as affluents the Macintyre Brook, the Dumaresq or Severn Rivers, and unite after crossing the New South Wales border with the Moonie River. The Condamine, which, rising near Warwick flows past Dalby, Condamine, Surat, St. George (having changed its name to the Balonne by the way and united with the Maranoa River), separates into branches and forms the Culgoa, Ballandool, and Narran Rivers, which all become affluents of the Darling River, and further south help to form the Murray.

The Warrego River rises in the Warrego Range, and, flowing southerly, receives as tributaries the Nive, Ward, Langlo, and, flowing past Cunnamulla, also joins the Darling.

Further west there are the Paroo, Bulloo, and Wilson Rivers, and Cooper's Creek.

Valuable as these rivers are for purposes of water supply, they are of no use for carrying purposes, and, whilst in times of flood they are large and formidable streams, in the absence of rain for any length of time they become chains of waterholes in the beds of the water-courses. Water conservation has not so far taken the form of dams or weirs on the large rivers, as such works would be too large and costly for private enterprise, whilst sufficient water can be more safely stored

and at less expense by dams and tanks made in the depression of the land where the structures are not exposed to the strong currents of streams in flood.

#### LAKES.

If we except the salt lakes formed where the western rivers cease to be recognised as rivers, there are only two lakes in Queensland of the area of 5 square miles required to constitute a geographical lake. These are situated in Central Queensland, and are Lake Galilee or Jochims, and Lake Buchaneer, both being salt.

There are many sheets of fresh water of considerable size in various parts of the State locally named lakes, but none of them are of sufficient area to constitute them lakes geographically.

#### MOUNTAINS.

Although Queensland cannot claim to be a mountainous country in the way of having mountains of great height, it is traversed throughout its length from north to south by mountain ranges having peaks of considerable altitude.

The highest mountain in Queensland is Mount Bartle Frere, near Cooktown, 5,438 feet. In the Central districts, Mount Roberts is 4,350 feet high, and in Southern Queensland, Mount Barney in the Macpherson Range is 4,300 feet high.

The Great Dividing Range, extending from New South Wales northward, becomes Queensland territory at Wallangarra, proceeds northwards to Maryland, where it divides the Herries Range stretching to the north-west, whilst the Main Range extends to the north-east for about 40 miles, where it again divides, one portion under the name of the Macpherson Range continuing to the sea coast and terminating at Point Danger. For over 100 miles this latter range forms the boundary between New South Wales and Queensland.

From its junction with the Macpherson Range the Main Range extends in a general north-westerly and westerly direction for about 35 miles when it divides—the Main Range extending westerly and then northerly—and, with many changes of direction, traverses the whole State from south to north.

Near Dalby the well-known Bunya Mountains are part of this range, the two highest peaks being Mount Mowbillah, 3,605 feet, and Mount Haly, 3,130 feet; the name is taken from the bunya bunya, a species of pine bearing an edible nut highly prized by aborigines as an article of food. The fruiting time for these trees is availed of by the different tribes from Gympie and Maryborough on the one side, and as far as Warwick on the other, to assemble together, hold corroborees and tribal fights, and feast on the bunya nuts.

The Little Liverpool Range runs roughly parallel with the coast to near Ipswich.

The D'Aguilar Range from a few miles north of Ipswich northerly, the Yabba Range on the north, and the Cooyer Range on the west, with the Main Dividing Range, form the boundaries and the watershed of the Brisbane River. The Blackall Ranges, known for their fine timber and splendid soil, comprise the greatest strawberry-growing district in the State.

East of the Main Range we have the Carnarvon and Bigge Ranges, whilst Expedition Range extends northward across the Central Railway. Grey's Range enters Queensland at 142 degrees east longitude, and extends northwards over  $4\frac{1}{2}$  degrees of latitude to Gowan's Range, with Cheviot Range breaking off to the westward. Gowan and Warrego Ranges junction with the Great Dividing Range.

In the Central districts are the Drummond, the Peak, and the Denham Ranges, whilst the Boomer Mountains, Broadsound Ranges, and Connor's Range form the coast range nearly to Mackay. Clarke's Range and Leichhardt Range extend northwards in the Northern districts nearly parallel to each other.

From Townsville northerly the coast range is close to the sea, and is bold and striking in character, with many sharp peaks rising to a considerable height.

In Southern Queensland, between the coast range and the sea, much of the land is good and fit for farming pursuits, whilst the banks of the numerous rivers and creeks are usually composed of alluvial deposits of great richness. Railways have opened up the country to settlement, and enable farmers to market their produce from places previously too difficult of access for profitable returns.

The country districts around Ipswich and Harrisville, Rosewood, Laidley, and Gatton, are the most thriving of the farming communities; maize and lucerne being the principal products, whilst dairying is very largely carried on. The land rises as one gets further away from the sea, Gatton, near the foot of the range, being 337 feet above the sea-level.

Mounting the range the railway reaches 2,003 feet at Harlaxton, the elevation at Toowoomba being 1,921 feet. On the western side of the coast range the country dips to the westward, Dalby, 52 miles distant, being 1,122 feet, whilst Warwick is 1,485 feet above sea-level.

This large district extending westerly from the Main Range is the Darling Downs, justly celebrated for its fertility and beauty.

The southerly portion is the great wheat-producing district in the State, 97 per cent. of the wheat grown in Queensland being from this district.

Near the range the country is undulating, and some of the most beautiful views in Queensland are to be seen near Killarney and Warwick.

Further south the country is more broken and hilly, but near Wallangarra and Stanthorpe it is found very suitable for grape vines and English fruits.

Westerly of the Darling Downs the country is mostly flat with belts of poor country dividing large stretches of open plains, or lightly-timbered country of great richness, whilst the rainfall of this part does not lend itself to agricultural pursuits, except in favourable seasons.

Maryborough and Bundaberg districts contain magnificent land alternating with belts of very poor soil, the Isis Scrub, near the latter place, being one of the best districts in the State for sugarcane growing. Immediately west of these places the country is mostly pastoral, and the hills abound in minerals—gold, silver, copper, antimony, and many other minerals being found scattered over a large area. Coal of excellent quality is found here.

Around Gladstone and Rockhampton farming has not made much progress, owing partly to the inadequate and uncertain rainfall, minerals forming the staple wealth of the districts. The celebrated Mount Morgan Gold Mine is situated near Rockhampton.

A railway line connects the Port of Rockhampton with the Western country. It is 427 miles in length, and terminates at Longreach, in the centre of the magnificent downs country and on the banks of the Thompson River.

Emerald, 166 miles from Rockhampton, will probably become a large farming centre at no distant date.

In common with all Western Queensland, country to the westward of the Great Dividing Range is principally flat or undulating downs, and sparsely timbered. The greater part of the country is rich soil, on which grass and nutritious herbage grows in profusion, the great drawback being the uncertain recurrence of the rainfall, droughts being frequent and severe of late years. Artesian bores have been put down in great numbers, there being now 839 bores, either artesian or sub-artesian, in the State.

Opals exist in these western lands, and some of great beauty and value have been found.

In the northern portion of the State we have localities on the coast district containing large areas of good agricultural land, with sufficient rainfall, devoted to the cultivation of sugar, as at Mackay and Proserpine, Burdekin Delta, and after passing Townsville the good land and copious rainfalls recur at Herbert River, Geraldton, Cairns, and Port Douglas. Past Cooktown the land is not of a quality that has induced its being opened up by agriculturists.

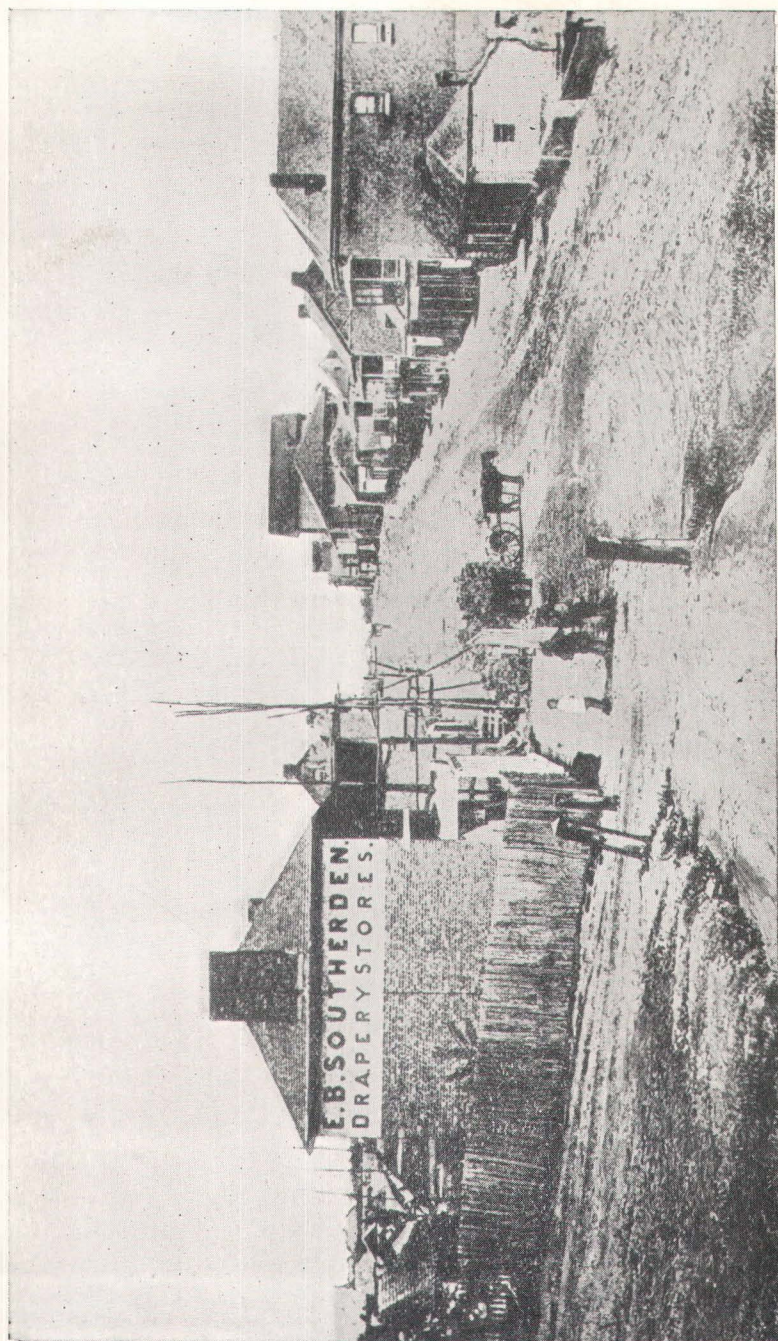
Minerals abound in many of the hilly and broken districts between the coast and Great Dividing Range, as gold, copper, and coal near Clermont. Near Ravenswood, gold and silver. Charters Towers, the premier goldfield of Australia, also lies to the westward of the coast range, as does the Cape Gold Field and the Star River copper and silver mines. The coast range near Ingham carries large tin deposits, and the head of the Russell River carries gold.

Further north, the Herberton district is extremely hilly and broken and seems to contain nearly all the more valuable minerals, since gold, copper, tin, wolfram, and molybdenite are found at many places, and names such as Herberton, Mount Garnet, Chillagoe, Thornborough, and Watsonville, are suggestive of mineral wealth.

Country abounding in minerals is not in North Queensland rich agricultural land, but alluvial flats exist of great fertility, usually scrub land, as, for instance, the Atherton Scrub, near Herberton: the margin of all rivers and creeks are rich, and covered with dense vegetation.

Further north, amongst the rough conglomerate ridges of the Palmer, gold exists, also on the Hamilton and Coen fields, whilst westerly the Croydon, the Etheridge, the Gilbert Gold Fields are found on second-class pastoral country, rough and hilly in character.

Further west the country is low and undulating, or flat with ridges, in which copper is found in great abundance about Cloncurry. Low detached ranges occur at intervals, many of which are metalliferous.



BRISBANE PAST.—QUEEN STREET, 'SOUTH-WEST' OF EDWARD STREET.—1860.



BRISBANE PRESENT.—QUEEN STREET, SOUTH-WEST OF EDWARD STREET.—1901.

Much of the Northern part of Queensland is mineral bearing, and a large portion of it is auriferous.

The principal towns in Queensland in the Southern division are—Brisbane, with a population of 119,428; Ipswich, 15,246; Toowoomba, 14,087; Warwick, 4,225; Roma, 2,634; Bundaberg, 9,666; Cunnamulla, 991; Charleville, 1,419; Gympie, 14,431; Maryborough, 12,900. In the Central districts—Gladstone, 1,622; Rockhampton, 19,691; Emerald, 1,015; Springsure, 443; Clermont, 1,955; Mount Morgan, 8,486; Longreach, 1,690. In the Northern division—Mackay, 5,157; Bowen, 1,585; Townsville, 15,506; Charters Towers, 20,976; Hughenden, 1,672; Winton, 1,030; Ingham, 373; Cairns, 3,467; Herberton, 667; Cooktown, 1,989; Thursday Island, 1,534; and round in the Gulf of Carpentaria—Burketown, 310; Normanton, 838; and Croydon, 3,102.

### CLIMATE.

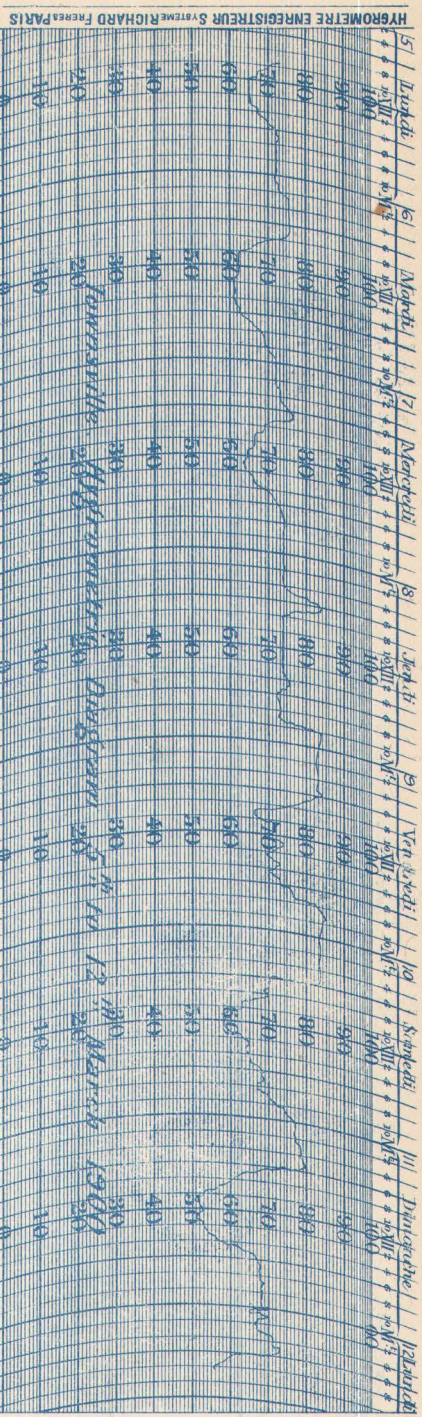
[Contributed by CLEMENT L. WRAGGE, F.R.G.S., F.R.Met.Soc., F.R.C.I., &c., Gold Medallist of Ben Nevis Observatory, Government Meteorologist of Queensland.]

We know of no region in the world, the Antarctic and Arctic areas alone excepted, where researches in the grand new science of Meteorology can be pursued with such practical advantage to every section of the community as in this physically strange land of Australia. Not only here have we "new" and strange geological formations and botanical types unknown in other parts of the world, but the meteorological conditions, with the exceptions aforesaid, are absolutely unique on this planet. And it so happens that in our State of Queensland the last sentence can be distinctly emphasised. For we find in this land, so aptly named as the special territory of our late beloved Queen, varieties of climate innumerable—from the soft and balmy conditions of the tropical coast, with its equable range of temperature and abundant rainfall, to the more extreme climates of the cretaceous downs and rolling plains of the interior and far west. In this lastnamed region temperatures are wide and very varied, the percentage of relative humidity works out, by mathematical tables, on some occasions, to absolute zero, and the rainfall is so scanty as to produce long periods of drought, which only serve to show up the sterling British grit of our brave squatters, many of whom have lost their all through failure of stock in this connection. And yet, while speaking of our far interior, we have abundant evidence that in many instances—the ironstone mulga ridges and some other areas excepted—the soil is fertile, only needing a water supply to bring the fruits of the earth to a ripe perfection. Herein we have examples clearly shown in the dogged enterprise and determination exhibited by the much decried Chinese, for wherever they settle they till the soil; and we unhesitatingly maintain that they are not only good settlers, but in many cases good colonists, to whom many of our own people, especially in the Western districts, owe a deep debt of gratitude. For in yon distant territories of the Barcoo and Cooper's Creek, as instances, wherever in the dry season a waterhole is to be found, there haply will a Chinaman, by simple irrigation, have made the desert smile. We are fully aware that in writing thus we shall arouse the ire of some people; but while

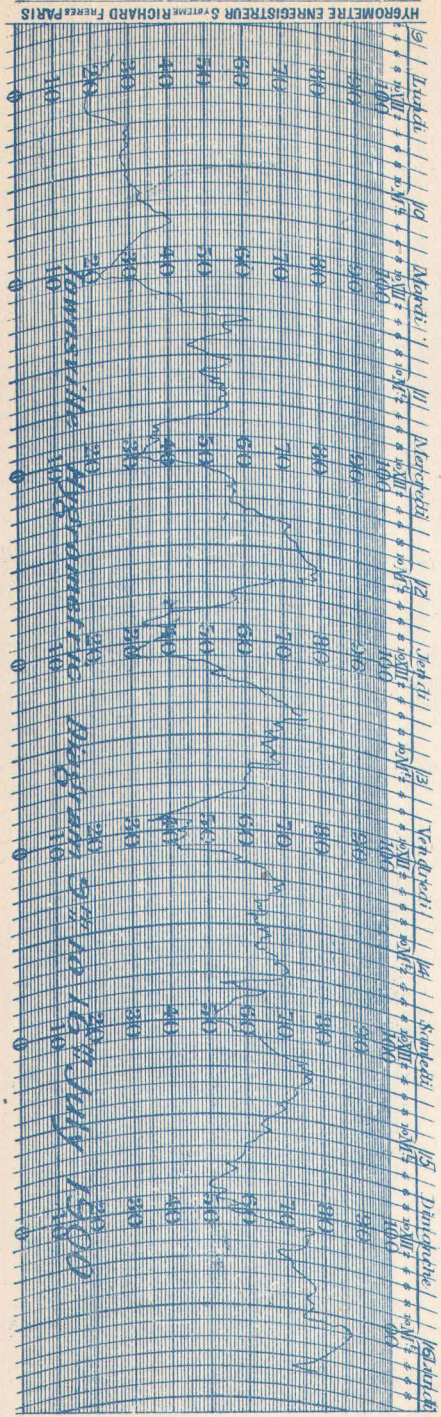
paying them every possible respect, we nevertheless must be straightforward—for the scientific man, amongst all others, is by his very nature fearlessly outspoken in the cause of truth and justice. So let our plucky people in the far West learn from the Chinese to conserve such water as is obtainable, and thereafter rationally to use it, when the land will respond under atmospheric conditions in a manner most truly astonishing.

Now nothing perhaps shows up the wonderful climatic features of Queensland more than the numerous fruits, vegetables, and cereals that can be grown from end to end of its wide extent embraced between the lovely cocoanut palms of the genial tropics, with their majestic fronds in delicate tracery softly bending and quivering under the balmy south-east trades, and the English cherry and other home fruits of the glorious Darling Downs. Why, we can grow in this State, if the people only *will*, vegetable products adapted to man's use of every sort and kind from every part of the habitable world; and the same infinite variety, we repeat, of climatic factors is found amply provided by an ever prodigal Nature, from the tropical North to the conditions of heavy frost, and even snow, in the New England district of Southern Queensland. Why, veritably, the English strawberry thrives to perfection around Bundaberg, almost on the edge of the tropics! What supernal advantages and possibilities we have then, not only for the horticulturist and agriculturist, but also for the growing of valuable timber trees and practical forestry! What superb openings for our squatters and farmers in the rearing of stock, the success of which depends to no small extent on local climate! And last—but yet first—what pleasant pastures does Queensland afford to every type of invalid, without exception, and those seeking renewed health!—for hygienic interests are of paramount importance, and with them as with other interests the Chief Weather Bureau, under our direction, goes hand in hand.

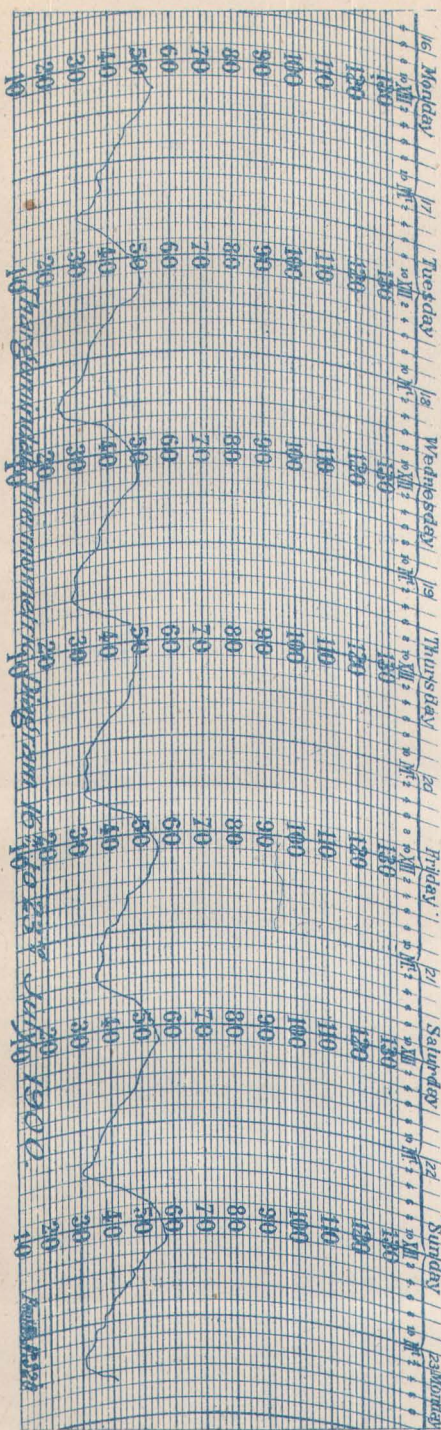
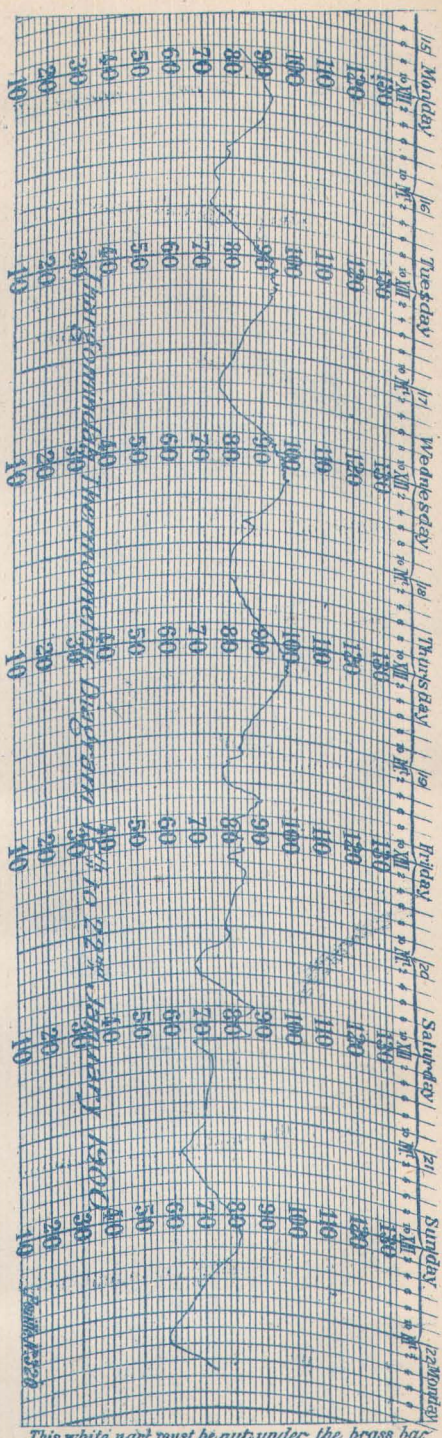
Speaking now of horticulture and tree-planting in connection with the Queensland climates, we have been very much struck during our long and many travels in Australia with the almost utter absence of a taste for the beautiful displayed by the average colonial. And how striking in many of the Queensland towns are the great vistas of ugly iron roofs, with the backyards, hideous paling fences, and the inevitable clothes-lines! In many cases, despite our marvellous climatic capabilities, people make little or no attempt at cultivating that beautiful taste which a little garden would develop. Those fences might be hidden by the lovely hibiscus or covered with tecomas and the gorgeous allamanda, and waving palms could fill even the corners of a 16-perch allotment. And how many townships might be made to smile, and become places of beauty—if not for this, why then for the next generation!—because for the welfare of posterity all living should have the most sacred regard. Take Brisbane—why not add to the beauty of the famous Botanic Gardens by planting its own streets with avenues of Royal palms as at Honolulu, while the fronds of the ever beautiful *Seaforthia* and *Cocos plumosa*, or feather palm of Brazil, could tower aloft in every odd and ugly corner. And our North Quay could be made as beautiful as the Avenue of Liberty at Lisbon. So should municipal councils, mayors, and corporations bestir them-

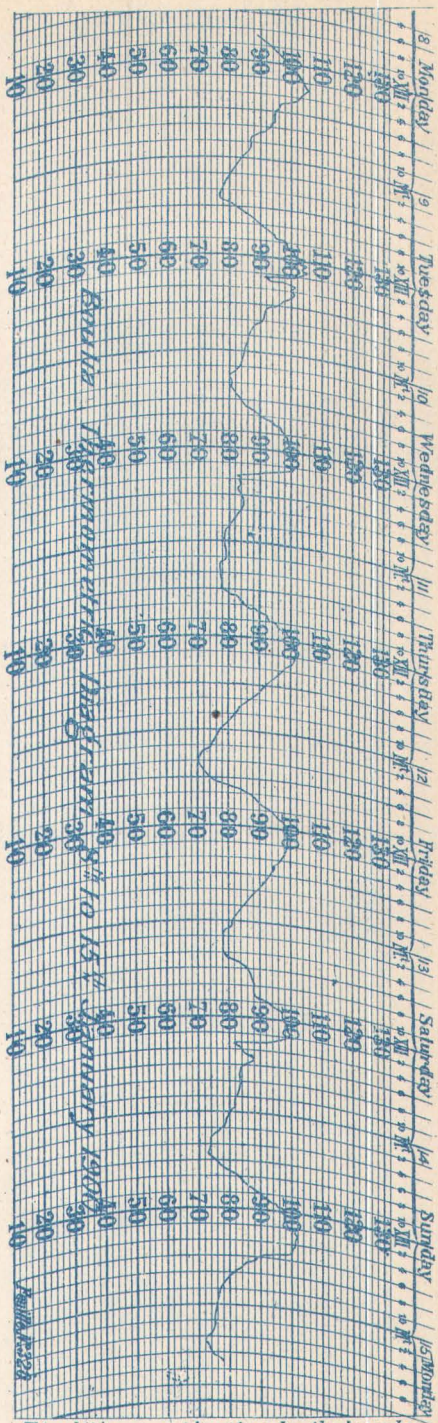


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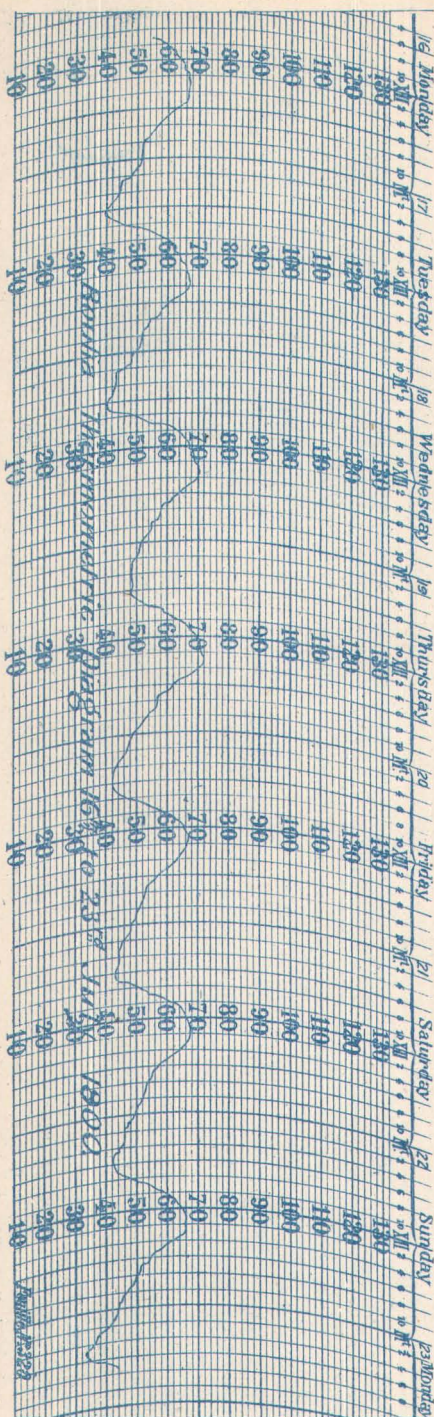


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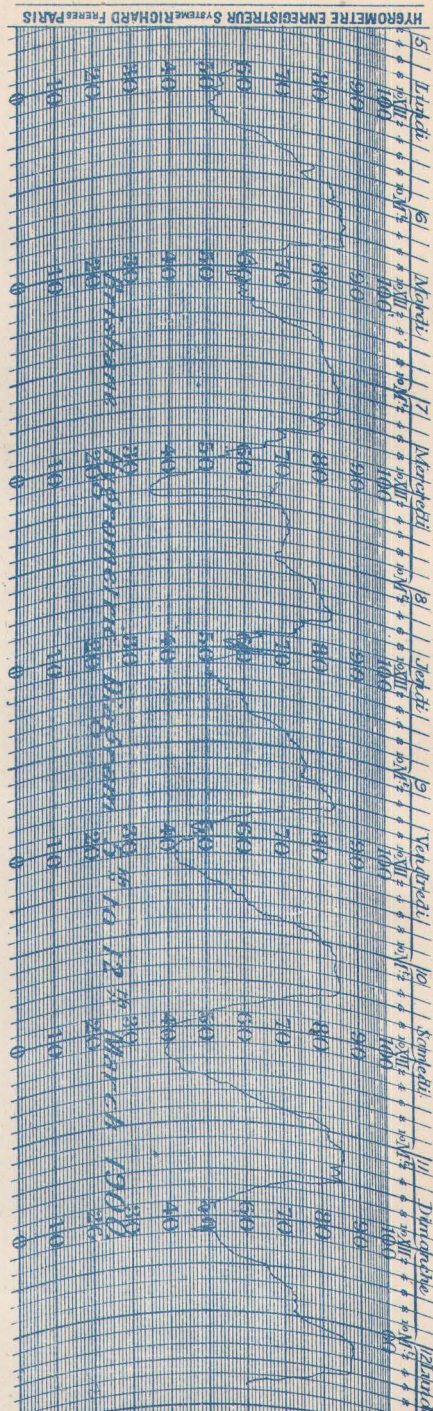




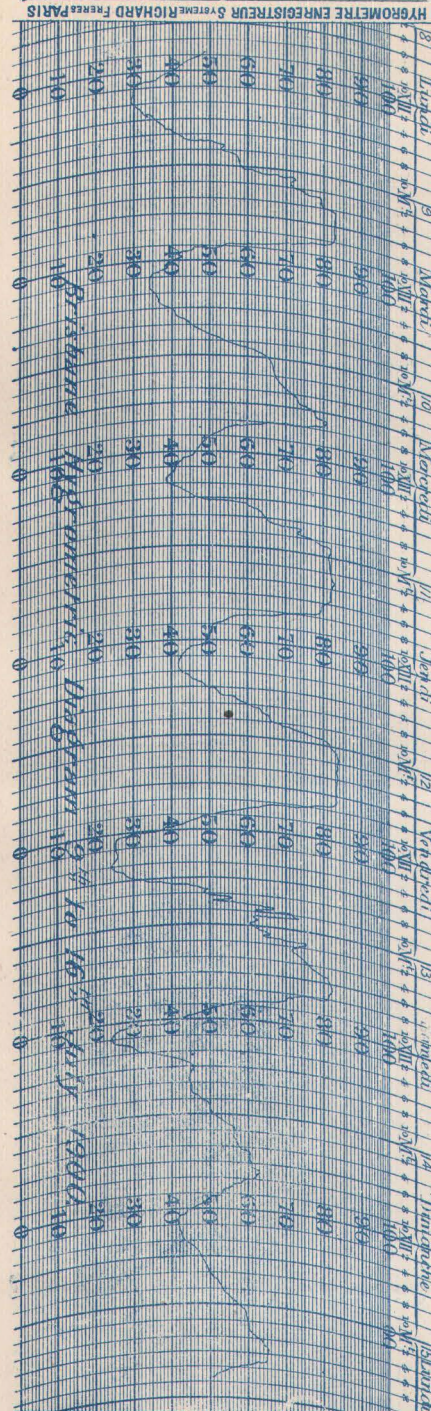
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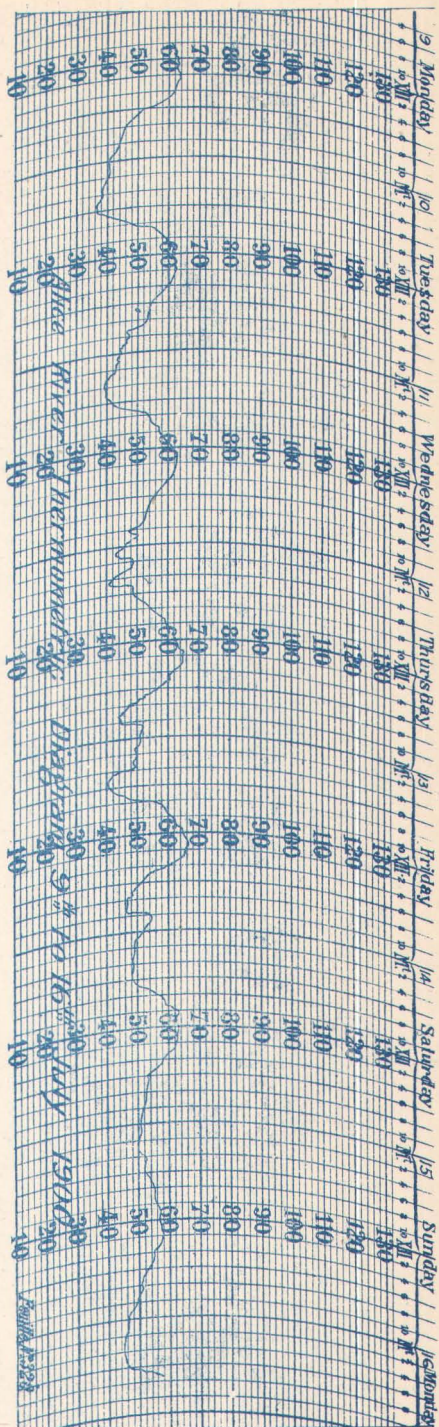
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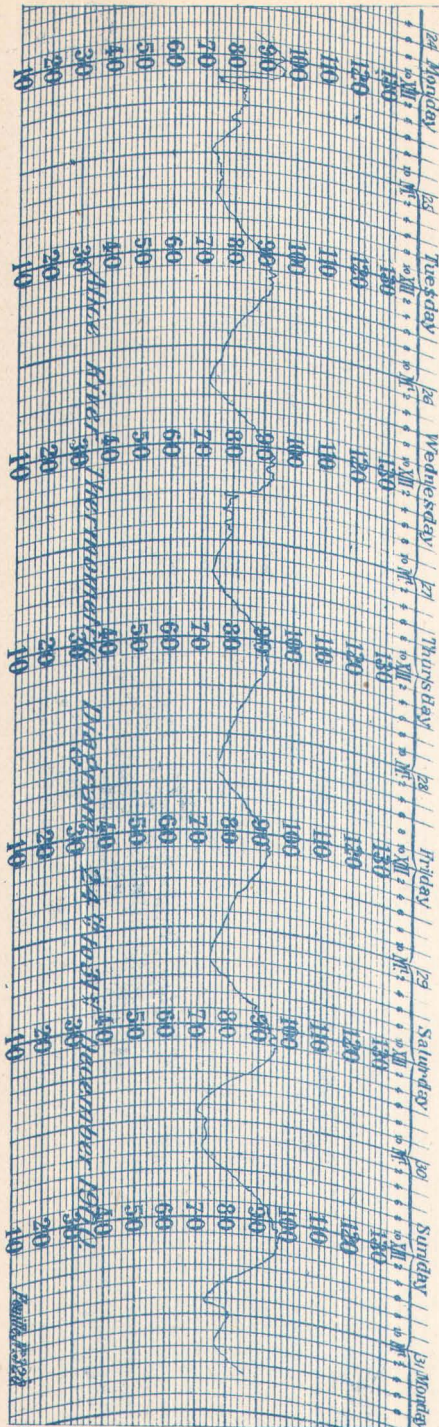
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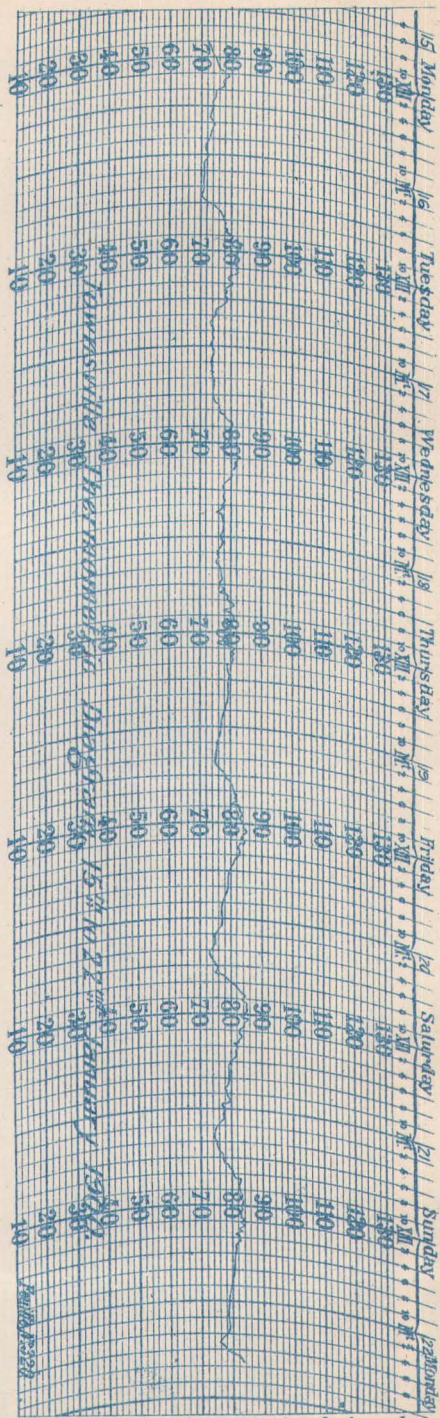
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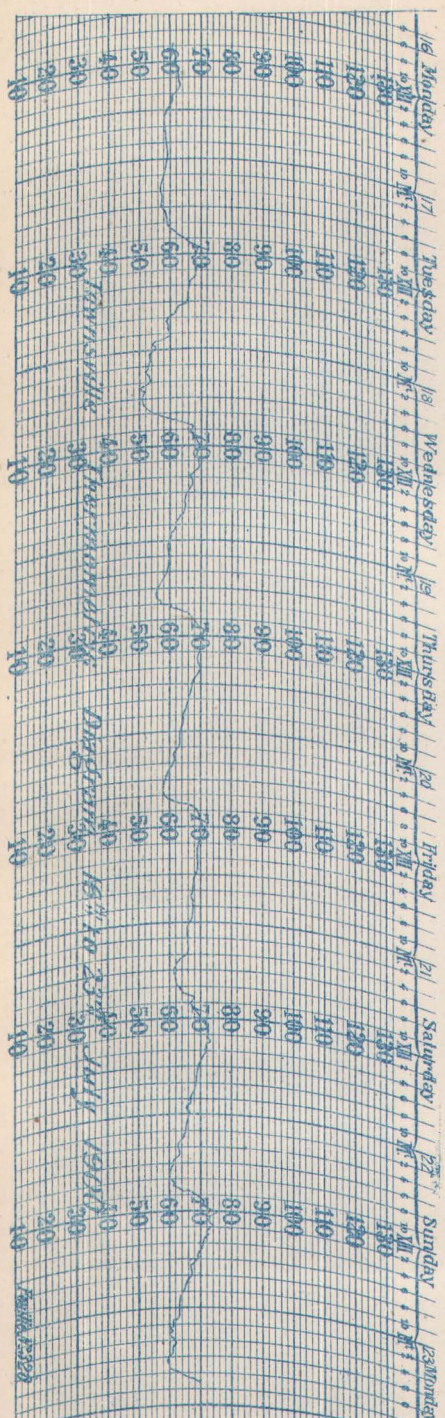
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selves, and set an example by lining the streets of their townships with avenues of palms and spreading shade trees which would convert many a backblocks settlement into a smiling oasis at a trifling cost. The thing can be done easily enough, and with little expense, when one knows how; and the secret lies in deep cultivation and drainage. Now by such plans of horticulture, ever utilising our lavish climatic variations, homes and towns could be made charming, and so would a taste for the æsthetic and beautiful be cultivated in the minds of children, who would thereby become elevated and ennobled in their ever-constant evolution, and better enabled to appreciate the supernal works of the great Master of Nature. And let the railway reserves on either side of our long lines to the West, North, and South, be utilised for the growing of vegetables for lengthsmen's use, for the growth of dates, olives, oranges, lemons, &c., in connection with the type of local climate adaptable, statistics concerning which, and of all parts of Queensland, can be obtained from the Chief Weather Bureau, which exists only to serve the people.

Now, if we may use a colloquialism, we "feel wild" when we hear some people from the southern States, who know nothing whatever scientifically of the subject on which they presume to speak, decry the Queensland climate. Why, positively, there are those in fair Sydney who believe that Queensland is a very Tophet fitted only for Pluto and all his demons!—and the same remark applies to the opinions of some who reside in Melbourne, Adelaide, Perth, and Hobart, and who do this State a great injustice. Now, as a matter of stern fact, under no conditions can any part of Eastern Queensland, from Brisbane to Torres Straits, experience such great changes of temperature as obtain in the southern capitals. At Brisbane, Rockhampton, Townsville, and Cooktown, as instances, such hot winds as Adelaide feels, which cause the very leaves of the native eucalypt to curl and shrivel, while fowls and ducks hobble over the heated ground in very pain, can never occur; neither can the cold blasts experienced in the southern States, which are so trying after the preceding heat to those suffering from pulmonary complaints.

Speaking now, not only of Queensland but of Australia generally—and indeed of other parts of the world as well—it is a well-known fact to meteorologists that, ever depending upon that grand factor, latitude, combined with altitude, every physiographical feature of country has, most distinctly, its own peculiar local climate. One type obtains on the hill-top, another on the slopes, another in the bush or scrub, another in valleys and low-lying places, another on plains, and others again near rivers and watercourses; and, with respect to Australia, these wonderful variations (and their modifications, as on the Darling Downs and the fertile Blackall Ranges, owing to latitude and elevation) are ruled or governed by four great classes of atmospheric pressure. These are (1) the anticyclones, atmospheric mountains, or high-pressure systems, which sweep the continent from west to east, their courses and amount of energy being referable to the season of the year and the declination of the sun; (2) the Antarctic V-shaped disturbances, or low-pressure systems, which form such strange attachments in wave-like form to the Antarctic zone of low barometers; (3) the equatorial or monsoonal V-shaped low pressures, and cyclonic areas; and (4),

but in a less degree, and affecting mainly the eastern and north-eastern coast of the Commonwealth, the tropical cyclones. In connection with these types of disturbances the climatic conditions of Queensland (always bearing in mind variations due to latitude and altitude), can be divided into three sections:—(a) The coastal climate, with its even temperature and comparatively high humidity; (b) the climate of the Central districts bordering a line joining the townships of Georgetown, Emerald, Mitchell, Dalby, and Mungindi, where the temperatures and humidities have a wider range, and where extremes of summer's heat and winter's cold are more marked than in the first instance; (c) the extreme or strictly continental climate of the far south-west, west, and north-west (except near the Gulf of Carpentaria), where the heat in summer is intense and the cold of winter equally so, while the range in percentage of relative humidity may be equally varied, but often showing an atmosphere intensely dry.

We now proceed to give a few statistics and special temperature and humidity curves\* from typical meteorological stations in Queensland. The figures speak for themselves, and will throw much light upon a subject which in some quarters appears to be but little understood.

\* These representative thermographic curves, including two hygrographic tracings taken from automatically recording instruments, show especially the range of these elements. The figures on these curves must not be regarded as absolute standards, since the machines being mechanical contrivances instead of strictly physical instruments, are liable to error. For standard values from the standard barometers and thermometers see the tabulated figures. Automatically recording hygrometers have not yet been placed at inland stations.

#### CLIMATOLOGICAL STATISTICS FROM SELECTED STATIONS IN QUEENSLAND.

Station.	Atmospheric Pressure (Barometer reduced to 32° F. and M.S.L.)	Mean Temperature.	Relative Humidity (Saturation = 100°).	EXTREMES OF SHADE-AIR TEMPERATURE.					MEAN ANNUAL RAINFALL.		Period for which Means have been Computed (both Years inclusive).
				Maximum.	Minimum.	Range.	Absolute Maximum.	Absolute Minimum.	Inches.	Number of Wet Days.	
Brisbane ...	30.067	68.4	70	77.4	59.3	18.1	105.9	36.1	58.001	150	1887 to 1896
Blackall ...	...	70.6	57	84.3	56.5	27.8	119.0	22.0	28.517	54	1888 „ 1896
Boulia ...	29.977	73.9	46	88.6	58.9	29.7	118.2	26.4	12.161	31	1888 „ 1896*
Cambooya ...	...	62.7	76	75.7	48.1	27.6	108.0	13.7	34.652	101	1888 „ 1896
Cloncurry ...	29.972	76.7	45	89.2	64.1	25.1	127.5	34.5	22.165	48	1888 „ 1896
Cooktown ...	29.967	78.4	70	83.6	73.2	10.4	103.8	51.8	67.696	122	1889 „ 1896
Hughenden ...	...	75.0	51	89.0	60.8	28.3	109.8	29.1	20.238	50	1888 „ 1896†
Mackay ...	30.019	71.9	71	79.6	64.1	15.5	97.2	36.3	76.568	111	1890 „ 1896‡
Normanton ...	29.975	80.5	57	91.8	69.0	22.7	110.1	42.5	39.709	55	1890 „ 1896§
Rockhampton ...	30.058	72.6	69	82.0	63.0	19.0	106.7	35.3	49.306	110	1.88 „ 1896
Stanthorpe ...	...	58.6	70	68.9	47.7	21.3	103.6	12.2	34.676	109	1888 „ 1896
Thargomindah ...	30.047	70.3	52	82.3	57.6	24.7	121.0	23.7	13.169	37	1888 „ 1896
Thursday Island ...	29.927	81.5	78	85.9	76.8	9.1	98.0	68.8	74.352	105	1892 „ 1896
Townsville ...	30.001	75.5	67	81.1	69.8	11.3	99.3	44.0	67.022	89	1888 „ 1896

\* Means computed for 8 years only; the records for 1895 were destroyed when the Telegraph Office was burnt.

† The readings for 1891 are incomplete, and means computed for 8 years only.

‡ The mean rainfall and number of wet days are computed for the period 1888 to 1896.

§ The means of atmospheric pressure, relative humidity, and rainfall, and the absolute maximum are computed for the period 1888 to 1896.

NOTE.—For further details of statistics reference must be made to the very complete set of tables which have been submitted to the Chief Secretary.

## CLIMATOLOGICAL STATISTICS for JANUARY in the typical year 1895 from SELECTED METEOROLOGICAL STATIONS in QUEENSLAND.

Station.	Atmospheric Pressure (Barometer reduced to 32° F. and M.S.L.)	Mean Temperature.	Relative Humidity (Saturation = 100).	EXTREMES OF SHADE-AIR TEMPERATURE.					TOTAL RAINFALL.	
				Maximum.	Minimum.	Range.	Absolute Maximum.	Absolute Minimum.	Inches.	No. of Wet Days.
Brisbane ...	29.857	76.8	79	83.4	70.1	13.3	90.4	63.2	27.717	22
Rockhampton ...	29.833	81.8	69	90.1	73.5	16.6	95.9	67.3	11.635	17
Mackay ...	29.813	80.5	70	87.2	73.7	13.5	95.6	65.3	10.690	10
Townsville ...	29.803	82.9	72	88.9	76.8	12.1	94.0	73.0	8.460	15
Cairns ...	29.835	81.6	70	89.3	73.8	15.5	95.4	68.9	7.230	14
Thursday Island	29.876	81.5	86	85.9	77.2	8.6	91.0	73.8	30.325	20
Emerald ...	29.871	81.9	67	91.7	72.1	19.6	98.6	67.4	7.960	16
Roma ...	29.770	81.8	62	93.4	70.2	23.2	105.4	60.3	10.120	12
Dalby ...	29.838	77.3	59	87.6	67.0	20.6	96.0	60.0	8.670	13
Toowoomba ...	...	71.2	87	79.2	63.2	16.0	88.9	53.1	11.020	16
Warwick ...	...	75.7	75	85.5	65.9	19.6	100.2	56.5	7.180	16
Wallangarra ...	...	68.4	71	77.2	59.6	17.6	91.2	49.2	9.275	16
Adavale ...	29.765	85.1	71	96.9	73.2	23.7	105.2	61.7	2.170	7
Cunnamulla ...	29.794	84.3	58	98.6	70.0	28.6	113.0	58.0	1.360	4
Windorah ...	29.707	87.2	48	99.8	74.6	25.2	108.6	58.1	2.470	6
Boulia* ...	29	...	...	...	...	...	...	...	...	...
Cloncurry ...	29.770	85.1	55	93.8	76.4	17.4	100.3	72.1	3.814	14
Camboowal ...	29.796	80.7	80	90.3	71.0	19.3	102.0	63.8	16.160	15

\* Records destroyed by fire.

## CLIMATOLOGICAL STATISTICS for JULY in the typical year 1895 from SELECTED METEOROLOGICAL STATIONS in QUEENSLAND.

Station.	Atmospheric Pressure (Barometer reduced to 32° F. and M.S.L.)	Mean Temperature.	Relative Humidity (Saturation = 100).	EXTREMES OF SHADE-AIR TEMPERATURE.					TOTAL RAINFALL.	
				Maximum.	Minimum.	Range.	Absolute Maximum.	Absolute Minimum.	Inches.	Number of Wet Days.
Brisbane ...	30.127	55.4	75	66.2	44.5	21.7	76.2	36.4	0.440	5
Rockhampton ...	30.182	57.4	69	68.3	46.5	21.8	76.9	35.7	3.000	7
Mackay ...	30.168	58.9	77	69.0	48.8	20.2	76.4	38.3	0.435	5
Townsville ...	30.148	64.1	66	69.7	58.4	11.3	76.1	47.2	0.290	3
Cairns ...	30.130	63.1	75	76.6	59.6	17.0	83.0	45.1	0.390	5
Thursday Island	30.002	78.0	83	81.3	74.7	6.6	87.0	71.7	0.116	1
Emerald ...	30.220	52.8	71	66.0	39.5	26.5	75.1	28.6	2.060	9
Roma ...	30.160	49.5	73	63.6	35.4	28.2	79.6	19.5	1.560	4
Dalby ...	30.162	46.8	69	61.0	32.5	28.5	72.0	19.0	1.250	4
Toowoomba ...	...	47.5	73	59.6	35.4	24.2	68.5	21.9	1.450	6
Warwick ...	...	45.0	76	59.9	30.1	29.8	70.7	16.8	0.700	2
Wallangarra ...	30.144	39.6	70	48.0	31.2	16.8	66.2	21.2	1.190	2
Adavale ...	30.189	49.6	65	62.5	36.6	25.9	71.2	27.7	1.110	2
Cunnamulla ...	30.199	48.8	77	61.7	35.9	25.8	71.9	29.8	0.020	1
Windorah ...	30.145	52.2	59	66.1	38.3	27.8	75.6	30.1	Nil.	...
Boulia ...	...	51.9	67	64.8	39.0	25.8	77.8	31.2	1.570	7
Cloncurry ...	30.165	58.4	60	67.6	49.1	18.5	79.9	38.0	3.257	11
Camboowal ...	30.157	57.9	77	68.6	47.2	21.4	80.2	33.9	3.130	9

Enough has now been given to show the marvellous climatic variations in this bonny State of Queensland, and we earnestly trust that what has been written will lead to a better understanding of its meteorological resources and conditions generally.

## Part II.

# HISTORY.

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### HISTORICAL SKETCH.

[Contributed by W. H. TRAILL, Esq.]

On the 16th of May, 1770, Lieutenant James Cook, R.N., commanding His Majesty's exploring ship, "Endeavour," skirting northward what he was convinced was the east coast of a great southern continent, the existence of which had previously only been conjectured, saw, some distance inland, a hill rising above the general elevation of a range. Almost simultaneously he became aware of a formidable row of reefs, the partially-submerged prolongation of the landward range, stretching far into the ocean. To the promontory whence these reefs protruded he gave the name of Point Danger, and to the hill which signalised their situation, that of Mount Warning. Ninety years later that point was the geographical starting station whence the boundary separating the Colony of Queensland from New South Wales was defined.

Pursuing his voyage, Cook, wafted by a fresh southerly breeze, and keeping at a distance of about 6 miles from the coast, as the afternoon of the following day wore on, again saw breakers on the larboard bow, and beyond, a little further north, a headland, to which, in the same vein of suggestive nomenclature which had prompted him in the case of Mount Warning, he gave the designation of Point Lookout. Just beyond this point, to the north of it, the shore receded, and "forms a wide open bay," to quote from Cook's journal, "in the bottom of which the land is so low that I could but just see it from the topmost head." To this wide open bay he gave the name of Morton's Bay, a very moderate tribute to Earl Morton, who in 1764 was President of the Royal Society, and one of the Commissioners of Longitude. As if by way of additional consideration, Cook appended the name of Morton also to the headland next in view, which he regarded as the northern point of the bay. Thus, it is clear that the Morton Bay of Cook is the wide and very slight indentation made by the inclination of the coast lines between Point Lookout and Cape Moreton towards the South Passage, which gives difficult access to the present Moreton Bay. From the situation whence his observations from the topmast head seem to have been taken—viz., five or six miles due east of Point Lookout—the low sandy land at Amity Point and the southern extremity of Moreton Island would appear to blend and join. The Moreton Bay of to-day Cook neither named nor, apparently, entered. It was not his business to sail up every indentation. He was serving the purposes of geography, not of topography. Such remarks as were proper for him to make he made. He recorded that "from C. Morton the land trends away W., further than we could see, further is a small space where we could see no land; some on board were of opinion that there is a river, because the sea looked paler than usual. Upon sounding, we found 34 fathoms, fine white

sandy bottom, which alone is Sufficient to change the apparent colour of Sea Water, without the Assistance of Rivers. . . . Be this as it may, it was a point that could not be cleared up as we had the wind ; but should anyone be desirous of doing it that should come after me, this place may always be found by three hills which lay to the northward of it in the Lat. of  $26^{\circ} 53' S.$ " Then follows a description of these hills to which Cook then gave the name they have borne ever since—the Glasshouses. Here, at the threshold of the harbour into which discharges a river destined to have on its banks the capital of a British State, Cook, all unconscious of its future, neither anchored nor entered. Pursuing his voyage he sighted and named Double Island Point, passed the opening to Wide Bay, and distinguished on the next bluff headland numerous natives, progenitors, doubtless, of those aborigines who three-quarters of a century later barbarously maltreated and murdered a crew of shipwrecked mariners. To this bluff he gave the name of Indian Head. To-day we know that it is a projection on Great Sandy Island. To Cook it naturally appeared to be a headland of the mainland, and even when on the 20th he rounded and anchored to leeward of Sandy Cape, with Hervey's Bay extending to the south and east, the fact that it connected with Wide Bay was not and could not be plain to him. He had passed the mouth of the Mary River, masked by Great Sandy Island, a wilderness of sandy forest and swamp, and his vessel lay directly opposite to the mouth of the Burnett, a stream on whose upper basin countless flocks and herds were later to thrive on the pasturages and enrich their owners, and on whose banks, nearer the mouth, wide fields of sugar-cane were to replace the tangled and impassable semi-tropical jungles. It is not necessary to detail the successive stages of this voyage. Regarded in its entirety, it is worthy to take rank with the exploit of the navigator who, in the days of Pharaoh Necho, coasted Africa from the Red Sea and doubled the Cape. With the circumnavigation of the same continent in the opposite course by Vasco de Gama, and with the famous expeditions of Columbus and of Magellan, Cook outlined the entire eastern seaboard of a continent hitherto only supposed to exist. Picturesque and romantic incidents to give attraction to his exploration were lacking indeed. The territory he skirted, and upon which he occasionally landed, was almost absolutely in a state of nature. Human labour, guided by intelligence, had done nothing to convert its fertility into commodities and to collect what civilised mankind recognises as wealth. The inhabitants Cook encountered were savages almost as devoid of intellect as of garments. They had nothing to exchange—neither barbaric bangles of gold, nor corn, nor fruit, nor ideas. There were no mild and tractable tribes to enslave. There were no rich and gorgeous, pompous and feeble, kingdoms to cajole and then to plunder. Naked savages, of intellect so embryotic that they passed from complaisance to fury without appreciable cause, rather infested than inhabited the land. Because these lacked everything which to the civilised man appears essential for enjoyment, for comfort, even for decency, it seemed probable that the land they lived in must be sterile and barren. The "Endeavour" had skirted the coast for thousands of miles. Her master, his associated men of science, and his crew, had visited other lands in equal latitudes, inhabited by simple barbarians ; but nowhere else had they touched on shores so uninviting

or people so wretched. They had not, in the whole course of their Australian voyagings, seen even a village or a cultivated yam-patch. Even personal vanity, which is innate in all members of the human race, had among the abject aborigines of Australia found for itself no decent expression. Elsewhere barbarous peoples decorate their persons with native metals which glitter and do not tarnish, and with pebbles that gleam and shine. But these brutal natives hung no flakes or beads of gold upon their naked women, and their males had conceived for their own embellishment no better decoration than ridges of their own scarred flesh, with resplendent bedaubings of dirt for great occasions.

This was not a territory nor was this a population to excite much interest, and Cook had no inducement to linger nor any to make frequent landings. He made the best speed, compatible with safety and with observation, of the coast-line to the northward, noting the successive alternations of capes and indentations as he proceeded, fixing latitudes and longitudes and conferring names as he sailed along. He had reached halfway between the 16th and 17th parallel of S. latitude without any incident to break the monotony, when, his ship striking a submerged reef, his adventurous career nearly came to a tragical end. Although on this particular night the experienced commander was proceeding with even more than his customary great caution, he was subjected to one of those perils of voyaging in uncharted seas which no experience can provide against and no prudence avert. Having during the evening perceived ahead in the direct course indications of obstacles, and knowing, moreover, that he was now arrived near the latitude assigned to some islands discovered by the Spanish navigator De Quiros, Cook had shortened sail upon the "Endeavour" and tacked out from the land close-hauled, to get an offing during the night. He had the advantages of moonlight and a fine working breeze, and kept the lead constantly going. Several alarms, consequent on eccentric shoalings and redeepening of the bottom, kept the ship's company on the alert. But just when ample and uniform depth of water seemed to have been attained, and the scientific and artistic gentlemen had left the deck with their minds at ease and had gone to bed, there was again a rapid shoaling, and before the lead could be recast the vessel struck and began to grind on a reef. The land was distant about 8 leagues. Fortunately, the brisk breeze died away, and the tide was not at its highest. The ship's bottom had been perforated by the rocks, and the utmost efforts of all hands at the pumps barely coped with the inflow of the sea. These efforts, too, were so strenuous that it was clearly impossible that they could be long sustained. Cook's own narrative, simple but graphic, as embodied in his journal, has been preserved and printed, and is accessible to any reader who desires to acquaint himself with the particulars of this terrible adventure. It must suffice for our present purposes to state that after throwing over-board guns and other deadweight to the extent of 50 tons, and experiencing several vicissitudes of hope and despair, the commander and crew, after resorting to every device which skill and ingenuity could suggest in such a plight, managed to reach in their vessel a harbour which a boat's crew, detached for the purpose in the pinnace, had discovered, where a small river fell into the ocean under the shelter of a bold headland. This refuge was reached in a few hours, a pleasant breeze wafting the leaky bark gently to its destination. It was not, how-

ever, until she had twice grounded on banks of muddy sand, which obstructed the channel, that the "Endeavour" was at last warped up the harbour, and, being secured to its southern shore at a chosen spot, beached at high water. Two months were spent in this haven, occupied by the mechanics in repairing the injuries in the ship's bottom, by the naturalists in their scientific pursuits, the artists in portraying the scenery, and by the invalids among the crew in recuperating. It is to a scape of sea and land by one of the artists that identification of the precise spot where Cook careened his vessel to replace the planks smashed by the reef, has within recent times been possible. A view taken from a little distance out in the harbour depicted the "Endeavour" lying, canted over, on the beach. The form of the hills in the background, faithfully represented, renders recognition easy. At this precise spot, within the last few years, there have been unearthed part of a cask still containing a quantity of tar or pitch, and several cannon balls have been found, just above the level of high tide. From the reef where the "Endeavour" struck, also one of the guns jettisoned to lighten the ship has also been recovered.

The ship having been repaired, on the 4th August she was warped out of the harbour, and the river of which it formed the estuary, and to which the name of the "Endeavour" was given, was abandoned to its pristine solitude, not again to be a resort of Europeans until more than a century had elapsed. Cook recommenced his voyage northward, and after being baffled in his purpose of navigating close to the coast, by the delusively insular appearances of a projection, which he stigmatised as Cape Flattery, weary of the constant anxieties imposed upon him by the perils of the coast on one hand, and the long chain of the Barrier reefs on the other, he sought an outlet through the latter, and succeeding, reached the open ocean. His journal records the sense of relief experienced by the whole ship's company. During little less than three months they had voyaged, entangled among reefs and shoals, 360 leagues, without once, even for a minute, being without a man in the chains, heaving the lead.

Within a fortnight, however, the familiar troubles had again to be braved. It became imperative to again return within sight of land lest the passage alleged to exist between north-eastern New Holland and New Guinea should be missed—if such passage there really was. In the attempt to get inside the Great Barrier Reef, the voyagers experienced perils more terrible than any which they had previously been subjected to. As they neared the line of reef, the wind fell. The depth of ocean precluded any possibility of anchoring. Tide and current carried them towards the reefs, over which the waves broke, foaming to a vast height. Fate sported with them with feline cruelty; now they drifted within 100 yards of the deadly rocks, and anon, when their destruction seemed but a matter of minutes, a turn of the tide or a light air wafted them to temporary safety. At last, however, fortune, relenting, permitted them to float, hustled by the reflow of the tide, through an opening, to which gratitude gave the name of Providential Channel. The coasting process was resumed, and, on the 21st August, Cook was enabled to cast anchor among the islands lying off the north-eastern promontory of New Holland, which has ever since borne the name then given to it by him—Cape York. Landing on one of the islands, Cook, although he had previously

performed the ceremony at various parts, hoisted English colours, and formally took possession of the whole eastern coast from latitude 38 degrees to this spot in latitude  $10\frac{1}{2}$  degrees S., in right of His Majesty King George the Third, by the name of New South Wales, with all the bays, harbours, rivers, and islands situated upon it. Then, re-embarking from Possession Island, he set sail, sought no further to define the coast line of New Holland, but directed his course for Batavia, *en route* for England.

Cook had not been favourably impressed by what he saw of the eastern coast lands of Australia. There was, however, one place where the naturalists of the expedition had found some attractions. Plants—heather and so forth—quite new to them there abounded. They called it Botany Bay, and reported on it in terms of considerably exaggerated favour when they returned to England. A few years later, the British Government having lost the North American plantations by the successful revolt of the colonists, were much embarrassed for lack of a place whither to send sentenced criminals. An experiment of confining them in a settlement on the west coast of Africa had proved a deadly failure. That the convicts died there as if a murrain afflicted them was perhaps only felt as a moderate grief. But the officers and others in charge also died so fast that there was a chance that the surviving criminals would some day have no one living to control them. The coast of New Holland might not be an ideal place in the ordinary sense, but, as described by Cook and his companions, it struck the worried authorities as an ideal place for the reception and retention of criminals. Botany Bay was vouched for as a secure harbour. The land bordering on it was represented as attractive, and probably fertile if cultivated. Consequently a fleet was prepared, the gaols opened their portals, and, under the charge of a naval captain with a couple of hundred marines to support his authority, and a handful of civil officials, and other free persons, 504 male and 192 female convicts were despatched to take such chances as might befall at a place which could not be reached in less than six months. How the rocky shores of Sydney Harbour were preferred to the swamps of Botany Bay as soon as seen, how the experiment struggled through difficulties and succeeded, need not be detailed. It is sufficient for our purpose to state that the penal settlement at Sydney prospered not only as such, but also as a sort of naval base whence renewed coastal exploration could be and was undertaken. The second Governor, Captain Hunter, R.N., in 1799 despatched Mr. Flinders—who had come out with him as midshipman, and had already distinguished himself by hardihood in coastal exploration to the southward—to supplement the information furnished by Cook, especially with regard to Glasshouse and Hervey's Bays. For this purpose Governor Hunter placed Flinders in command of the "Norfolk," a sloop of 25 tons, built not long before at Norfolk Island, and to a crew already tested by Flinders' previous expedition to define Bass' Straits—discovered a little earlier by him and Surgeon Bass in a tiny open boat—a tamed aboriginal, Bongaree, was added, to facilitate communication with any natives who might be encountered.

Flinders sailed in July, 1799, under instructions to return within six weeks. In six days he had passed Cook's "Morton Bay," and was at anchor at the mouth of Glasshouse Bay. For about a fortnight he

beat about in that enclosed sheet of water, constantly seeking the orifice of that river, which some of Cook's companions had believed must fall into this bay. In this quest Flinders failed. He ascertained that what Cook regarded as part of the mainland, projecting at Cape Moreton, was in fact an island, and wrote it Moreton Island. He landed and made his way to the nearest of the Glasshouse hills; he visited and named Redcliffe Point; he had, despite Bongaree being available, a collision with the aborigines, and named the place Point Skirmish; he sailed towards the southern parts of the bay, where the land approaches on each side, and an archipelago of islets and mudbanks fringed with mangroves obscure the channel, and he rather fancied a river might fall in there. But he was convinced that no river of importance flowed into the bay, either there or elsewhere. That such should have been Flinders' impression was not surprising. True, the Brisbane River, a stream of magnitude equal to that of the Thames, the combined Logan and Albert, with an estuary of respectable dimensions, and half-a-dozen minor creeks, discharge into the bay. But the greater portion of the fore-shore of the mainland—and especially the portions adjacent to the mouths of the streams—is bordered with muddy shoals covered with a dense growth of mangroves. The mouth of the Brisbane also was masked by islets, similarly clothed. During July and other winter months the watercourses are at their lowest, and the salt tide sweeps up them and out again with the flow and ebb, just as it does into other channels through the mangroves where no river or creek is hidden. In flood time the rivers disclose their presence by pouring fresh water and débris into the bay. But Flinders had no such indications. He returned to Sydney and to England. Two years later he revisited Australia in command of an expeditionary party, such as Cook had carried on board the "Endeavour." Flinders' vessel was the "Investigator," and again in the month of July, in the year 1802, he set sail from Sydney, bound north. In the course of this voyage Flinders discovered and entered and investigated a bay that Cook had passed at night, and which, still bearing the name given it by the former—Port Curtis—is regarded as one of the finest harbours on the coast of Queensland. He visited Keppel Bay, but did not perceive that the river now known as the Fitzroy debouched into that indentation. Pursuing his northerly route, he rounded Cape York, and, sailing into the Gulf of Carpentaria, landed on Sweer's Island; there repaired his ship, which was in a most decayed condition, and, skirting the shores, circumnavigated Australia, and regained Sydney by way of Cape Leeuwin.

At this stage, Flinders' share in the maritime exploration of the coasts of what is now the State of Queensland practically terminates, and although he once more navigated the coast, and experienced most romantic adventures, it will be necessary to content ourselves with explaining how it happened that it was not till ten years later that particulars of his final voyage were published. After clearing the north coast of Australia he put in at Port Napoleon (better known as Port Louis) in Mauritius, on board the "Cumberland." General De Caen, who commanded there for the French Emperor, refused to recognise as valid for the "Cumberland" the protection papers which had, during the brief Peace of Amiens, been granted for the scientific exploring ship "Investigator." The "Cumberland," a schooner, sailed under the

pennant of His Majesty's Navy. The two nations were at war. De Caen seized the vessel, treated her officers and crew as prisoners of war, and impounded her papers, including Flinders' log and journals. Flinders was detained in honourable but distressing captivity from 17th December, 1803, till June, 1810, anticipating by just six months the release which would have come to him by the capture of Mauritius, on 3rd December in the same year, when by the articles of surrender by which De Caen yielded the Mauritius to Admiral Bertie and General John Abercrombie, "all English prisoners of war, of whatever description," were liberated. Flinders made his way to England, and on 14th July, 1814, the day of his death, was published his "Account of a Voyage to Terra Australis."

In 1817, Lieutenant Philip Parker King surveyed and chartered portions of the eastern coast.

A singular condition of affairs had been growing up amidst the community at Sydney. Originated as a place to which felons should be sent from Great Britain and Ireland for safekeeping, it had developed in a fashion which aroused a desire to retransport some of its criminals. Insufficiently relieved by branch establishments at Norfolk Island, Van Diemen's Land, Newcastle, and Port Macquarie, yet another locality was desired. Lieutenant Oxley, R.N., the Surveyor-General of New South Wales, experienced in inland exploration, was despatched by sea in the cutter "Mermaid," to inspect Flinders' Port Curtis, and Port Bowen (now known as Port Clinton), and, as a last resource, Moreton Bay, to ascertain if at any of these places a situation suitable for a branch penal establishment existed. Oxley accordingly visited Port Curtis. He regarded the place as unsuitable, and tried the Moreton Bay of to-day—for the name given by Cook to the recession of the coast leading to the South Passage had by this time been transferred to his Glasshouse Bay. Considering that the western shore had not been exhaustively examined by Flinders, he "determined to trace it entirely round, in the hope to find in such an extensive inlet some opening which would render an apparently fine country of more utility and value than it could be expected to be if the accounts of the scarcity of fresh water here were correct." The execution of such a determination must have resulted in the discovery of the Brisbane River, for in Flinders' chart of the bay the western shore line was laid down with occasional hiatuses, indicating parts where he had not viewed the actual land, and one of these blanks—which Oxley was sure to try and fill in—is precisely where the Brisbane River opens into the Bay. But Oxley was saved the trouble of patiently investigating every opening between the mangroves. His first day's researches terminated a little north of Redcliffe Point. But that first day had begun by the rescue from the aborigines of a white castaway who gave information of the existence of a large river which must empty into the Bay. We have here no space to retell the extraordinary adventures of this man Pamphlet and his mates Finnegan and Parsons. They will be found in the original narrative by Mr. Uniacke, one of Oxley's companions on this occasion, published by Judge Barron Field in 1825, and their sequel in Oxley's own journal of his second visit in 1824 to Moreton Bay, which is printed as an appendix to a paper read by Sir Hugh Nelson, K.C.M.G., on 27th July, 1900, before the Royal Geographical Society of Queensland. It is sufficient for our present

purpose to mention that with Finnegan in his boat Oxley next day discovered the fine river which he named in honour of the then Governor, Brisbane. He ascended this river to a point now identified as the present village of Goodna, and during his visit in the following year made his way up it further to a point beyond which further progress in boats was impracticable, now recognised as the place where the Mount Crosby pumping station for supplying Brisbane with water is situated.

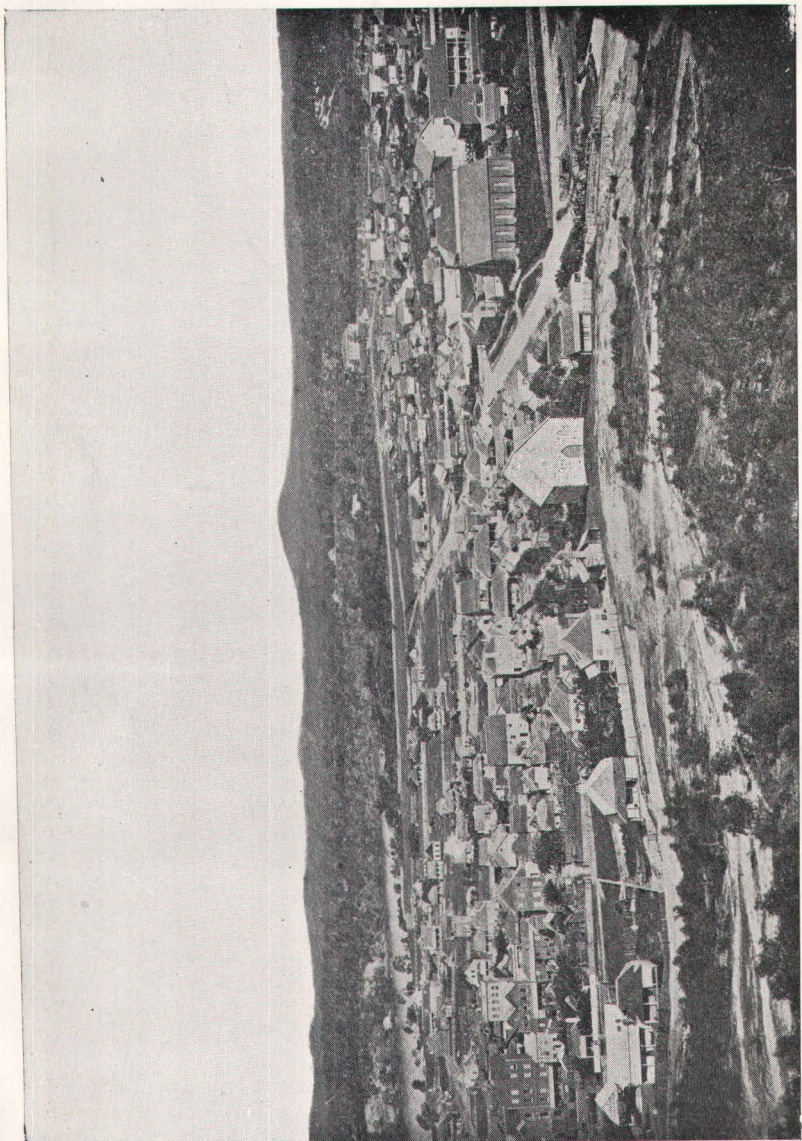
Although delighted with his discovery, and highly pleased with the land on the banks of the river, Oxley judged Redcliffe Point the most suitable locality for the proposed penal establishment. Thither accordingly in the following year he conducted, in the brig "Amity," a pioneering party of thirty convicts, guarded by a detachment of the 40th Regiment, under the command of Lieutenant Miller, to lay the foundations, at Redcliffe Point, of the branch penal establishment. He himself, accompanied by Lieutenant Butler and by Mr. Allan Cunningham, botanist and explorer, proceeded up the river, as already stated. It was not long, however, before the Redcliffe site was regarded as unsuitable, and the establishment removed to a position up the river, where the nucleus of the present town of Brisbane was created by the labour of the convicts, whose numbers were rapidly augmented as buildings were erected.

This earliest phase of settlement has no attractions which dispose one to linger on it. Live stock were brought by sea to start flocks and herds for the food supply of the establishment. Captain Bishop succeeded Captain Miller without notable occurrences until Captain Logan arrived in his turn—an energetic, determined, enterprising, and dreadfully severe ruler, whose term of office extended from 1825 to 1830, the year of his bloody and somewhat mysterious death. During the first year of Logan's rule, Major Lockyer, of his regiment, visited the port, and extended Oxley's explorations up the Brisbane by a boating trip, ascending the tributary creek which has since borne his name, for some distance. Some doubt has been cast upon the identity of this creek with that which Lockyer ascended, in consequence of the looseness of his description, and especially because he reported that he made his way up it by boat about 30 miles beyond its confluence with the river, whereas, except in flood time, when no boat could be forced against the stream, the creek has not sufficient water for such a voyage. Lockyer unluckily had not provided himself with instruments for taking astronomical observation, even had he, an officer in a line regiment, knowledge of the art. But his draft of his course has been preserved, and although the positions shown on it are utterly misplaced, it demonstrates conclusively that it was the present Lockyer's Creek, and no other, which he explored. Logan himself was indefatigable in exploratory work. He established an outpost at a spot at the head of the tidal water on Oxley's Bremer Creek, where the existence of limestone induced him to have a kiln erected, the cement being of importance in connection with his building works at Brisbane. To protect the prisoners labouring at the quarries and kiln from the attacks of the natives, a non-commissioned officer's squad of soldiers was stationed here, and the nucleus of the present flourishing town of Ipswich was thus created. Logan also pushed out to the southward and came upon the fine country lying between the crescent-shaped

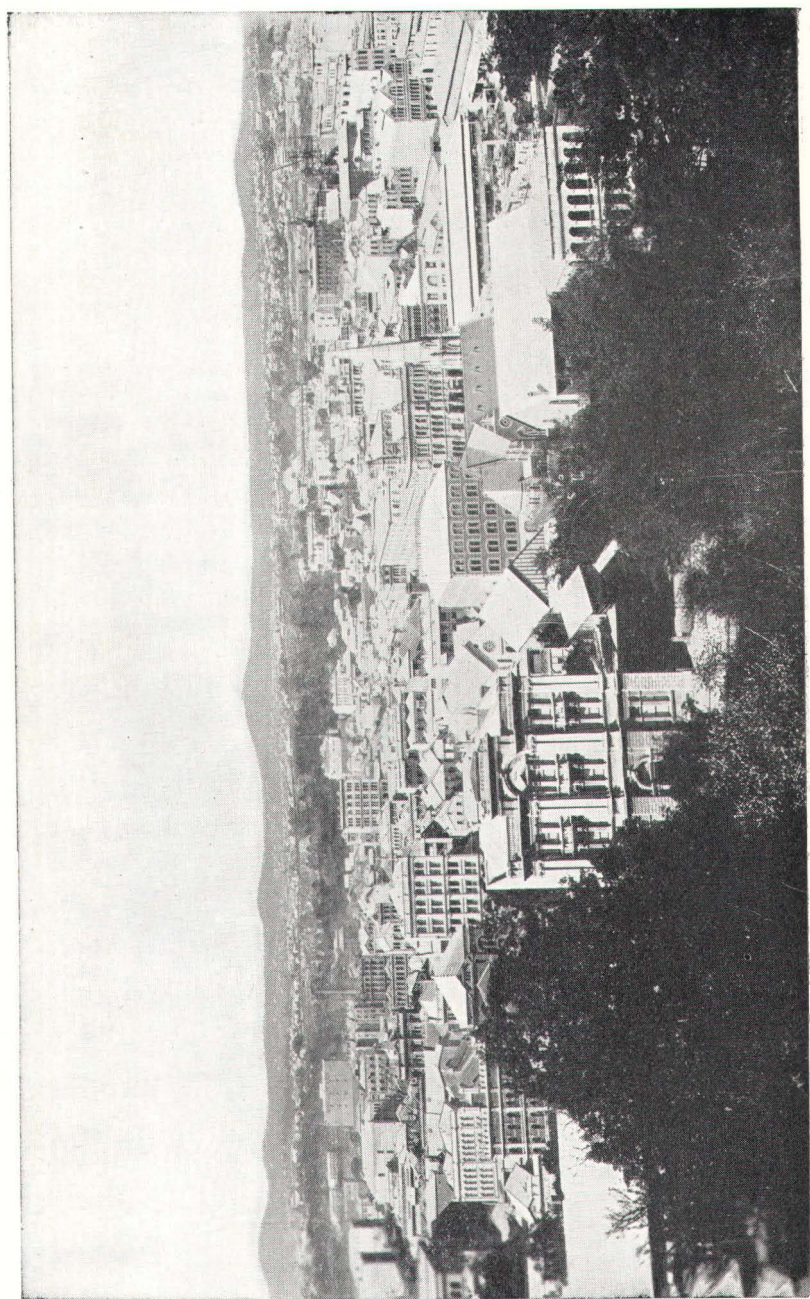
sweep of the main range and the southern part of Moreton Bay, and drained by the minor rivers which discharge into that bay. The existence of such rivers having thus been ascertained, Logan boated down the bay, sought and found an estuary, and ascended the river which now bears his name, and which is joined by the Albert. In 1827, Allan Cunningham, who had accompanied Oxley in his second exploration up the Brisbane River, was placed in charge of an expeditionary party which he led from the then northernmost interior pastoral settlements of New South Wales to investigate the territory lying to the westward of the imposing chain of mountains which he and Oxley had viewed with interest from eminences near the river. After traversing country of no special attraction, Cunningham at last, on 5th June, emerged from the forest and saw extended before him a tract of undulating downs, to the first stretches of which he gave, in honour of Sir Charles Darling, the Governor, the designation of the Darling Downs. Another tract to the north he called Peel's Plains, and to a third, lying to the south and south-east, the name of Canning Downs. The whole expanse, extending far beyond the range of view then possible to Cunningham, has ever since been known under the first designation. Desirous of discovering some way of access from these pastoral lands, whose excellence the botanist recognised, Cunningham deflected his course to the eastward, approached the eastern face of the range, and noted a remarkable excavated part in its crest which "appeared likely to prove a very practicable pass through these mountains to the eastward." This accomplished, he retraced his steps, and on arriving at Sydney was commissioned to attempt to reach from the Brisbane settlement the pass which he had located, and through it reach the Darling Downs.

He accordingly sailed for Brisbane, and thence, accompanied by the indefatigable Logan, and by Mr. Frazer, Colonial Botanist, attempted to gain the pass by ascending the Logan Valley. This expedition, however, was unsuccessful, and Cunningham made his next attempt by starting from Limestone, reached the foot of the pass, scaled it, and regained the spot, on the Downs, whence he had first viewed it. Returning to Limestone, he promptly entered upon fresh labours. Striking north from that station, he reached, after five hours' travelling, the Brisbane River, at the very point to which in Oxley's company he had ascended in 1824, and where further progress in boats had been found impossible. He also traced the Bremer Creek from Limestone to its junction with the Brisbane. Cunningham's map of these two last-mentioned trips is still extant in the Queensland Survey Office, and it is notable that it shows that he had observed and recorded the existence of coal in the bed of the Bremer, some little distance above the point to which the tide ascends, as well as at the first curve below the "basin," and in the gullies and ridges lying along his track from the Bremer northward to the Brisbane.

Captain Logan's expeditions were now terminated by his tragical death while engaged in one of them. He had started with a party from Limestone, and on the return journey, for some reason never clearly understood, sent his companions ahead. Not making his appearance at that settlement when expected, he was sought for, and his corpse, the face and head battered, was discovered buried. The battering



VIEW OF BRISBANE FROM SPRING HILL, LOOKING SOUTH-EAST, 1860.



VIEW OF BRISBANE FROM SPRING HILL, LOOKING SOUTH-EAST, 1901.

indicated murder by natives, but the interment was contrary to their practice. The mystery has never been cleared up. The convicts, who had suffered dreadfully from the severities of his iron rule, were known to exult over his fate, and from them a rumour spread that they had been avenged. There had been numerous abscondings of convicts, and although generally the escapees were recaptured and flogged, and others were known to have been killed by the blacks, it became known later that a few had managed to avert both alternatives, and were spared by the aborigines to live among them. The most probable speculation is that Logan encountered some tribe of natives with whom one or more of these absconders associated, and fell a victim equally to native savagery and to the vengeance of criminals who had formerly been driven by his cruelties to the desperate resource of flight into the bush. Captain Fyans became Commandant in succession to Captain Logan, and was followed in turn by Major Cotton, Lieutenant Gravatt, and Lieutenant Gorman, during a period of ten years. During this time no progress worthy of mention was made. Logan's explorations indeed were fitfully followed up, and the flocks and herds belonging to Government, as their numbers increased, were grazed progressively further from Limestone. But against colonization by free settlers the region was rigidly tabooed. A Government proclamation absolutely prohibited any person not specially authorised from approaching within 50 miles of the penal establishment. Special authorisation was granted to a party of German missionaries, comprising two clerics and ten laymen with their wives and children, who arrived in Moreton Bay in 1838, and after having been driven from their first abode at Redcliffe Point, where the remains of the buildings of the earliest penal station were placed at their service, by the active hostility of the blacks, were allotted land about 7 miles from the Brisbane establishment, where they, under very trying conditions, maintained themselves and brought up their children. These were in effect the first free colonists of what is Queensland to-day, and their descendants are numerous among the present population. Their old home, familiar during nearly half a century under the style of "German Station," has now lost its identity in the modern application of the native name Nundah to the suburb which includes their former settlement.

Two sets of circumstances were concurring to relieve this northern portion of New South Wales from the state of stagnation which afflicted it. One was the appropriation as pastoral runs of all the best accessible country to the southward. The other was the successful issue of an active agitation against continuance of transportation to the colony. In consequence of the first, Mr. Patrick Leslie, desiring to find some unoccupied country for his stock, after an unsuccessful attempt to find a way from New England to the Clarence River region, bethought to himself of Cunningham's famous discovery, the Darling Downs; and in 1840, after a preliminary expedition to find a route and to inspect, managed to bring his stock and equipments on to that land of promise, and took up the country from Toolburra to the head of the Condamine, including all tributaries. The Leslies' stock consisted of 4,000 breeding ewes in lamb, 100 ewe hoggets, 1,000 wether hoggets, 100 rams, and 500 wethers three and four years old, as well as two teams, each of 12 bullocks, two drays, a team of

horses and dray, and 10 saddle horses. There were twenty-two men, all ticket-of-leave or convicts, of whom Patrick Leslie remarked that they were "as good and game a lot of men as ever existed, and who never occasioned a moment's trouble; worth forty men I have ever seen since." The tract appropriated has since sufficed to graze a hundred times as many, and to-day supports more than twice as many human beings as Leslie had beasts. Leslie was almost immediately followed by Arthur Hodgson and Gilbert Elliott. The latter had been aide-de-camp to the Governor, Sir George Gipps. Hodgson had been educated at Eton, and, passing beyond Leslie's country, took up another tract, to which he gave the name of Etonvale. Messrs. King and Sibley quickly followed and secured Clifton.

Information respecting the extraordinary excellence of the country these pioneers had secured, and of the extensive area of equal merit which remained available, was diffused southward, and speedily numerous imitators were in motion with their stock to avail themselves of the opportunities. A serious difficulty was the replenishment of stores and an outlet for wool. All hopes were centred on Moreton Bay. But the prohibition against approaching within 50 miles was still operative. Patrick Leslie, and one of his men, Peter Murphy, his assigned servant for life, a convict of whom he has recorded that "a better servant or a gamer man never was seen than Peter," for whom he subsequently obtained a pardon, and who died at Charters Towers in 1872, a respected colonist, aged seventy-two years, had almost immediately after bringing his stock on to the Downs, made their way through Cunningham's Gap. They ran down a creek to the Bremer River, but on second thoughts, apprehending awkward consequences had he presented himself at the penal establishment without special credentials, Leslie retraced his steps. Hodgson and Elliott, however, probably being provided with official authorisation, passed also down the Gap and reached Brisbane, where they had an interview with Commandant Lieutenant Gorman, and on their return Elliott dragged his drays down the formidable pass and with them reached the settlement—probably at Limestone (Ipswich).

Just at this juncture a change, fraught with consequences of the most far-reaching importance, was taking place in the conditions under which these portions of New South Wales were governed. The second of the two sets of circumstances mentioned above had begun to operate. In February, 1840, the Legislative Council of New South Wales passed "an Act to abolish the transportation of female convicts and to provide for the more effectual punishment of offenders. Among the consequences of that Act was the abandonment of the penal establishments in the Moreton Bay district. The prohibition against approach within 50 miles was cancelled. The establishments were broken up and the convicts withdrawn. Moreton Bay was thrown open to free settlement. Pastoralists with their stock succeeded one another unceasingly in occupying the Darling Downs. Cunningham's Gap being difficult of descent by wheeled vehicles, even when empty, and impracticable for ascent with loaded drays, other routes for communication between the Downs and the coast were sought and discovered, first by Mr. Elliott on his return, when he had assistance from Commandant Gorman, with a party from Limestone guided by Baker, or, as the natives called him, Boralchow, a

convict absconder who had long lived with the aborigines in these parts; and second, by a co-operative gathering of Darling Downs squatters, who followed a different line, and sufficiently smoothed and cleared away the worst bits to make a route infinitely preferable to Gorman's, which was known as the Hell Hole. The last established road at Woowoomba has continued to be the main passage from the coast to the Downs. The whole of that tract having been appropriated, later comers passed the ranges which bounded the Downs and occupied country beyond, on the head waters of the Burnett, the Brisbane, and the Mary Rivers, the estuaries of the first and last of which were still unknown. The station produce was sent to Limestone mostly, as the Bremer was navigable for craft of sufficient size to convey considerable burdens by water to Brisbane, which became the shipping port of Moreton Bay; back freighting, such as station supplies of provisions, tools, and so forth, was procured where the wool, &c., were unloaded. Population came from the south to both towns, and began to dribble to the little hamlets in the interior. Lieutenant Gorman was the last of the Commandants. In his stead came Captain Wickham, R.N., as Police Magistrate, and distinguished with the more imposing title of Government Resident. Captain Wickham was an officer who was free from the arbitrary disposition which is apt to grow upon men who have been accustomed to rule over a community of convicted criminals devoid of civil rights and personal freedom. Not many years before, in 1837, he had commanded H.M.S. "Beagle" in a voyage of exploration to further examine the shores of the Gulf of Carpentaria, which had not been visited since Flinders' voyage. Numerous traces of that intrepid officer's landings were found. The journals of Wickham's first Lieutenant, Stokes, who officiated as marine surveyor, make frequent reference to Flinders, and testify to the admiration which his accomplishments had impressed upon his successors. Most of the boat work seems to have been entrusted to Stokes, and a great deal of useful investigation was accomplished. Nearly 200 miles of the southern shores of the Gulf of Carpentaria were closely examined. Twenty-six inlets were entered, into two of which rivers were found to discharge. To the first of these rivers the esteemed name of Flinders was given. The second, named the Albert, was ascended in the boats, in the hope of satisfying the ever-prompting expectation that the mysterious interior of the continent might be penetrated by navigation up some waterway capable of floating vessels of burden. The rivers which have the longest course and drain the largest extent of country are not in this region those which flow into the Gulf by the most imposing and least obstructed openings. Tempted by an inviting estuary, Stokes ascended the Albert, a river of minor importance, and after rowing up it for 50 miles found further progress impossible. But he had ascended above the tract of low, swampy ground which borders the sea, and, quitting the boats, the explorers ascended a short, woody valley. On reaching the head of this, a vast, boundless plain, here and there dotted with woodland isles, lay before them. The course of the river could be traced to the southward by a line of green trees. The view inspired the mind of Stokes with pleasing, wistful imaginings and speculations, which find expression in his journal by passages of uncommon beauty and genuine feeling. He breathed an aspiration that ere long the now

monotonous horizon might be broken by a succession of tapering spires rising from the many Christian hamlets that must ultimately stud this country. But, he lamented, "To speculation alone was I reduced ; all I could do was to give one lingering look to the southward before I returned." Provisions for a longer lingering were lacking. Stokes returned to the ship. Upon the lovely country which had so charmed him he bestowed the name of the Plains of Promise. His account, when circulated, naturally assisted to extend the growing appreciation of the northern parts of Australia, which the unrivalled excellence of Cunningham's Darling Downs and the fair esteem into which the forest country of the Moreton Bay District was rising, created.

The progress of pastoral occupation continued. During 1839, in anticipation of the opening of the Moreton Bay District to free settlers and of the removal of the convict establishment, Messrs. Dixon, Warner, and Stapylton, surveyors, were sent to lay out a town at Brisbane and to survey the coastal country. Governor Gipps paid a visit to that centre immediately after the arrival of Captain Wickham, and, disapproving of the handsome scale upon which the town had been laid out, with wide avenues, squares, crescents, and parks, which he regarded as ridiculous for what appeared to him destined to be a mere village, he ordered a resurvey on a more modest scale, which, being carried out in consonance with his ideas, imposed upon the future capital of Queensland, beyond possibility of remedy, the gridiron plan and streets of cramped width, which deprive the principal business parts equally of dignity and airiness. About the same time Dr. Simpson was appointed Commissioner of Crown Lands in the Moreton District, and Mr. Christopher Rolleston to the same post on the Darling Downs. The survey of the town having been effected to the Governor's satisfaction, in 1841 the first sale of lots was held, not, however, at the place itself, which would have given an advantage to the pioneer residents, but at Sydney for the convenience of speculative investors. The successful result of this sale was a testimony to the expectations which had been by this time formed of a prosperous future for these northern regions. The aggregate area of the lots sold amounted to 13 acres, and the amount realised was £4,687. Some lots fetched at the rate of £250 per acre. Limestone was surveyed about the same time, and it was then that official intelligence extinguished its original descriptive designation under the name of Ipswich. Here also the cramping influence of Governor Gipps's restricted foresight had effect, and imposed the permanent disfigurement of narrow streets upon what has already become an important town, and may yet grow into a great city.

Much yet remained to be done in the way of detail exploration. Surveyor Stapylton was charged to continue Logan's project of charting the country on the river discovered by him, lying enclosed between the Main Range and the seaboard. While engaged in this work he was surprised and killed by the blacks. Peter Cunningham, a brother of Allan, lost his life in the same way and in the same region. The relations between the aborigines and the white intruders had in fact become utterly unsatisfactory. Apparently this had been an inevitable result of the two races coming into contact. The natives had no consistency of character. To regulate the appetites, powers, and passions of adults, they had but the faculties of children.

Flinders, who was the first European to have communication with the natives of Moreton Bay, found them treacherous, thievish, and audacious, and was provoked into using firearms against them. The place where he fell in—and fell out—with them, at the southern extremity of Bribie Island, in Moreton Bay, is known as Skirmish Point to this day. A score of years later, in the same neighbourhood, if not on the identical spot, the natives received the helpless castaways, Finnegan, Pamphlet, and Parsons with benevolence, treated them with active hospitality, and even endured from them acts of gross ingratitude with indulgence. Yet five years after, Oxley and Cunningham were amazed by their wanton effrontery in thieving, and during their exploration of the Brisbane River were compelled to have recourse to their muskets to repulse their aggressiveness. The German missionaries already mentioned were so persistently attacked by the natives at their first settlement at Redcliffe Point, that after several hairbreadth escapes by individuals of their party, they were obliged to remove to the protecting neighbourhood of the Penal Establishment, where a company of soldiers were stationed, at Brisbane. Captain Logan's fate has already been mentioned. Patrick Leslie, on reaching the Darling Downs, and during his trip thence to the Bremer, had repeatedly to fight his way. The theory of the authorities was uniform. All inhabitants of the territory over which the British flag had been hoisted were equally entitled to the protection of the law. Thus we catch a glimpse of Commandant Gorman with a military escort proceeding to what is now Grantham, to arraign before him certain Darling Downs pioneers who were reported to have dashed on horseback into a camp of blacks who were feasting on stolen sheep, and shot some of them. A court was actually constituted on the spot, the Commandant himself presiding. But among the muster of squatters two were also magistrates of the territory, and sat as such. The result was that, in default of evidence, the case fell through. Pagan natives could, of course, not be sworn as witnesses.

The hostility of the natives did not quench the ardour with which exploration was carried on. By adding a spice of danger to the ordinary risks it rather increased the attraction for the more enterprising among the colonists, of whom indeed there can have been few who were deficient in that spirit. The officials at Brisbane at this time included a superintendent of works, one Andrew Petrie, a superior mechanic who had emigrated from Scotland under the auspices of the Rev. Dr. Lang, and from Sydney had been sent on to Brisbane with a Government appointment. Petrie was a man who combined great energy with solid intelligence. He sought and availed himself of opportunities for extending information respecting the vicinage of Brisbane. About this time a chance for an expedition further than usual presented itself. Petrie had voyaged from the old country to Sydney in the ship "Stirling Castle." That vessel on leaving Sydney sailed northward, and was wrecked on the land of which Cook's Indian Head is the most easterly point, and which had since been ascertained to be an island. The wreck of the vessel and the fate of her people became known when the sole survivor, Mrs. Frazer, the captain's wife; or rather widow, made her appearance at the Penal Settlement at Brisbane. What were the details of her story is now unknown. But there is indication that she stated the destruction by blacks of the whole

ship's company, and that she had been enabled to escape from captivity among them by a convict absconder, living with them, whose name was Graham. Mrs. Frazer was assisted to reach England. Apparently the degradation to which she had been subjected while among the blacks had deprived her of all self-respect. Mr. Stuart Russell saw, in London, some announcements of a show, in which she figures, disgracefully enough. Petrie no doubt was interested in visiting the scene of the wreck and the tragedy. He and his companions had scarcely cleared Moreton Bay, and reached the first point of land beyond, to the northward, now known as Noosa Head, but which Petrie at that time named Bracefield Cape, than adventures began to crowd on them. At this place the party came in contact with a mob of blacks who, while assisting them to land, evidently only waited a good opportunity to attack them when ashore. Partly by a display of their preparedness for violence, and partly by tact, peaceful relations were established. It was learned that there was among the tribe, but not present, a white man, who had been with them for years, and Petrie sent by one of the mob a note inviting him to come. Although the white man could not decipher the letter, he understood the message and came. Some difficulty was found at first in communication. The wild white man had forgotten the English language. But the sense and use of it returned to him after some moments of embarrassment. He proved to be a convict who had absconded during the term of Captain Logan's terrible rule. His name was Bracefield, or Bracefell, and he was the man who had helped Mrs. Frazer to escape from among the blacks and had conveyed her to the settlement. No explanation is available respecting the former report that her rescuer's name was Graham. According to Bracefield's story, which Mr. Russell, who noted his expression while he was telling it, believed to be truthful, he had, at the risk of his life, sneaked away with her, eluded pursuit by exerting every device of bush-craft, and brought her within cooey of the settlement. She had stimulated him with glowing promises of the great things she would do for him on their arrival. But when the pair had reached the very margin of safety, the man, his mind agitated between hope and terror, asked her to repeat her promises. She was for a while silent, but as they went on, she threatened that she would complain of him. He turned and fled for his life. Thus it was that after an interval of seven years he was found still with the natives. Bracefield was still under the influence of the terror, which memories of the Penal Establishment had indelibly burnt into his mind. He could hardly believe that the old order had passed away, and that a community of free settlers had replaced the gaol and the chain-gangs. He became however persuaded, and consented to join the party. At the next landing place, at Double Island Point, then known as Brown's Point—as it was believed that Brown, the first mate of the "Stirling Castle" had been there slaughtered by the blacks—other natives were encountered, and one of these, through Bracefield, asserted that he knew of a large river to which he could guide the party. It was not, however, until the third day after that they managed to find the river, which they spent three more in ascending as far as navigable. Employing Bracefield and the two Brisbane blacks as scouts, the adjacent country was also investigated. One result was the discovery among a tribe there of another

convict-escapee, James Davis, or Durramboi, who after some trouble was also persuaded to join them. The events of the expedition were altogether of the most exciting and romantic kind; and having by rare good fortune been chronicled by two individuals among the adventurers, each having a happy knack of narrative—Messrs. Petrie and Russell—the story has been retold from the narratives of these raconteurs by everyone who has since dealt with the early history of Queensland.

To the river thus discovered the name of the Mary was subsequently given, in honour of Lady Fitzroy, just as later a much larger stream, emptying into Keppel Bay, was named after her husband, Sir Charles Fitzroy. The Fitzroy, it may be here mentioned, was first navigated in 1855. It was during the same year in which the Mary River was thus discovered that the Governor, Sir George Gipps, accompanied by Colonel Barney, R.E., visited Moreton Bay in the steamer "Shamrock," and, before giving the instructions which for ever afflicted Brisbane and Ipswich with narrow streets, inspected Cleveland, a projection of land into the Bay nearly opposite the South Passage between Moreton and Stradbroke Islands, which was then the approved channel of access from the ocean. It had been represented that here a seaport might be found preferable to Brisbane. But the Vice-regal party's experiences were not such as to dispose them to favour the Cleveland site. The foreshores were shallow, and muddy ooze bordered them, in which the Governor, whose boat grounded at some distance from *terra firma*, found himself floundering in attempting to wade ashore. The notion of substituting this place for Brisbane was consequently abandoned for the time, although in after years it was revived. The steamer in which Sir George Gipps had made the trip was laid on to trade between Sydney and Brisbane, but shortly afterwards taken off for awhile. However, in 1843, she was again placed on the route, and thenceforth steam communication by sea between the southern ports and Brisbane continued uninterruptedly.

The British Ministry having, in 1842, granted a sort of instalment of representative Government to the colony of New South Wales, the inhabitants of these outlying northern settlements known as Moreton Bay, but including all the territory occupied by pastoralists who had already overrun the Darling Downs and stocked large portions of the coast country south and north of Brisbane and Ipswich, and of the upper feeders of the, then unnamed, Burnett, found themselves included in a constituency. This electorate, which was entitled to one representative in the new Legislative Council, was more than tolerably comprehensive. It comprised Port Macquarie and the Upper Hunter. The chief polling place was at Maitland, about 400 miles distant. The franchise was as restricted as the electorate was extensive. With a small share in one member of the Council out of thirty-six the pioneers did not find their situation appreciably improved by the change from the previous system of semi-irresponsible rule by Governors, who did sometimes consider them. There were two candidates for the seat. Mr. Alexander Macleay, an old member of the official class, was one, and Mr. Charles Windeyer, once a reporter for the Press in the gallery of the House of Lords, but after arrival in New South Wales a police magistrate, were the contestants. Mr. Macleay won the seat and was

chosen by the Council to be its Speaker. He was seventy-seven years of age, and owing his election chiefly to support from Port Macquarie and the Hunter, did little for Moreton Bay. The population of the whole northern region, in fact, was very small. From an official return included in a collection made by Mr. Bonwick from different sources in London, it appears that in 1844 there existed in Darling Downs 26, and in the Moreton Bay district 17 pastoral stations. There were 471 free settlers altogether, and the stock was:—Horses, 650; cattle, 13,295; sheep, 184,651. Mr. Coote in his history quotes a census taken in March, 1845, which gives the number of houses in the County of Stanley as 255, and the population as 2,210, distributed, in Brisbane, 812; in Ipswich, 103; on Squattages, 452; Darling Downs, 658; Military and Officials, 185. Dr. Lang gives a statement for the following year, 1846, thus: Horses, 1,128; cattle, 29,795; pigs, 1,158; sheep, 339,753. A census return for 1851 states the population at 8,575—viz., 6,012 males and 2,563 females; and in 1859 Pugh states the population was about 25,000. From that date proper records were kept, and information regarding population thereafter will be found in its place. In addition to the free settlers, indeed, there were perhaps a hundred ticket-of-leave people, useful as servants, but politically unrecognised.

The cessation of transportation in 1840, due entirely to agitation by the democracy of the towns in the South, was increasingly regretted by the squatters, who constituted in some degree an aristocracy, but in all essentials a plutocracy. In lieu of a supply of labour furnished by abundance of convicts assigned to responsible employers, and having the attractions of being exceedingly cheap and necessarily docile in consequence alike of the severe discipline as prisoners which had broken them in, and to the dread of punishment to which they were liable in case of any insubordinate act, there was now available a limited number of free people, either immigrants or persons who by the expiration of the period for which they had been sentenced had regained their liberty. These required full wages, exercised and sometimes abused their right of withdrawing or transferring their services, and were apt to emphasise their independence by exaggerating a freedom and familiarity of bearing meant to be an assertive distinction between them and their servile predecessors. Thus afflicted equally in their pockets and their pride, the squatters looked for relief in every direction. We have seen with how emphatic a tone Patrick Leslie referred retrospectively to the superiority of his convict servants over all men subsequently employed by him. His gang of twenty-two assigned convicts were "worth any forty men he had seen since." This became the current tone among the squatters, and indeed was probably penned at about the time when the squattocracy was straining every influence to bring about a renewal of transportation. As alternatives they favoured the importation of kanakas from the South Sea Islands, of Indian coolies, and of Chinese; some indeed of each were actually introduced. Mr. Patrick Leslie himself was prominent among the agitators for a revival of transportation. He had with him most, if not all, of his fellow-pioneers of the Darling Downs. Arthur Hodgson was in the thick of the fight. The squatters of the Brisbane, the Logan, and the Burnett were for convicts to a man. A Secretary of State for the

Colonies, in an official utterance, went so far as to remark that "all the respectable portion" of the colonists favoured the revival of the system. If by "respectable" the Right Hon. Minister meant persons of social status recognisable in the upper circles in Great Britain, possibly he was, as regards the Moreton Bay District, not far from correct. The members of the little trading communities at Brisbane and Ipswich, making their livelihood for the most part by ministering to the squatters, either sympathised with their views or judged it prudent not to openly dispute them. Again, the Moreton Bay District squatters were, socially regarded, a most extraordinary lot of men to be buried in the bush on this out-of-the-world frontier of what then was Great Britain's least esteemed dependency. The proportion among them of gentlemen of culture and of race, whom even a Secretary of State would recognise as belonging to the same class as himself, not only was remarkable, but was a couple of years later remarked, when Dr. Ludwig Leichhardt found himself brought into contact with them. In the cities and settlements of the South, however, with their larger populations of more varied pursuits, the advocates for the resumption of transportation did not monopolise all the people whom even a Secretary of State would class as respectable. There were in public life there barristers and other professional men, merchants and tradesmen, who cared nothing for the "squatters'" patronage. Henry Parkes, indeed, might be a nobody and an agitator, but Robert Lowe, afterwards Chancellor of the Exchequer in the British Parliament, and later elevated to the Peerage as Lord Sherbrooke, was, even at that time, too high for contempt, and Charles Cowper, brother of the Archdeacon, and a subsequent Premier, had to be taken seriously. But perhaps the most formidable among all the champions of a clean Australia was a Scotch Presbyterian Minister. The Reverend John Dunmore Lang, D.D., a man endowed with prescient breadth of ideas far transcending that of contemporary politicians, projected his mind into the future. Impatient of the narrow views of the public men of the generation amongst whom he existed—British ministers and Australian magnates alike—he pondered with sagacious foresight upon the destiny of the continent. While the squatters and their allies among the urban population regarded no consideration save such arrangements as would minister to their profit in the immediate future, Lang aimed at laying sound and wholesome foundations for the great nation which he believed must in the centuries to come grow up to populate the vast territory available. He despised the British Ministers for their persistent dimness of vision as evinced by their inability to perceive in the continent, which Fate had placed at their disposal for good or evil, anything more than a huge binn convenient for the reception of the refuse of the British people. To counteract their mischievous projects and neutralise the scheming of those influential people among the colonists who, for sordid objects, exhorted Ministers to adhere to their designs and sought to impress upon them a false belief that the superior weight of opinion in Australia itself was favourable to a resumption of transportation, Lang plunged into a political career, without, however, abandoning his religious functions. His industry was indefatigable, his courage unblenching, his perseverance inexhaustible. He harangued, he corresponded, he published, he travelled. In 1845 he visited Moreton Bay.

In December of the following year he was in Great Britain. There he laboured to engage the co-operation of merchants and manufacturers to forward his projects for combining with emigration the cultivation of cotton and sugar. He suggested that British-born young men in the West Indies, whose prospects there had been blighted by the abolition of slavery, should transfer their energies and their knowledge of tropical agriculture to Moreton Bay. He promoted an association styled "The Cooksland Colonisation Company," and applied to the Colonial Office for concessions of land to be leased with right of subsequent purchase. He wrote and published a book, "Cooksland"—a most interesting work—giving information respecting the place and its people. He enlisted in his crusade the influence even of religious bigotry, representing that a process of Romanising Australia was in actual execution, by the shipment from Ireland of large numbers of Catholic emigrants, with the aim of establishing in the Australian continent an overwhelming preponderance of colonists of the Roman Catholic faith. A man so thorough and even extreme in his views as Dr. Lang was certain to provoke strong antagonisms and to part company with sympathisers less ardent than himself. There was no one so heartily detested by the squatting magnates as he, and representations to his prejudice as a turbulent agitator had reached the Colonial Office. Moreover, his methods were precipitate. His impatience to achieve results sometimes betrayed him into entering upon engagements which subsequent obstructions, due to his iron impetuosity and peremptoriness, disabled him from fulfilling. Insensible of reverence for any being except his Creator, Dr. Lang affronted Earl Grey, the Secretary of State for the Colonies, and thereafter finding subordinates only accessible to him, complained in stinging letters to the Minister that his business was dealt with by underlings. In one memorable letter he declared to his lordship that his contemptuous treatment of the interests of the colonists was equivalent to knocking at the door of posterity for the future President of an Australian Republic. Lang's project of emigration and plantation clashed with or, at anyrate, rivalled, a method just previously formulated by the British Government, and to administer which a body styled "The Land and Emigration Commissioners" had been constituted. Among the arrangements formulated by those Commissioners the bestowal of grants of land to emigrants on arrival at their destination was included. Lang demanded that his emigrants, although not despatched under the auspices of the Commissioners, should be conceded that boon. Apparently he believed he had extorted a verbal assurance that such should be the case from the Under Secretary, Mr. Hawes; although later, when by direct instructions from Earl Grey himself, the grants were withheld, Mr. Hawes declared that he had no recollection of having given the assurance. The practical outcome of these wranglings was that the Commissioners despatched a shipload of emigrants to Moreton Bay, forestalling Dr. Lang's first vessel. The Lang party alleged that the Commissioners' ship, the "Artemesia," carried an ill-assorted complement of people. There were 240 souls aboard her, and they found engagements immediately on landing. The "Fortitude," the first of Dr. Lang's chartered ships, sailed from the Thames shortly after, and after a somewhat long passage brought her human freight in good condition

to Moreton Bay. Arrived there, however, they found everything topsy-turvey for them. The Government Resident would have nothing to do with them. The land-orders furnished by Dr. Lang were repudiated by the local authorities. Even the merchant to whom the ship was consigned would take no responsibilities upon him. The vessel and people were subjected to a fortnight of quarantine, and when released the immigrants had to pay for conveyance to Brisbane. No accommodation was provided there. The old convict barracks, which had sheltered the immigrants by the "Artemesia," were not made available for the immigrants by Dr. Lang's ship. Grudging permission was granted for them to encamp out of sight, beyond a ridge, and from this encampment Fortitude Valley, one of the principal suburbs of Brisbane, derived its name. During all these misfortunes and provocations the immigrants remained firm in their conviction that Dr. Lang was not responsible for their disappointments, which indeed were not, generally, of long influence upon their well-being. Those who were content with hired service found it easily enough. Others—skilled mechanics and tradespeople—began business on their own account. Of the rest, a sort of committee was appointed to inspect the country and see what offered, should their land-orders be, later, recognised. The immigrants by the reverend gentleman's next ship, the "Chasely," fared a little better. The barracks were opened to shelter some and the residents accommodated others. Their land-orders, indeed, were refused recognition. The "Lima" was the third and last of this series of free and personally selected immigrants. But Dr. Lang's energetic proceedings had effected more for the Moreton Bay territory than perhaps a quiet and undisputed success in his proposed organisation would have done. The Commissioners seem to have entered into a sort of competition with him, and despatched ship after ship with free immigrants on board. These accessions of population gave the place the fillip it had needed. The almost simultaneous arrival of several freights of convicts from England, for immediate assignment, whom the squatters eagerly snapped up for station labour, satisfied them, while the town population was strengthened by a large proportion of the respectable free immigrants there settling down. These events extended over several years, by which time not only Brisbane and Ipswich were centres of settlement, but Warwick, on the southern part of the Darling Downs, and Drayton on their north-eastern boundary, were growing villages, while the Wide Bay country, as the district drained by the Mary River was, and is, called, was under pastoral occupation, and three storekeepers, establishing themselves on the north bank of the river, had forestalled the authorities who were considering the propriety of establishing a post office and laying out a township. Between that place, now the town of Maryborough, and Sydney, there was direct traffic, probably bringing north supplies for the squatters and taking back wool in its season, other pastoral products, and especially pine timber, which existed in abundance in the scrubs bordering the river, and indeed was not exhausted two score years later.

These transactions bring us forward to the year 1849. Simultaneously, however, there had been events proceeding which require mention. In 1845 a census of the colony had, as already remarked,

been taken. The returns showed that there were in the Moreton Bay and Darling Downs districts 1,599 persons, of whom rather less than one-third were females. In Brisbane, North and South, there were respectively 299 males and 184 females and 209 males and 137 females. Ipswich had 64 males and 39 females, while distributed among the squattages were 390 males and 92 females. The Military and official establishments had 160 males and 25 females. The occupations of the people, as then ascertained, throws a good deal of light upon the conditions of existence prevailing. There were 213 shepherds and 54 stockmen, 54 male and 51 female domestics. The number of male domestics must not be imagined to indicate that employment of footmen, butlers, or valets, was in vogue. The men so classified were probably hut-keepers for shepherds and station hands. It must be understood that at that time, and long after on frontier stations, the danger from natives made it necessary not only that shepherds should, in pairs, share a hut between them at the outstations where they grazed their flocks, often ten, twenty, or even thirty miles, from the head station, but that a third man lived with them as hut-keeper, cook, and night-watchman. This arrangement had been rendered necessary by a number of tragic incidents. Shepherds returning home at evening had been speared by savages ambushed close to the hut, and sometimes even in it. Besides, dingoes at night leaped the low sheep yards and wrought great destruction among the flocks.

To resume: 182 men were set down as labourers, 23 as agriculturists, 8 as horticulturists, and 165 as mechanics and artisans. There were 14 clergymen, 6 lawyers, 6 doctors, 13 "other educated persons," and "all other occupations" embraced 108 more. Only 56 individuals had qualification for the franchise. The requirements were either freehold property worth £200 clear over encumbrances, or rental of a house worth £20 per annum and upward. There were in the districts but 255 houses in all; 41 of stone or brick and the balance of wood.

In this year, 1846, it was judged by an enterprising journalist, one Arthur S. Lyons, that this population, of whom not many more than half could read and write, would suffice to support a newspaper. Securing the help of a practical printer, James Swan, Lyons started *The Moreton Bay Courier*, published once a week, whence has since developed the daily *Brisbane Courier*, the *Evening Observer*, and the weekly *Queenslander*. A first and unsuccessful attempt was then also made to establish communication between Brisbane and Ipswich by steamer, one, Pearse, running the "Experiment" in that service to his own undoing.

We must again go back a couple of years to catch up the dropped links in the story of exploratory development of the territory. On 1st October, 1844, Dr. Ludwig Leichhardt, provided with means for equipment by a Committee of Sydney people, started from Jimbour, on the Darling Downs, bent on traversing the unknown interior thence to Port Essington, on the extreme north-west of the continent, where a British settlement, exclusively official, had been established by Captain Sir Gordon Bremer, R.N. Leichhardt had not long been in Australia. He was an ardent devotee of natural history, and had sought to qualify himself for some great exploit, such as now presented itself for accomplishment,

by living with the aborigines in the south, and by a journey from the Hunter to Wide Bay. Still, he was not regarded as an ideal leader of a party for such a tremendous exploratory enterprise, and when after reaching the head tributaries of the Dawson, whence two of his company returned, he disappeared into the unknown, and a term far exceeding what had been reckoned ample for the fulfilment of his journey had been exceeded, he and his party were regarded as dead men, his sudden reappearance with the survivors in Sydney, consequently created a profound sensation. Leichhardt had descended the Dawson, passed over the Expedition Range, dropped upon a creek, the Comet, followed it to its junction with the Mackenzie, struck north-east, and came upon the Peak Downs; thence proceeded by the Isaacs, a northern tributary, just as the Dawson is a southern one of the Fitzroy. Ascending this river, he overstepped the watershed dividing it from the southern feeders of the Burdekin, travelled down these and up the northern tributaries of the river, and then, judging that he had been keeping too much towards the east coast, he turned abruptly to the westward, hit upon the heads of the Lynd, the first of the Carpentaria rivers he had come upon. Thenceforward his course was north-westerly. From the Lynd he crossed to the Mitchell, and next to the Gilbert, named to commemorate the fate of Mr. Gilbert, a naturalist of the party, who was there buried, having been killed during a night attack by natives. Persevering in the same direction, modified by an increasing trend westerly, the party reached Stokes's Plains of Promise, and skirting the Gulf of Carpentaria, eventually attained Port Essington when almost at their last gasp. Thence they found conveyance by sea, down the west coast and round the south, to Sydney.

The names mentioned in the foregoing condensed description of Leichhardt's route, are those bestowed upon places, &c., by himself *en passant*. His transit through so extensive a stretch was of immeasurable future value to pastoralists. With Leichhardt's journals to consult, persons desirous of obtaining new runs, knew in what direction to investigate by subsequent detail exploratory expeditions. Similarly, information respecting the character of the country in the Western interior was derived from the observations made by Colonel Mitchell, who had succeeded Lieutenant Oxley as Surveyor-General of New South Wales, and, desirous of emulating Leichhardt, conducted, in the year 1846, an expedition, from Bourke on the Darling River, almost due north, and penetrated, by following up the course of the Warrego, to the heads of the Belyando, whence turning west, he reached the upper part of the Barcoo, there flowing northerly. Believing that he had discovered the head of a river traversing the interior and discharging in the Gulf of Carpentaria, Mitchell named it after the Sovereign, the Victoria, but that designation has sunk out of use. Here Mitchell turned back, and regained Sydney. Still his explorations were of great value, and quickened the subsequent westerly trend of pastoral occupation.

Associated with Mitchell in this expedition was a young Surveyor, Edmund Kennedy, who shortly afterwards returned with a party to Mitchell's Victoria, instructed to trace it further. He found it to turn south, and join Cooper's Creek, previously ascertained by the explorer Stuart to flow toward the Great Australian Bight, in the

South. On his return to Sydney, Kennedy was charged with another exploration. He was, with a strong party and suitable equipments, put ashore from a ship of war, the "Rattlesnake," at Rockingham Bay, thence to make his way up the Cape York Peninsula to Albany Islands, near the Cape, where it was arranged a schooner would await him with supplies. The expedition became involved in difficulties from the landing. Kennedy was compelled to leave all his companions, save one tame black, near Shelborne Bay. With his native companion he dared to attempt the rest of the journey, but perished by the hands of the aborigines when almost in sight of his objective. Jacky with difficulty eluded the pursuing aborigines and reached the schooner, the commander of which hastened to reach and extricate those of the party whom Kennedy had left, in great straits. There were only two survivors, who were rescued when at the last extremity, starving and beleaguered by hostile natives. The rest, eight in number, had succumbed to hardship and exhaustion. Kennedy's papers were lost, and not much that was useful was by this ill-fated expedition added to the knowledge of the country. Kennedy perished on the 10th December, 1848. He had landed at Rockingham Bay on the 24th of May. On the 26th February previous, Leichhardt, bent on surpassing his previous exploit, set out from Canning Downs, resolved to traverse through the centre of the continent from east to west, intending to emerge at Swan River, where a penal settlement existed. The western frontier of pastoral occupation had by this time been extended to and past Mount Abundance on the Maranoa, a tract discovered and lauded by Colonel Mitchell. From the last outpost in this direction, Cogoon Station, Leichhardt wrote, and thenceforth, with all his company, vanished from the ken of civilised mankind. Even in death, Dr. Leichhardt's influence on the exploration of the territory continued. Successive expeditions were despatched year after year, first in the hope of perchance extricating him and his companions, and latterly with the object of clearing up the mystery which enwrapped his fate. Not one of these expeditions accomplished its primary aim, but each of them added to the accumulating knowledge of the character of the interior country, and on the routes taken by each, the pastoralists presently followed with stock and established squatting stations. Thus Hovenden Hely in 1852 penetrated westward to the Warrego. Six years later A. C. Gregory, starting from Juanda Station, on the Upper Dawson, struck boldly hundreds of miles further westward in a time of awful drought, and traced watercourses by the extreme south-western corner of what is now Queensland, into Lake Eyre, in South Australia, whence he made his way to Adelaide. Even Burke and Wills, in their famous expedition from Cooper's Creek to cross the continent from south to north, had as a secondary aim the discovery of Leichhardt's track east to west, had he penetrated so far. And the numerous expeditions launched to rescue Burke and Wills when their time for reappearance had been exceeded, each added something to the stock of topographical information, till the territory now comprised in Queensland had been traversed in all directions, except only the Cape York Peninsula. Nobody has again attempted to retrace the impracticable route which the unfortunate Kennedy faced. But up the easier Carpentarian slope of that peninsula the two young Jardines, Frank and Alexander, bushmen bred, drove a herd of cattle

from the Einasleigh River to that very haven of Albany which Kennedy had sought, and where, at this later period, their father was posted, at Somerset, as police magistrate. Even they, accustomed from boyhood to every phase of frontier bush existence, superlative horsemen, and provided with steeds which they had chosen for their own riding and could rely on, arrived on foot, driving before them the remnants only of their herd, after desperate encounters with fierce tribes of natives.

Reverting once more to the political history of the community, we find the agitation for and against the resumption of transportation occupying the minds of all classes. In the South the preponderance of the popular element adverse to any renewal was so great that, although the majority of the members of the Legislative Council easily carried motions to address the home Government in favour of recommencing the system, and officially shelved monster petitions adverse to their views, the British authorities hesitated. In the northern parts of New South Wales, on the contrary, where the squatter influence was yet supreme, an idea germinated that the desired object might be attained in spite of the southern populace, by the severance of those portions from New South Wales, and the creation of a separate colony to which convicts might be sent in unlimited numbers. Some genius had conceived the happy thought of substituting for the coarsely suggestive word "convict" the term "exile," as fraught with associations rather noble than otherwise. This notion of separation with exiles excited the hopes of the squatters, even as far south as what is now the New England plateau of New South Wales, with Armidale then as now its chief town. The pastoralists promoted the project energetically. But although the British Government of the day were eager to adopt any means of disembarassing the old country of its accumulating criminals, and Mr. Gladstone had invited the New South Wales Legislative Council to suggest a method, it was evidently considered inadvisable to provoke the bulk of the colonists, already evincing a most determined repugnance to the reintroduction of convicts, to extreme measures of resistance. Mr. Gladstone decided to leave matters as they were in the settlements, and to provide the outlet for sentenced prisoners so desired by the British rulers, by creating a sort of reformatory at a place further north than even pastoral expansion had yet reached. The site fixed upon was Port Curtis, the fine harbour north of Hervey's Bay, which, as we have seen, Oxley had turned his back upon when in search of a place for similar purposes. The history of this experiment has been told very fully by Mr. J. F. Hogan, M.P., in a volume, "The Gladstone Colony," to which is affixed a prefatory note by Mr. Gladstone himself, written in April, 1897. In this note, that statesman explains:—"The period, December, 1845, when I became Colonial Secretary, was one when the British Government had begun to feel nonplussed by the question of Transportation. Under the pressure of this difficulty, Lord Stanley, or the Colonial Office of his day, framed a plan for the establishment, as an experiment, of a *pure* penal colony without free settlers (at least at the outset). When I came in, the plan might have been arrested in the event of disapproval, but the Government were, I think, committed, and I had only to put the last hand to the scheme. So it went on towards execution.

Execution was entrusted to Colonel Barney, then commanding at Woolwich, but who had served previously in Australia. After some slight preliminary inspection, he sailed for Sydney on 8th January, 1847, in the "Lord Auckland," a chartered vessel, to found the new Colony of "North Australia." Barney had with him his wife and family, and aboard his vessel were also W. W. Billyard, sent from England with him by Mr. Gladstone to be actual Judge, but with the status only of Chairman of Quarter Sessions; Mr. J. S. Dowling, Crown Prosecutor; E. C. Merewether, Colonial Secretary; W. A. Brown, Deputy Sheriff; Mr. Robertson, Surgeon, Mr. W. K. Macnish, wife and family, and twelve other civilians, of whom two were females, besides Captain Day of the 99th regiment, Mrs. Day and family, with twenty-two men of the regiment, accompanied by seven women and twelve children. In another vessel, the "Thomas Lowry," chiefly freighted with stores, voyaged Colonel Grey, police magistrate, with his son, Mr. and Mrs. Connell and family, Mr. Bates and family, Mr. Loundys, and Lieutenant De Winton with fifty men of the 99th. The expedition was fated to be abortive. On arrival at the entrance to the port, while Colonel Barney was preparing with his staff to make an official landing with great pomp, every functionary having assumed the full uniform or other insignia of their rank and station, the "Lord Auckland" grounded on a shoal, bumped in an alarming fashion, and sprang a leak. The boats were hoisted out. His Honour the gallant Superintendent put his own family in the first. Unfortunately, for his reputation, he accompanied them, and landed with them on Facing Island. The ship was bumping and rolling. It was feared she would go to pieces. She had five feet of water in her hold, and big pieces of her sheathing, torn from her bottom, came to the surface. Yet it was not till the following day that the whole of her passengers were brought ashore. Ultimately, lightened of her cargo, she floated off and was got into a convenient creek, which has ever since borne her name, where there were natural conveniences for beaching and careening her. The ceremonial landing and proclamation of the new Colony of North Australia, as constituted by Letters Patent, were effected, and the first *Government Gazette* was issued in manuscript the same day, 30th January, 1847. The proclamation declared all the land lying north of the 26th degree of latitude to be comprised in the Colony of North Australia. This line of southern boundary is just three degrees further north than the present dividing line between Queensland and New South Wales. It would have included in the proposed Colony of North Australia the Lower Mary, the Wide Bay country, most of the Burnett, almost the whole of the Dawson valley, and westward those portions of the interior discovered by Mitchell which had most favourably impressed that explorer. But it would be useless to dwell upon an ephemeral partition which left no consequences, save directing some particular attention to Port Curtis itself. Affairs were still in a chaotic state at the proposed settlement when an intimation arrived that Lord Grey had succeeded Mr. Gladstone as Colonial Secretary and had countermanded every part of the plans and instructions of the latter with regard to the Colony of North Australia. Colonel Barney was enjoined to withdraw his establishment. The Letters Patent constituting the new colony were revoked. The scheme of flooding

northern New South Wales, under a different name, with "exiles" and with time-expired emancipists from Van Diemen's Land, was quashed. The Government party, soldiers and all, was consequently withdrawn and Port Curtis reverted to its pristine solitude.

The discovery of gold in the southern parts of Australia in 1851 had, temporarily, had effects on the slowly growing settlements in the North. Such floating population as existed drifted towards the gold-fields. Emigrants who were leaving Great Britain in shoals converged upon those spots where wealth was to be had by scratching the surface of the soil. There was no countervailing attraction to draw people to outlying townships like Brisbane and frontier stations, where even the climate was represented as disagreeable—in truth, those parts were far from offering temptations to new-comers. The land laws of the time were framed as if the direct objective were to discourage any but pastoral use. In 1844 Governor Gipps, in a despatch dealing with the Moreton Bay District, stated that "beyond the boundaries, the country never having been surveyed, there is no division either real or pretended, into allotments or sections, of square miles; the quantity of land, therefore, occupied by any squatter, under the denomination of a 'station' or 'run,' is altogether indefinite, and the price of a license is equally £10 for everybody, whatever may be the extent of his run or the number of sheep or cattle depasturing upon it." A few years later, legislation attempted to evoke order out of this chaos, and a series of Orders in Council was promulgated, dealing with the leasing and alienation of land. There was no indication in these that the political rulers of the day entertained any conception that the country was fit to be put to any use save grazing. The tenure and rental of pastoral runs were regulated, and a distinction fixed between settled and unsettled districts. In the case of what is now Queensland, the settled districts simply comprised the County of Stanley and a strip within 3 miles of the sea. Within the settled districts pastoral leases ran from year to year only. Beyond these limits the tenure was for fourteen years. But the truly extraordinary thing was the omission to offer any encouragement whatever for agricultural occupation or for small holdings. Nay, in lieu of encouragement or even passive neglect, there was positive prohibition in some respects. It was laid down that while the pastoral tenant of the Crown might cultivate produce for his own consumption, he was prohibited from doing so for sale or barter. The ostensible object of this restraint was to prevent the pastoralist, who got his land at a cheap rate for grazing purposes, from competing in the market with the agriculturist, who had to pay for his through the nose. In effect, the limitation of choice to persons contemplating agriculture, by restricting them to the County of Stanley and the sea-coast strip, operated sufficiently as a deterrent from cultivation, apart from the fact that the most inaccessible equally with the most convenient country lands were priced for sale at £1 per acre, cash down, and could be bought only by the holder of the run of which they formed part. Suburban lands and lands in the settled districts generally were not commonly to be had at any price.

Under such conditions progression towards the development of a community was almost impossible. Without agriculture, without manufactures, depending exclusively on the conversion of the wild

grasses into wool, tallow, and skins, there were few openings for individual energy. The squattages needed but few people to work them, and the handful of resident owners diffused but little of their gains. These, again, were restricted by that very absence of population which it had been, and continued to be, the shortsighted policy of the runholders to secure. Their flocks and herds increased, but the value of such commodities was limited to the annual crop of wool in the case of sheep, and to the hide and tallow yielded by neat cattle when slaughtered. The flesh was practically a waste product. Such surplusage as natural increase conferred on the pastoralist had to be killed and boiled when no buyer desirous of stocking vacant country further from existing settled regions presented himself. Some occupation was found by people, otherwise without chance of employment, in felling and sending to the nearest navigable water the pine and cedar which abounded in the scrubs clothing the alluvium bordering rivers and creeks. A few industries directly associated with the boiling down of stock grew up. It had been earlier ascertained in the South that the bark of the native wattle-tree was rich in tannin. The superfluity of green hides and sheepskins suggested tanning and fellmongering. Thus boiling-down works, wool-scouring establishments, fellmongeries, and sawmills came into existence in the neighbourhood of ports, and these added to the tradesmen—part merchant, part storekeeper, part forwarding agent—and to the publican, blacksmith, and so forth, whose ministrations are necessary for even the most primitive sort of colonisation, with the secondary businesses of bakers, and so forth, furnished a livelihood for small populations at convenient centres. On the Darling Downs, Warwick had been laid out as a township in 1848, and a hamlet had arisen there. At Drayton, where Orton, an emancipist servant of Mr. Stuart Russell's, had put up a public-house near the spot where Lieutenant Gorman's "Hell Hole" route up the range debouched, a village was also growing. The Burnett squatters had occasioned a somewhat similar settlement at Gayndah, and the land adjacent to the Mary River having been stocked, Maryborough had its beginnings of public-houses and stores to serve the squattages as well as the timber-getters who were exploiting the scrubs.

The anti-transportation party in the South had by this time completely got the upper hand of the advocates for a revival of convictism, and the Northern squatters had begun to be impressed with the idea—encouraged, if not originated, by expressions in Lord Grey's despatches—that a separation might be effected whereby the Northern districts would be constituted a separate colony, with distinct provisions for the reception therein of prisoners of the Crown, possibly qualified by the simultaneous immigration of a proportion of free people to be despatched by the Emigration Commissioners in Great Britain. Indeed, an Imperial Act had actually been passed, specifically empowering Her Majesty, on petition by the inhabitants, to detach the territories lying to the north of the 30th degree of south latitude from the Colony of New South Wales, and erect same into a separate colony. Accordingly a petition was got up, praying for such separation. The boundary fixed, however, was too far south to please the Sydney magnates. It would have thrown into the new colony nearly the whole of the lands watered by the Clarence, by this time

under pastoral occupation, and the river itself recognised as incomparably the greatest discharging into the Pacific Ocean. It would also have cut off quite half of the New England tableland from New South Wales, besides most of the Gwyder-Barwon country and all lying west therefrom to the north of Fort Bourke. The last-mentioned regions, however, probably weighed but lightly in the balance, as their merits were then scarcely known. There was, however, sufficient in respect of the Clarence and New England regions to excite determined opposition on the part of the Sydney people, and by their influence action was delayed. Advantage was taken of this protraction of the negotiations by the anti-transportation party in Moreton Bay to rally against the stipulations favourable to converting the proposed new colony into a receptacle for convicts. Dr. Lang visited Brisbane, and, enthusiastically supported by the immigrants now settled down, whom he had been instrumental in introducing, and by the urban population generally, organised a resistance to all proposals of that nature. Separation, certainly; but separation with convictism as a concurrent condition, never!

The struggle, thus complicated by several distinct clashings of unrelated interests, was protracted so as to extend over a number of years, the pro-convict party losing ground all the time. All residents concurred, however, in resenting one set of grievances. The Northern districts continued to be neglected by the general government of New South Wales. They did not get their due share of public expenditure. They were subjected to all sorts of inconveniences, attributable to the remoteness of the seat of government and the small proportion of representation held by members for the Northern electorates. This disadvantage was intensified by the inevitable circumstance that out of the small resident population few were in circumstances which permitted of their neglecting their business to the extent involved in electioneering campaigns and residence in Sydney to attend Parliament during part of the year. Thus the Northern settlers found that not only was their number of parliamentary representatives too few to exert adequate influence upon Ministries to secure full consideration of local requirements, but to an annoying and damaging extent they were not truly representative men. If they persisted in requiring a local man for their member, the townsfolk had generally to content themselves with a well-to-do squatter, who would be sound on the subject of obtaining expenditure of moneys in the North, but was known to be out of sympathy with them on almost every other subject of public concern. He would be one who had actively fought them relative to transportation, and who was known to hold views relative to opening land for small holdings, agriculture, and so forth, utterly antagonistic to the feelings and aspirations of his constituents. Hence candidates who presented themselves with anti-transportation credentials from Sydney, and with some political reputation, were able to successfully seek election in these Northern electorates. There was evidently no escape from this vicious circle except by smashing it. Separation was the only way—separation which would give the districts a local Parliament which local men could attend without abandoning their bread-winning occupations; which would collect their own revenue into their own treasury, and disburse it for their own benefit. When all parties

joined unreservedly in this united decision, it became obvious that the difference of a degree or two of boundary line would not interminably prevent the accomplishment of the essential object, since the principle of that had been more than endorsed, had actually been originated, by the British Government.

One unlooked-for and adventitious effect of a conviction that such was the situation was that the New South Wales rulers, apprehending that the 30th degree of south latitude would be adopted as the line of severance, partly in recognition of the constantly urged argument that Brisbane, the most populous town and the most convenient port, should be apportioned a reasonable amount of territory to the south to balance the unlimited expanse lying north of it, decided to do something which would have the effect of shifting the centre of politico-geographical gravity a handsome distance northward. With this object, a survey party, headed by Mr. Surveyor McCabe, was despatched from Sydney, in a hired vessel, to lay out a township at Port Curtis, the scene of Colonel Barney's abortive expedition. That the township was intended for a future capital, the terms of the instructions to Mr. McCabe leave no room for doubt. He was enjoined to reserve in the neighbourhood the most suitable space for a public quay and Customs House, a large block for public offices, and a corresponding block for a Government House and grounds. Singularly enough, nothing specific was said about provision for a Parliament House area. There was, however, mention of setting apart land for police purposes, for markets, for public gardens and squares, and for recreation grounds. Sites for churches and chapels, he was informed, "may also be considered," and a cemetery was to be laid out 3 or 4 miles away, on a prolongation of one of the principal streets. It is a curious fact, and illustrates the persistency of bad precedents, that despite the obvious intention that the town should be designed so as to serve the purposes of a capital city, and seat of a Governor in time to come, the Survey Department informed Mr. McCabe that "the streets may be in general 1 chain wide, the back lanes 20 feet," which they are to this day.

Mr. McCabe, on arrival, found the place absolutely deserted, but in about five weeks a Mr. Wilmott and party arrived by open boat from Wide Bay, and a few days later, Mr. W. H. Walsh, with some attendants, arrived on horseback, overland from the same region, but did not stay. Wilmott became a storekeeper, and long resided at Gladstone. Mr. McCabe had trying times. The blacks came to his camp, "were very noisy, and made it understood the camp occupied their ground, and told the party to 'go away.'" Later, when he had fewer men, they attacked his camp in earnest, speared a man named Sheriss in the thigh, and managed to carry off some plunder. Fortunately for the survey party, a detachment of native troopers had just before been sent from the Burnett District for their protection, and were close at hand. These pursued the natives and carried reprisals so far that "subsequently twenty-three of their lives were taken by the police in recovering the property they stole from my men." The name of the town laid out was Gladstone, and early in 1854 Captain O'Connell was appointed to be Government Resident there, and proceeded to remove thither his family and belongings from Gayndah, where at the time he was discharging the duties of Commissioner of Crown Lands.

A few days later he was gazetted to the same position, and to be Police Magistrate at Port Curtis.

As this gentleman was destined to figure eminently in the Colony of Queensland, and moreover, as he supplies a type of numerous gentlemen of social stamp and antecedents whose seclusion in frontier squattages so surprised Dr. Leichhardt, a few biographical notes will not be misplaced here. Maurice Charles O'Connell entered the Army in 1828 as an ensign in the 73rd Foot, with which he was stationed successively at Gibraltar and Malta. In 1835 he obtained permission to raise an Irish regiment for service with De Lacy Evans' British Legion in Spain, for Queen Christina against Don Carlos. Of this regiment, the 10th Munster Light Infantry, he was gazetted Colonel, and at its head he participated in several engagements, and so distinguished himself that, at the close of the campaign, he had attained the rank of General of Brigade and was a Knight of three Spanish Orders. In 1838 he accompanied the 28th Regiment to Sydney, sold out, settled in the colony, for three years sat in the New South Wales Legislative Council as member for Port Phillip, thereafter accepting the appointment as Commissioner of Crown Lands on the Burnett, whence he was promoted to be Government Resident at Gladstone.

The project of thus creating a rival to Brisbane for metropolitan importance had consequences quite unforeseen by those who forwarded the design. That the first sale of allotments in the new township should, when held in Sydney, realise a handsome sum was not surprising. The Governor, Sir Charles Fitzroy, had announced his intention of personally visiting the place. The sale took place on 8th and 9th February, 1854. Captain O'Connell, with his staff, sailed on the 1st March, and the Governor embarked on H.M.S. "Calliope" three days later, for the same destination. The amount realised for town and suburban lots aggregated nearly £14,000, and among the purchasers were prominent men who might be supposed to have opportunities of knowing what degree of importance to attach to the apparent earnestness of the authorities with respect to pushing the place. Wealthy Jews invested freely. The Roman Catholic Primate secured sites. Leading men in politics showed their belief in the seriousness of the project by becoming purchasers. Squatters on the nearest pastures, the Burnett and Wide Bay Districts, pushed out with stock to appropriate "runs" in the country at the back of the expected future capital. Monduran Station, on the Kolan River, seems to have been the nearest to Port Curtis before this movement began, and the brothers James and Norman Leith-Hay were the earliest pastoralists to push beyond the established runs with stock. But many others followed in rapid succession, each pressing on beyond the other. The Archer family, ever notable among the most esteemed colonists of Queensland, advanced as far as the Fitzroy River, a far cry beyond Port Curtis, and secured that Gracemere run which now is almost suburban to Rockhampton, a rival to Gladstone then unthought of, but destined a little later to create great heart-burnings in the breasts of people interested in the capital-presumptive of the North. Expenditure of public moneys in salaries of officials and in public works and public buildings encouraged settlement by store-keepers and other tradesmen. The township appeared started on a career of prosperity and in the way to future importance. Governor

Fitzroy had, during his visit, been greatly interested by the discovery of specks of gold not far from the Settlement. The Government Resident was desired to encourage search for the metal. The residents themselves, as trade began to slacken, consequent on the completion of most Government buildings, took the matter in hand and contributed to keep prospectors searching. In July, 1858, W. C. Capel, the leader of a small prospecting party so supported, returned to the township from one of his expeditions, and reported that having extended his search across the Fitzroy River he had discovered a place where gold existed in payable quantities. The Government Resident at once despatched the Government Surgeon, Dr. A. C. Robertson, a gentleman with Californian digging experience, with Capel to inspect, examine, and report. The result was that Capel and the doctor returned with seven samples of gold, easily won at a place called Canoona, and affirmed that a sturdy worker would be able to earn from 15s. to £1 per day there. Further, that many other tracts lying between the Boyne, south of Gladstone, and the Fitzroy, about 90 miles to the north, presented the appearance of being auriferous. Those of the townspeople and the hands on the stations in the district who could, immediately hastened to the golden spot. Their accounts were more than encouraging. The news spread South, embellished as it spread, and presently all Australia, and even New Zealand, were astir. A prodigious influx of adventurers ensued. Vessels were laid on the berth, at first to Gladstone, but presently to the Fitzroy River. By 2nd October the exodus had assumed such proportions that the *Sydney Morning Herald* of that day described it as "astounding." Sir Wm. Denison, who had succeeded Sir Charles Fitzroy as Governor of New South Wales, in his memoirs, estimated the number of people at Canoona at 16,000. Capel's discovery was rich. No estimate of the quantity of gold got there has been possible, but numbers of allusions convey the impression that the early arrivals on the ground won very large quantities. But the extent of the auriferous alluvial was narrowly limited. It did not exceed a few acres, and by the time the rush had reached its maximum the patch was practically worked out. The reaction need not be imagined. It is described in detail in numerous published works. The disappointed, destitute adventurers were in danger of starvation, and the Governments of Victoria and of New South Wales had to arrange with steamship companies to bring back, free of cost to these, the wandering colonists, who had assembled on the banks of the Fitzroy. Thus the human tide receded, but it left behind it the nucleus of the town of Rockhampton, on the south bank of the Fitzroy, at a point where a bar of rocks prevents navigation further up the river by vessels of burden. Gladstone, which had been rather injured than benefited by the discovery, due to the enterprise of its own people, was prostrated by the recoil, and the establishment of Rockhampton in a situation more conveniently accessible for the back-country squatters, gave permanency to the injury. But a heavier blow impended.

The agitation for separation from New South Wales had all this time never abated. The squatters, either despairing of overcoming the popular antagonism to a revival of transportation, or fancying that, should the Northern country be invested with autonomy, their influence in the portion cut off and relieved from the predominance of the

proletariat in the South, might predominate sufficiently to enable them to secure some renewal of the "exile" project for the new colony, had joined hands with the aspirants for unconditional separation. This unanimity proved effectual. In May, 1859, during the administration of Lord Derby, letters patent were issued creating as a new colony, styled Queensland, a vast expanse of North-Eastern Australia. The southern boundary, however, was adjusted so as to exclude the Clarence and New England districts. It commenced at Cook's Point Danger, and thence followed in a westerly direction the mountain range and the Macintyre River to a point where the latter intersects the 29th degree of south latitude, which it followed to the 141st degree of longitude, and by that line northerly to the 26th degree of south latitude, coinciding with that to the 138th degree of longitude, which defined the western boundary up to the Gulf of Carpentaria. The choice of a situation for the seat of Government was not formally decided. Sir George Ferguson Bowen, at the moment Governor of the Ionian Islands, a highly accomplished gentleman, was appointed to be the first Governor of Queensland. A Constitution, framed on the lines of that last granted to New South Wales, was conferred on the new colony. The Governor of the older dependency was authorised to appoint, with a five years' tenure of the position, such persons, not less than five, as he thought fit, to form a nucleus of a Legislative Council. The Governor of Queensland was to add, at discretion, members to have a life tenure. With regard to a Legislative Assembly, the Governor of New South Wales was directed to fix the number of members, the extent of the several electorates, and the distribution of representatives, and generally to arrange matters for the first election. The franchise, which in New South Wales had recently been extended to male adults who had resided six months in the electorate where they enrolled, was in the Constitution for Queensland restricted to that which had prevailed in New South Wales prior to that extension, and which has been previously described in these pages.

On the 10th December, 1859, Sir George Bowen, conveyed by H.M.S. "Cordelia," landed at Brisbane, issued a proclamation, and, amidst much ceremonial and rejoicing, the birth of Queensland was thus announced. The task which lay before the new Governor was difficult. He had everything to constitute—Ministry and Parliament were non-existent, of course. But there was no money available for any public purpose whatever. The New South Wales Government, on relinquishing the territory, closed all bank accounts relating to it.

Sir George Bowen in after years said he found sixpence in the Treasury. That must have been a *façon de parler*. The morning's receipts for sale of postage stamps may have been available. The Governor had no constitutional advisers. He had no official residence, save a house hired from Dr. Hobbs, a medical man who had arrived as surgeon of the "Artemesia" several years before. He had no accommodation for officials, save the abandoned convict barracks and some brick houses on the North Quay. There had accompanied Sir George Bowen from England, at the instance of the Colonial Office, a gentleman who was to set in motion the constitutional machinery. Mr. Robert George Wyndham Herbert had made a good mark at Oxford, and was regarded in official circles as a young man of sterling

promise. He was indeed merely a student of constitutional and parliamentary procedure, and not at all an experienced practitioner. But he had been Private Secretary to Mr. Gladstone, and had not wasted his opportunities. The Governor had scarcely set foot upon the soil and constituted the colony before he formally summoned to his Council Mr. Herbert as Colonial Secretary, and Mr. Ratcliffe Pring, a smart barrister, as Attorney-General. Somewhat more than a month later, Mr. St. George R. Gore received the portfolio of Secretary for Lands and Works, and a day later Mr. Robert R. Mackenzie was appointed Treasurer. The Governor and Mr. Herbert evidently preferred to associate, even in politics, with gentlemen. Both Mr. Gore and Mr. Mackenzie were sons of baronets; both were squatters. It was understood at the time that Sir George Bowen had instructions to call to his counsels Captain Wickham, R.N., the Government Resident, but that officer was somewhat mortified at not himself being the first Governor, and preferred retiring to England. He was the recipient of a valedictory in handsome terms, and carried with him the esteem of the colonists.

Sir William Denison nominated to be members of the Legislative Council the following gentlemen:—

John Balfour, of Colinton.  
 Francis Edw. Bigge, of Mount Brisbane.  
 Alfred W. Compigné, of Nindooimbah.  
 George Fullerton, of Brisbane.  
 John J. Galloway, of Norman's Hill.  
 James Laidley, of Franklin Vale.  
 John F. McDougall, of Milton.  
 Robt. G. Massie, of Toolburra.  
 Sir Charles Nicholson, of Rockhampton, Bart.  
 Maurice Charles O'Connell, of Riverston.  
 William Henry Yaldwin, of Taroom.

Sir George Bowen, as Governor of Queensland, made immediately after four additional appointments, viz. :—

Stephen Simpson, of Wolston.  
 Henry B. Fitz, of Pilton.  
 George Harris, of Brisbane.  
 Daniel Foley Roberts, of Brisbane.

Mr. Fullerton was a medical man of Brisbane; Mr. Galloway a proprietor of property; Captain O'Connell's career has been already outlined. The creation of the new colony had occasioned the abolition of his office as Government Resident at Gladstone. Dr. Simpson had been Commissioner for Lands on the Darling Downs; Mr. Harris was a leading merchant of Brisbane; Mr. Roberts was a solicitor of the same town; Sir Charles Nicholson was a medical man who had already achieved distinction and wealth, and won his baronetcy in New South Wales politics. All the other nominees were squatters.

Sir William Denison's arrangements with respect to an elective Legislative Assembly provided for an apportionment of the colony, within the range of occupation, into sixteen electorates, to return in the aggregate twenty-six members. The Maranoa District was by this time sufficiently partitioned into runs to be included among the consti-

tuencies, and west of Port Curtis the country, of which Rockhampton was the port, was, under the name of Leichhardt District, in like case. The electorates consequently were arranged as follows :—

Electorate.	Adult Male Population.	No. of Members.
Brisbane North, Town of ... ..	1,205	3
Brisbane South, Town of ... ..	176	1
Burnett, District of ... ..	1,075	2
Drayton and Toowoomba, Town of...	881	1
East Moreton, District of ... ..	766	2
Eastern Downs, District of ... ..	724	1
Fortitude Valley, Hamlet of ... ..	297	1
Ipswich ... ..	806	3
Leichhardt ... ..	751	2
Maranoa ... ..	653	1
Northern Downs ... ..	588	1
Port Curtis ... ..	980	1
West Moreton ... ..	1,071	3
Wide Bay ... ..	473	1
Warwick ... ..	311	1
Western Downs ... ..	278	2

Preparations for the elections in the form of candidates' addresses began forthwith, but it was not until the 4th April, 1860, that the writs were issued. By the 7th May following the returns were in, and the first Legislative Assembly of Queensland consisted of the following members :—

Brisbane North: Geo. Raff, Henry Jordan, Chas. W. Blakeney.

Brisbane South: Henry Richards.

Fortitude Valley: Chas. Lilley.

Ipswich: Fred. A. Forbes, Patrick O'Sullivan, Arthur Macalister.

Drayton and Toowoomba: John Watts.

Warwick: St. George R. Gore.

East Moreton: George Edmondstone and Henry Buckley.

West Moreton: George Thorn (senr.), A. D. Broughton, and the Rev. Dr. Nelson.

Western Downs: Thos. DeLacy Moffatt and Jas. Taylor.

Eastern Downs: Ratcliffe Pring.

Northern Downs: Chas. Coxen.

Maranoa: John Ferrett.

Burnett: Robert R. Mackenzie and Chas. R. Haly.

Wide Bay: Gilbert Elliott.

Port Curtis: Chas Fitzsimmons.

Leichhardt: R. G. W. Herbert and Chas. S. Royds

Of these twenty-six individuals, about sixteen continued for so many years to fill a prominent place in the public eye that biographical notices of their careers would be interesting. Only two survived to the commencement of a new century and the inauguration of Australian Federation—one, Sir Robt. G. W. Herbert, K.C.M.G., after many years officiating as permanent head of the British Colonial Office; the other, popularly known as "Paddy" O'Sullivan, in a

private station in Ipswich. Of the original members of the Queensland Legislative Council, Sir Charles Nicholson alone remains. Some also among the candidates unsuccessful at the first Queensland election afterwards became prominent in public affairs, and left the stamp of their abilities upon the early parliamentary history.

As was natural, the members returned for the pastoral districts were squatters to a man, with the single exception of the Attorney-General, Mr. Pring. The coastal districts and towns, on the other hand, elected business men chiefly, but included a barrister, Mr. Lilley, and a solicitor, Mr. Macalister, both men of somewhat exceptional ability and political aptitude. On the meeting of Parliament, Sir Charles Nicholson, who had held the position of Speaker in the Legislative Assembly of New South Wales, was elected President of the Queensland Legislative Council, and Mr. D. F. Roberts was chosen Chairman of Committees, a position to which he continued to be elected during a very long series of subsequent years. In the Legislative Assembly, Mr. Gilbert Elliott was elected Speaker. That gentleman had officiated, as we have already mentioned, as Aide-de-camp to Governor Sir Geo. Gipps, and more recently had sat in the New South Wales Legislative Assembly. Mr. Macalister was elected Chairman of Committees, on a division, defeating the Government nominee, Mr. Blakeney, by two to one. Mr. Lewis A. Bernays, who had been brought from the New South Wales Parliamentary staff for the purpose, was installed as Clerk of the Legislative Assembly, a post which he has continuously filled ever since. It must be mentioned that, in default of better premises, the Legislature was accommodated in a portion of the big building then facing Queen street, which had been constructed by convicts for convicts in Captain Logan's time, and which subsequently was used as a Supreme Court before it was pulled down and the site sold for shop frontages.

The fortunes of the huge territory comprised within the proclaimed boundaries of the Colony of Queensland were now entrusted to the handful of colonists partly concentrated in a few towns and hamlets near its south-eastern corner, and partly scattered very thinly over the squattages of the Moreton Bay, the Darling Downs, the Burnett, the Wide Bay, the Port Curtis, the Upper Dawson, the Maranoa, and the Leichhardt regions, a tract included within about five degrees of latitude by five of longitude. Exterior to this semi-settled fraction lay an expanse equal in area to about one-third of Hindostan, but contrasting strikingly therewith. In lieu of presenting the embellishments and the useful monuments of an ancient civilisation, and of being thronged by a population of 250 million souls, this portion of the Australian continent was unimproved by human industry since it was created, and peopled only by scattered tribes of naked savages. The opportunities and the task demanded of them were the promotion of the prosperity of the existing white colonists, and while dealing considerably with the aborigines to convert to useful occupation the wild lands and lay broad foundations for a future development, the expansion of which it was, as it still remains, difficult to adequately conceive. The degree in which the first constitutionally elected rulers of Queensland appreciated these responsibilities may be in some measure gathered from the terms of the first speech delivered by the Governor to Parliament. The abolition of

State aid to religious bodies was suggested; an invitation to examine, regulate, and improve the arrangements for primary education was given, and the establishment of a grammar school suggested. Telegraphic connection with the Southern colonies, permissive authorisation for the landing of a cable from Java and Singapore to the shores of the Gulf of Carpentaria, and the establishment of regular steamship service between India and China and Queensland, were topics mentioned. An immigration policy was hinted at for early future attention. And as to the land—these millions of acres at the disposition of the Government—a measure to reform the method of tendering for runs was promised. The actual course of legislation can best be learned by a reference to the Statute Book, upon which were inscribed in 1860, *inter alia*, an Act Regulating Carriers and other Bailees, a Census Act for 1861, a Primary Education Act, a Grammar Schools Act, a Discontinuance of State Aid to Religion Act, and Acts dealing with Liens on Wool, Leasing of Occupied Crown Lands, and a Moreton Bay Tramway. An Act dealing with the Alienation of Crown Lands was passed, which provided for the establishment in each of the Coastal Districts—East and West Moreton, Wide Bay, Port Curtis, and Keppel Bay—of Agricultural Reserves of 100,000 acres, and reservations for settlement, each of 10,000 acres, were to be defined within 5 miles of every town of 500 inhabitants. It was by this earliest Parliament of Queensland that the State educational system in Queensland was founded on the basis of unsectarian teaching, on which it has ever since been maintained. The Estimates presented to the Legislative Assembly that year throw some further light on the intentions of the Government. It must be understood that the Legislative Acts of New South Wales in force at the date of separation continued in force, and the receipts produced from imposts thereunder. The estimated revenue for 1860 amounted to £160,000. Of this total, £60,000 from Customs duties was the largest item. From sales of land £45,000 was expected; rents of runs were estimated to yield £14,000; stock assessments, £28,000; licenses, £3,000; and immigration remittances, £2,000; the balance being made up by minor items. The immigration remittances deserve attention. These were sums paid by immigrants or persons nominating others for passage to the Colony, and entitled the payers or their nominees to certificates assuring to them grants of land to a corresponding value. By these, and by sales of portions, the only provision for actual settlement was arranged. It is obvious that the process was restrictive—in fact, it was not until the whole system of land alienation came to be liberalised by successive enactments that any real progress towards populating the colony ensued.

In setting forth the probable expenditure for the year no extravagance of ideas was exhibited. The salaries of the Governor and of the two Ministers of the Crown, set forth in a schedule to the Constitution Act, were no more than £2,500 a year for the Governor and £700 a year each for the Colonial Secretary and for the Treasurer, together with £1,200 a year for one Judge, and £300 for His Excellency's Private Secretary. The original holder of the last-mentioned office was Mr. John Bramston, a young barrister, who had accompanied Sir George Bowen from England to fill the post, and who subsequently became a member of several Administrations. £54,460 was allotted to

the Chief Secretary's Department, £9,882 for the Administration of Justice, £23,621 for the Treasurer's, and £50,985 for expenditure on Lands and Public Works. The year's operations were estimated to leave a surplus of £11,481, but a separate schedule of special appropriations was presented, to be expended during three successive years, and amounting to £47,000, thus apportioned:—For a Steam Dredge, £10,000; Electric Telegraph to frontier, near Warwick, £10,000; towards building a Government House, £10,000; towards building Legislative Chambers, £10,000; balance for completion of Gaol, £4,000. Whatever lingering hopes the people at Gladstone might have entertained that the capital of Queensland would be fixed at their town were extinguished by the items so appropriated. The Steam Dredge was obviously for the Brisbane River; the Telegraph Line was from Brisbane; the Government House and Parliament House were for Brisbane; the Gaol to be completed was at Brisbane. The Tramway Bill was the result of an impression prevalent at the time—that it would be injudicious to compromise the future solvency of the Colony by undertaking to construct railways with borrowed moneys. Many persons held that such constructions should be, as in European countries up to that time, the outcome of private enterprise. So legislative authority was given for a first beginning. But the promoters of the project were unable to avail themselves of the concession, and it became necessary for the Government to undertake railway construction as in New South Wales, if it was decided that there should be railway works started at that stage at all. The squatters of the Darling Downs were desirous that communication by rail should be afforded between that plateau and some water ports. Those on the Upper Burnett, Upper Dawson, and Maranoa, whose produce and supplies were carted also up the ugly ascent of the Main Range and over the Darling Downs to their remoter stations, were of the same mind. Those West Moreton pastoralists, also, whose runs lay within access of the route such a railway must necessarily take, were sympathetic. The population of Ipswich was ardently favourable—provided Ipswich were adopted as the water-port and eastern terminus of the railway. Brisbane citizens were indignant, but East Moreton settlers further towards the coast, whose convenience a section of railway from Brisbane to Ipswich would not serve, were apathetic. A combination in Parliament of Ipswich, West Moreton, and Western representatives prevailed, and the first length of a State railway in Queensland was started westward from a point in the town of Ipswich on the south bank of the Bremer River, immediately adjacent to the tidal basin which it was the fashion at that time to refer to with great emphasis as “the head of navigation.” The gauge chosen was 3 ft. 6 in., thereby fixing that width as the future standard throughout Queensland, a determination which there has been no reason to regret; although, since federation of all Australian Colonies, the difference in the gauges adopted by the several States has become a matter of some concern.

For such constructions and for public works in general, the impossibility of providing funds from annual revenue had early been recognised. In July, 1861, a first Queensland loan had been negotiated in London bearing interest at 6 per cent., and went off at a premium which reduced the actual annual interest payable on the amount

borrowed, £123,800, to £5 14s. 9½d. per cent. A second loan of £707,500 in 1863 was nearly as successful, but a third in 1864 went the other way, the 6 per cent. interest offered coming out, at the price realised, at £6 12s. 1½d. per cent. per annum; only £954,252 being received for £1,019,000 of debentures. Of these, and subsequently raised, borrowed moneys, part was devoted to promoting immigration. Lecturers—among them none so successful as the late Henry Jordan—were despatched to Great Britain and to Germany to push under the notice of people in the old countries the attractions of this youngest among the Colonies of Great Britain. The persistence with which the representatives of the towns and more populous districts urged the necessity for making available, lands for agricultural settlement on the Darling Downs, had by the year 1863 so far prevailed that the Legislature in that year resumed from pastoral lease several tracts, the severance of which from the runs might be expected to least inconvenience the squatters. Upon the rich soil and treeless downs of the Darling Downs the advocates for tillage had long cast a longing eye. The squatters in localities less provokingly attractive and less accessible, although sympathetic with their brethren of the Darling Downs with regard to the affliction of irruptive farmers, did not combat the principle of close settlement with the same ardor as those now directly menaced. Still the constant unblenching declaration by the pastoral lessees of the Darling Downs—and if they were not authorities, who could be it was asked—was that those treeless stretches of gentle slope and grassy plain, which seemed absolutely to invite the plough, were of all lands the least amenable to cultivation. They themselves had attempted to have vegetable gardens, and had failed. “The Downs soil would not grow a cabbage” became quite a catchword. Still sundry tracts, avoiding as far as possible these infertile downs—so admirable for pasturage and so abominable for arable uses—were surveyed and set apart as agricultural reserves. Sections of 160 acres were made available for farmers on easy terms of quit rent. Certainly the places were not chosen with any special reference to an accessible market. Still it had been impossible to avoid including some of the real downs country, and selections on them were eagerly appropriated. Teamsters, drovers, and others thus were enabled to provide homes for their families and paddocks for spelling their beasts, while real tillage was undertaken by other selectors.

Meanwhile, the effects of legislation concerning the acquisition of tracts of new country for pastoral occupation had been most stimulating. In this instance the legislators almost to a man understood thoroughly the subject they were dealing with, and framed the Acts with single-minded purpose. They made it very simple and easy for any pioneer pushing out beyond occupied country to appropriate fresh runs, and they made it very difficult, if not impossible, for any one individual to hold any country at all without making good use of it. Within a reasonable time the country must be stocked with so many sheep or so many cattle; failing that it became forfeited. Enterprising young men, thus encouraged, pushed out either on their own account or on behalf of squatters in New South Wales and the older stations in Queensland itself, and penetrating courageously to the wild lands beyond existing runs, marked trees and roughly traced creeks or other natural features, and returning, lodged at the Lands Department applications for this and that tract of so many hundred square miles, in

blocks not exceeding a specified area, and deposited with their applications the sums stipulated by law. Provided there was no clashing with other applications, titles good enough for barter were speedily issued to them, and these they proceeded to turn to account, either by selling outright to some stockowner, or by arranging a partnership on the basis of providing a run for someone who should provide stock. In this fashion the expansion of pastoral settlement proceeded at a prodigious rate. Westerly and south-westerly the Maranoa District was overpassed and the Warrego occupied. To the northward the progress was extraordinary. Leichhardt's published journals of the itinerary of his expedition from the Darling Downs to Port Essington supplied indications where good country lay, and also one route by which it could be reached. Thus, in rapid succession, run after run was applied for and stocked down the valley of the Dawson; Expedition Range was surmounted and Peak Downs parcelled out into stations. Runs were taken up on Leichhardt's Comet River. From the region of the main Fitzroy River the stream of squatting pioneers with their herds or their flocks overflowed the whole of the Broadsound country, lying between the coast range—here both lofty and steep and sweeping suddenly towards the ocean. The formidable barrier thus interposed in the way of future progress northward was in turn forced, and the fine downs country on the Isaacs was overrun with stock. Contemporaneously some maritime exploration along the coast had proceeded. Port Denison had been entered in 1859 by Geo. Elphinstone Dalrymple, then fresh from a land expedition to trace the lower course of the Burdekin River. The same gentleman was despatched in 1861 to found by an official establishment the town of Bowen. The Pioneer River was about the same time ascended from the sea, and became the most convenient outlet for the new scenes on the Isaacs and Suttor. To sum up, before the year 1864, so extraordinary had been the outward expansion of pastoral enterprise, that stations had been formed and stock were grazing on country beyond Mitchell's Victoria River and Kennedy's Thompson, in the western interior; that the track followed by Leichhardt was now bordered by runs, and cattle were cropping the herbage on Stokes' Plains of Promise, while from the south the heads of his Flinders River had been reached and the whole stretch of treeless country along its course of some hundreds of miles towards the Gulf of Carpentaria was under pastoral occupation.

In the coastal settlements, while the interior was thus being overrun by the jubilant pastoralist, revelling in high prices for all his produce, free from the harassment of stock diseases, and favoured with a succession of good seasons, there was almost corresponding activity. The sugar industry was fostered by liberal concession in respect of land for cultivation of the cane. The Civil War in the United States of America, by creating a cotton famine in the fabric-manufacturing towns in the West of England, gave a renewed impulse to the cultivation of the plant in Queensland, which was enhanced by the grant of bonuses on exportation of bales of the fibre. The same war, by compelling the sale of whole fleets of clipper ships from American to British owners, assisted to cheapen the expense of conveying immigrants from Great Britain to Queensland. Allured by the descriptions of the bustling and progressive Colony which were displayed before them by the lecturers and immigration agents commissioned and des-

patched to the old world centres of population for the purpose, and further attracted by the gift of land-orders, immigrants of all classes poured in in multitudes. To immigrants who defrayed the cost of their own passages these orders were issued available for the purchase of lands to the value of £18 on arrival, with an additional £12 worth after two years' residence. Two children were reckoned as equal to one adult. These orders, however, were found to be transferable, and were eagerly snapped up at a discount on their face value by squatters just then anxiously erecting ramparts and outworks of freehold land to defend their leaseholds from the resumptions for closer settlement, which they apprehended must result from the influx of population. The ostensible purpose of the orders—immediate settlement of the new-comers, was thus to a great extent defeated, and even ultimate provision of land for occupation as homesteads was prejudiced beforehand. An identical result accrued from an issue of land-orders to volunteers who had completed a certain stipulated term of efficient service with their corps. But as touching the immigrants, the sale of their land-orders at least furnished them immediately on landing with what many stood much more in need of than a small patch of bush land—ready money to enable them to support themselves and families until they could find some opening or employment. This also led to a free circulation of money in the ports of arrival and other centres, as the immigrants made their way up country. From January, 1860, till September, 1865, about 38,000 immigrants had been added to the population. Six banks, having their headquarters in the southern colonies or in London, had branch offices in Queensland. The first section of the railway from Ipswich towards the Darling Downs had been opened for traffic; the second section was being proceeded with, and a commencement had been made of a line from Rockhampton westerly; much costly dredging had been effected in the Brisbane River, across which, also at Brisbane, the construction of an iron bridge had been authorised, and a temporary wooden one for foot-passengers thrown; electric telegraph lines had been stretched from Brisbane—previously connected with Sydney, *via* Warwick—to the towns of Maryborough, Gladstone, and Rockhampton; the main streets of Brisbane had been swept almost clean of its early architecture of wooden shops by a fire, and had been rebuilt in improved style; building societies had sprung up, and were flourishing; money circulated abundantly, and credit for all sorts of enterprise was easily obtained and had been freely employed. In short, the community appeared to be marching with a quick and firm step towards ever-increasing prosperity when on the far-distant horizon clouds began to project gloom towards the community. In the first place, prices for produce fell sharply. The foundations of numerous enterprises and undertakings, based on previous prices and supported by advances from financial institutions, were instantly shaken. The Government had just before been authorised to float a new loan of over a million sterling. The Agra and Masterman's Bank had undertaken to make advances on account pending the flotation of that loan. When that bank itself succumbed the situation in Queensland became desperate. The only locally-managed bank—the Bank of Queensland—closed its doors. The Herbert Administration which, with sundry changes of *personnel*, had till then continued in power, resigned, and Mr. Macalister took the Premiership. Business of every kind was paralysed.

The fall of banks and commercial houses in Great Britain in quick succession shook down scores throughout Queensland. The navvies on the railway construction, unable to obtain their wages from the contractors—Peto, Brassey, and Co.—seized a train, steamed to Ipswich, and thence marched on the capital, preceded by rumours of intended sack and looting. The men were with little difficulty partly persuaded, partly intimidated, by being faced by our armed police and bodies of special constables, into halting and encamping near where the Roma-street Railway Station now stands. Rations were distributed, and presently a scheme of relief works provided for them. Meanwhile the wildest confusion prevailed in commercial and in governmental circles. The Governor objected to part of the devices proposed by Ministers to extricate the country from its financial straits. They wished to pass Bills authorising the issue of Treasury bonds and of legal tender notes. Sir George Bowen objected to the latter. The directors of southern banking companies on being applied to for succour offered limited accommodation on conditions which Mr. Macalister considered would have intensified the troubles later on. Unable to work in harmony with the Governor he resigned. Mr. Herbert was sent for. In conjunction with Mr. George Raff, a substantial merchant, he was willing to tackle the financial problems, but neither would take office. Political confusion was now added to the complications of the time; but the outcome was that Mr. Herbert, sitting in the Assembly as Vice-President of the Executive Council, was virtually Premier. Mr. Raff, also without salary, was a member of the Cabinet. Mr. Dalrymple was Colonial Secretary, Mr. J. D. Maclean, a hard-headed squatter, Treasurer; Mr. Watts was Secretary for Lands and Works; Mr. Prior, Postmaster-General; and Mr. Pring, Attorney-General. Amidst violent contentions a Bill was passed authorising the issue of £300,000 in Treasury bonds with a currency of less than three years, yet carrying interest at the rate of 10 per cent. per annum. The Administration, however, succumbed immediately after, and Mr. Macalister returned to office, having with him, as in his first Administration, Mr. Charles Lilley as Attorney-General. Mr. Thos. B. Stephens later joined this Ministry, which after just a year's tenure of office was succeeded by one formed by Mr. R. R. Mackenzie, in which Mr. Arthur H. Palmer made his first appearance as a Minister of the Crown.

Meanwhile the financial hurricane had blown over, but its effects and consequences continued to be felt. The colony, regarded as a commercial and industrial community, was in a wretched condition; trade and industry appeared as though they would never recover from the mauling they had been subjected to. They seemed too faint to even attempt to raise their heads. Business was languid; poverty was almost universal, and penury not uncommon. It was at this juncture that a first disclosure of the auriferous wealth of Queensland occurred and almost instantly the stroke of the digger's pick, like the slap of harlequin's wand, was the signal for a gorgeous transformation scene.

Up to this time, minerals in Queensland had contributed but little towards providing its people with employment or its investors with wealth. True, a large number of men found advantageous occupation in working alluvial flats on the Peak Downs for gold, discovered in 1861, and a very profitable lode of copper was being there worked by a Sydney proprietary, while at numerous places fossickers and

prospectors were getting a little gold. But little importance was attached to these facts, and when just at the close of 1867 a genuine goldfield, very rich indeed, and fairly extensive, was discovered at Gympie Creek, on the Mary River, the destitute people, who were but too numerous and of all classes, rushed precipitately to the spot. These were supplemented by a great influx of adventurers from the Southern Colonies. Business at once began to revive. The field proved permanent. In other localities good deposits of gold were found. Confidence in the future of the Colony returned. Vitality was diffused through every nerve of the community. In 1868 a new Act dealing with alienation of Crown lands was passed, and helped to quicken the revival. By this measure, half of the leased areas in runs in all the "settled" districts—that is to say the two Moretons, the Darling Downs, the Wide Bay, Port Curtis, and Kennedy—leaving unaffected the interior districts, were resumed from lease and thrown open to general selection at very cheap rates and on easy conditions of instalment. The maximum area permitted to be acquired by single selectors was indeed large, being designed to permit of grazing occupation. A condition of residence by selector or a deputy was provided and also one requiring the boundaries of selections to be fenced. This Land Bill served its mixed purposes. The facilities it gave for obtaining freeholds of large and small area by easy payments originated a very extensive movement of capital. Runowners, rather than have their stations broken by the intrusion of selectors, soon found means, involving indeed in too many instances shameless sapping of personal morality, to secure for themselves great slices of the resumed halves of their runs. Applications poured in from the clerks in the employment of merchants doing business as agents for squatters, from dependents of every sort, each attesting by a solemn statutory declaration that he applied for the land for his own use and not on behalf of anyone else. The prevalence of the corrupt practice was notorious and patent, but not easily provable. A squatting Administration was in power, under Mr. R. R. Mackenzie, and a disposition to stir up heaven and earth to get at and foil the "dummies" was lacking. Even when later Mr. Lilley displaced Mr. Mackenzie, his Minister for Lands was a Darling Downs squatter, and believed to be as deeply immersed in acquisition of selections by oblique means as anyone in Queensland. Still there was a great deal of *bonâ fide* selection, and, immense areas being taken up, the condition of fencing provided employment for numbers of men in all the settled districts. In 1872 there was a discovery of tin ore in shallow alluvium which proved worth millions, and kept the ball of progress rolling, while coincidently lodes of copper at Mount Perry, at Kilkivan, and in numerous other places allowed the hopes and energies of the people no chance to flag. Henceforth, successive discoveries of gold and other minerals in Queensland have succeeded one another almost without intermission. The annual publication which held the place of the accepted compendium of Queensland current history—Pugh's Almanac—had no reference to mining. Now the production of minerals comprising almost all, even the rarest, which are of service to mankind, ranks among the foremost industries of the Colony. The year after the discovery of Gympie, a goldfield was discovered at Ravenswood, followed in steady succession by Charters Towers, the Cape River, the Palmer—a field of enormous richness in alluvial gold—the Gilbert, the

Etheridge, the Hodgkinson, the Croydon, and the Coen, all of which are still scenes of more or less activity, to say nothing of scores of rushes to other places which were quickly skimmed of their surface treasures. In the vicinity of Herberton, also, tin in lodes, as well as in alluvial, was found to exist over a great expanse of country, and further afield thence immense outcrops mark the situation at and around Chillagoe of what promises to be great lodes, mineralised with copper, silver, and lead, while at a place called Cloncurry, in what is called the Carpentaria or Gulf country, the earliest squatting pioneers found themselves confronted by mounts impregnated with copper ores, and in the remotest north-eastern corner of the Colony reefs yielding silver-lead, more recently discovered, are being developed at the present time. The subject of mining is, however, dealt with distinctively in another part of this Year Book, and we mention the foregoing facts only as essential for a comprehension of the general development of the Colony by broadening the industrial and productive basis upon which its economic structure stands.

The cotton plantations flourished only so long as the American civil war lasted. The industry lasted long enough to prove beyond all question that climate and soil were admirably suited for the production of a first rate fibre. But when the war ceased, the ports of the Southern States were opened, and the cultivation of the long neglected plantations was resumed with labour of the emancipated slaves, the Queensland planter could not produce cotton at the reduced price which was a consequence. With respect to sugar-growing, however, the case was different. Powerful inducements had been offered by the State for the extension of this industry, although probably the price then ruling for sugar was the most powerful attraction of all. Plantations multiplied along the banks of the southern rivers, mostly where scrubs had formerly clothed them. At Mackay it was discovered that the open forest lands bordering the Pioneer River were of a rich red soil, and being inexpensive for clearing, immense areas were there secured under the liberal regulations applicable to sugar and coffee lands, and plantations sprung up. The labouring population being able to obtain employment generally, at good wages, a condition supported by the attractions offered by the goldfields, where by taking the chances of hardships, with the set-off of personal independence, and a possible golden prize, some difficulty was experienced in securing a dependable supply of field hands. Mr. Robert Towns, a Sydney capitalist who had accumulated wealth from beginning as a shipmaster trading with the South Sea Islands, where he had numerous trade depôts, and who had a sugar plantation on the Logan River, brought a number of kanakas in one of his vessels to work in his fields.

The influence of the sugar-planters was strengthened as years passed. Not only did their industry take deep root beside the Pioneer River and lead to the expansion of the town of Mackay, but along the banks of the Burnett in the reaches approaching its mouth the cultivation of the cane practically superseded all other agriculture and converted the little hamlet of Bundaberg into a considerable and very prosperous town. In 1872 Mr. G. E. Dalrymple was once more despatched in command of an expedition by sea to explore those parts of the north-eastern seaboard, which still remained undefined in detail. In a

couple of small cutters of about ten tons burden, he set out from Cardwell—a port discovered by himself during his last previous similar expedition. He had with him twenty-six men, including a detachment of native police. His researches disclosed the existence of a most interesting and valuable tract of country extending between the main range, which for hundreds of miles rises parallel with the ocean at varying, but nowhere very great distances from the shore, and the ocean itself. This region he ascertained to be watered by a network of running brooks, converging into small rivers, which, debouching behind sheltering islands and promontories, were easily entered at their mouths and navigable for some distance by vessels of moderate draught. The chief of these are the Mulgrave, Mossman, Daintree, Johnstone, Russell, Moeresby, and Barron. There were also discovered the harbours known as the Mourilyan, Trinity Inlet at Cairns, and Port Douglas. The land bordering these rivers was ascertained to be of remarkable richness and, when climate and rainfall were considered, were judged to be—as subsequent experience has proved they are—exceptionally well suited for the growth of sugar, coffee, and other tropical plants. On these tracts being disclosed, extensive areas were promptly selected, under the very generous land laws of the time dealing with the acquisition of such lands. Plantations were cleared and cultivated, sugar mills were erected, chiefly with the capital of business people in Sydney and Melbourne, and the sugar-planting interest acquired additional weight and importance.

A new direction was given to political cleavages when in January, 1874, the Palmer Administration was displaced by one formed by Mr. Macalister, and by the inclusion in the new Cabinet of two gentlemen who were thenceforth to impress their strong personal influence upon the course of public affairs. Mr. Thomas McIlwraith was intrusted with the Works Department, and Mr. Griffith was Attorney-General. The first-named Minister almost immediately gave intimation of the far-reaching conceptions which germinated in his active mind. He fostered, if he did not actually originate, a proposal by capitalists to undertake the construction of a long trunk line of railway, which, starting from a point far west from Brisbane to be reached by extension of the State railway already carried past the Darling Downs in that direction, should traverse northerly the interior country, thence to a port to be created on the south-western shore of the Gulf of Carpentaria. The principle of compensation for the outlay on this great work was essentially that grants of land in alternate sections along the whole course of the railway should be allotted to the undertakers. Mr. Macalister dallied with the proposition for a short time, and then, without even communicating his decision to his colleague, suddenly authorised the *Brisbane Courier* to announce that he would have none of it. Mr. McIlwraith instantly resigned his portfolio. Mr. Griffith in turn signalled his acquisition of a position of executive influence by vetoing the issue of deeds of grant—already signed by the Governor and impressed with the Seal of the Colony—for several groups of selections on Darling Downs runs aggregating a large area, which were regarded as having been acquired by dummying. This action led to protracted legal proceedings by the holders of the land, who sought to compel the Government to issue the grants, and the incident was only terminated years later by the singular circumstance of a subordinate official in the Lands Department in Brisbane hand-

ing the whole of the deeds, which were in his custody, to a solicitor for the applicants, by an inadvertence. By several reconstructions and changes in the constitution of the Cabinet, first Mr. George Thorn, junr., and then Mr. John Douglas succeeded to the Premiership. Mr. McIlwraith meanwhile gradually shifted from the Government cross-benches, where he had seated himself on resigning his portfolio, to the front Opposition benches, and eventually dominating his new associates became the recognised leader of the Opposition. On the fall of the Douglas Government he succeeded to the Premiership, and found his opportunity for putting into practice the projects which he had been revolving in his mind. In Mr. Griffith, as leader of the Opposition, the new Premier had a foeman worthy of his steel, and until 1883, when a general election resulted in the disappearance of Mr. McIlwraith's majority, the contests in Parliament were regarding subjects of large interest involving important principles, and were conducted on a high level of ability. Mr. McIlwraith revived his scheme for a land-grant railway to the Gulf of Carpentaria, and the matter progressed so far that he carried through Parliament an Act empowering Government to enter into preliminary contracts with parties willing to undertake railway constructions on the land-grant principle, subject, however, to confirmation of the terms by Parliament. In pursuance of this law, arrangements were made for the Carpentarian line, and Major-General Feilding, on behalf of British capitalists, came to Queensland and with a numerous entourage traversed and inspected the proposed route.

State railways had by this time been constructed and extended or authorised from Ipswich to Brisbane, and to Warwick on the Southern Downs, westerly to Roma on the Maranoa, and from Rockhampton to the Comet River. In 1887 further extensions and new lines were authorised as follow: Extensions—Warwick to Stanthorpe, and from the Comet to Emerald; New Lines—Maryborough to Gympie, Townsville towards Charters Towers, and Bundaberg towards Mount Perry. Great quantities of steel rails being required for these constructions, Mr. McIlwraith entered into a contract for the purchase of same. He also provisionally signed in London a contract for a mail and immigrant passenger service from London *via* Suez and Torres Straits to Brisbane, with the British-India Company. Both these contracts were challenged by the Opposition as having been arranged in terms disadvantageous to the Colony. The steel rails contract especially was the subject of a fierce contention; Mr. McIlwraith being charged with having contrived to assist connections of his own in London to pocket an undue profit. By a party vote the Premier was exonerated.

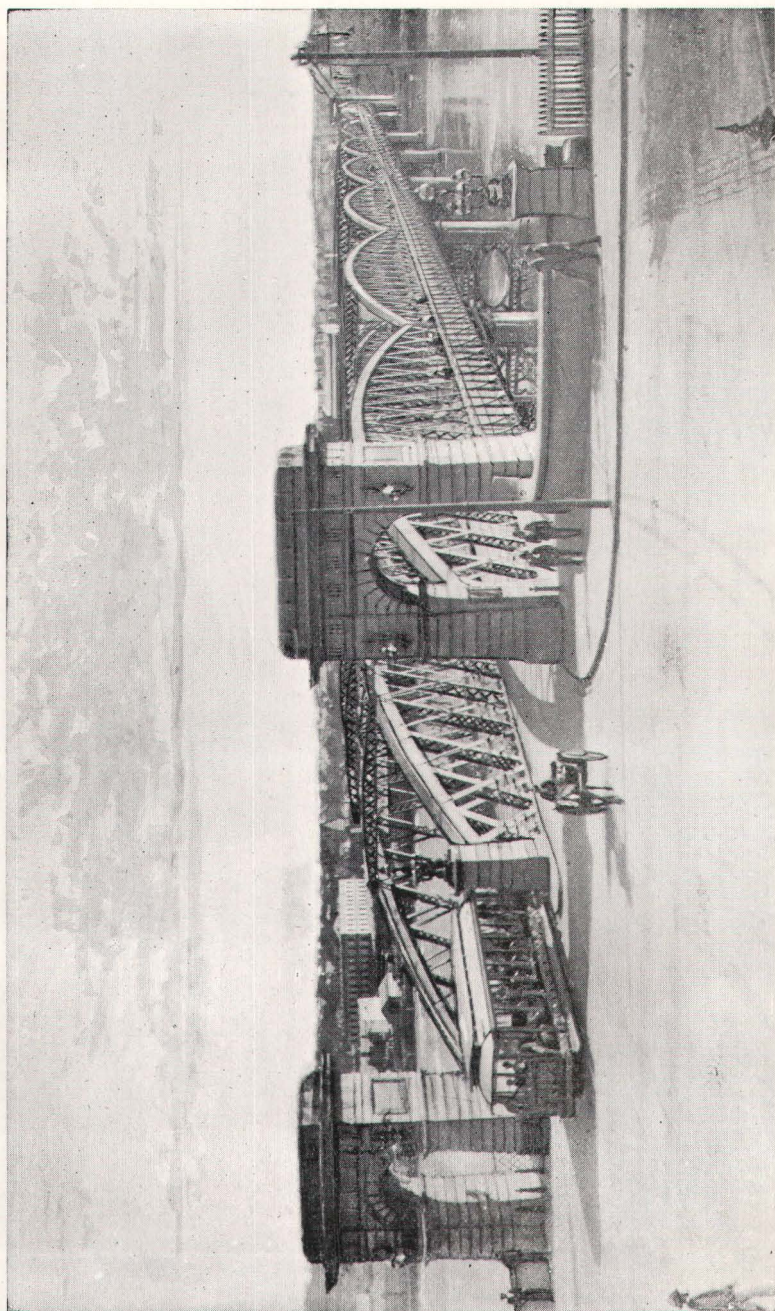
In the year 1879, the principle of relieving the Cabinet from the harassing duty of apportioning the expenditure on minor public works among different localities was embodied in a Divisional Boards Act, which, modified by subsequent amending legislation, continues to operate beneficially. The requirements of the various portions of the Colony respecting such works as roads, bridges, drainage, &c., are thus provided for by local taxation supplemented from the consolidated revenue, the expenditure being controlled by elected local authorities. There was in fact no lack of useful measures during Mr. McIlwraith's term of office, which was also signalised by his masterful exploit in having the British flag hoisted in New Guinea and formally pro-

claiming the annexation of the unappropriated southern portion of that island. Lord Derby, Colonial Secretary, was affronted by such a trespass on his functions, and repudiated the annexation—an error of pettishness of which Germany at once took advantage to appropriate half the territory affected. Sir Thomas McIlwraith, however, was applauded by Queenslanders for his foresight and energy; but by the year 1883 his popularity had been so worn away by the attrition of these contentions that the general election enabled Mr. Griffith immediately on the meeting of the new Parliament to oust the Government by defeating their nominee for the Speakership. The downfall of the Ministry had doubtless been helped by the unprosperous condition of the Colony, due to a prolonged drought, and an impending deficit in the annual balance-sheet. The Griffith Administration had to face the thankless task of restoring financial equilibrium by resorting to fresh taxation. The existing *ad valorem* duties were increased from 5 to  $7\frac{1}{2}$  per cent. with some exemptions; succession duties were imposed, and a Protectionist flavour was imparted to the country's policy by the introduction of a resolution, since partly acted upon, to encourage local industries by ordering all locomotive engines and iron bridgework from local manufacturers. The Ministry also took a new departure in Land legislation. Up to this time the purport of the land laws had been only to withdraw lands from pastoral lease when required for closer settlement under a freehold tenure. The Land Act of 1884 invaded the squattages beyond the old settled districts, and resuming half of the leaseholds in certain localities, made them available for selection, in particular areas as agricultural farms up to two square miles in extent, the fee-simple of which could be acquired by easy instalments of a total price of 15s. per acre, and in grazing farms not less in extent than four square miles and not greater than 20,000 acres. This Act formed the basis of subsequent legislation still in force, the principles being preserved and the details modified.

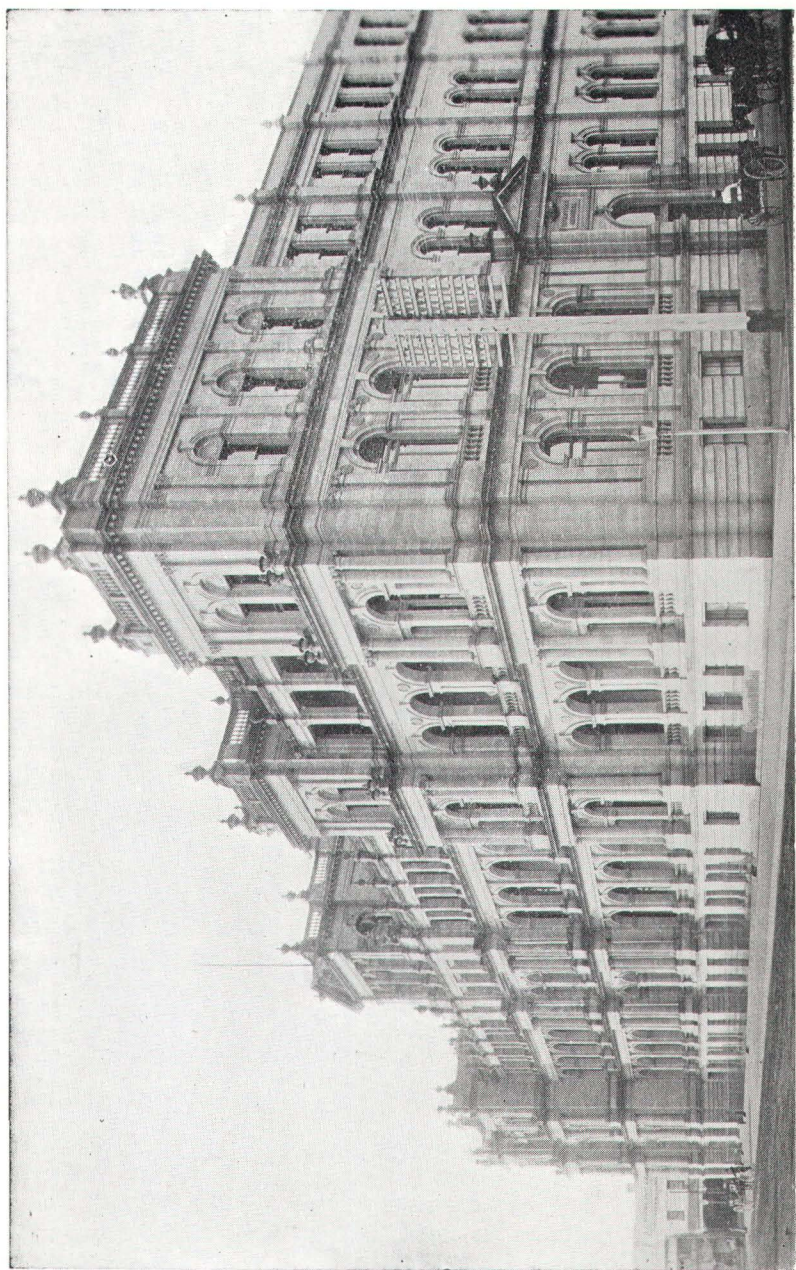
In 1888, Mr. Griffith had, in turn, exhausted his popularity. His great rival, now Sir Thomas, had for a period withdrawn from active politics, but emerging at the general election, and heading what was styled a National party, he swept the polls and wrested the Premiership from the hands of his opponent. But the health and vigour of Sir Thomas were impaired. He emitted indeed occasional flashes of his former fire, as when he defied the British Colonial Secretary to send as Governor to Queensland the ex-repression magistrate Blake of Irish Coercion-Act notoriety. But the travail of office fatigued him. He handed over the Premiership to Mr. B. D. Morehead, and sought recuperation of his health in voyaging to China and Japan. Mr. Morehead had a troubled experience. A universal strike of shearers, accompanied by burnings of woolsheds, and encampments of armed men, forced upon him the necessity of imposing what was almost equivalent to martial law, enforced by the presence of quasi-military forces upon the disturbed districts. His Ministry was not strong in its *personnel*, nor interiorly harmonious, and when Sir Thomas McIlwraith, on his return, took a position on the Opposition cross-benches, with Sir Samuel Griffith leading against the Government, its fall was only deferred until the two Knights could find a way of accommodating their own old antagonism. This event was duly accomplished. The necessity for making provision for another deficit furnished the occa-

sion sought. Sir Samuel moved and carried a vote of want of confidence, and a Coalition Ministry was formed, he being Chief Secretary and Sir Thomas McIlwraith Treasurer.

The alliance between these two recognised chiefs of the old political parties in the Colony, each carrying with him a personal following, disjointed and disorganised politics. Both sides had lost their rallying cries. The Coalition Government carried railway proposals on the land-grant system, authorising the Government to receive offers for eleven railways. Some legislation favourable to partial autonomy of three separate provinces into which the Colony was to be divided was debated, but has now lost interest since Federation. Sir Thomas McIlwraith again went on his travels to Eastern Asia, and during his absence on the retirement of the late Sir Charles Lilley from the Chief Justiceship Sir Samuel resigned the Premiership and mounted the Supreme Court Bench. Sir Hugh Nelson was sent for by the Governor, but advised His Excellency to await the return of Sir Thomas, who on arrival undertook to form a new Government, in which Sir Hugh was included. After a few months, however, Sir Thomas felt himself unequal to the labour of the Premiership, and, resigning, the position devolved upon Sir Hugh Nelson. Sir Thomas shortly afterwards quitted the Colony. His vitality slowly ebbed, and he died in London. Sir Hugh Nelson did not long hold the Premiership. On the decease of the late Sir Arthur Palmer, who had succeeded Sir Joshua Peter Bell as President of the Legislative Council, Sir Hugh took that position, and in his stead Mr. T. J. Byrnes, a colleague, was entrusted with the reins of Government. Much was anticipated from the talents of this gentleman, but before he could impress his mark upon the annals of the Colony death claimed him, at the early age of 37 years. To him in turn succeeded Mr. James R. Dickson, whose term of office was notable for the enthusiasm with which he threw the Ministerial influence into the cause of Australian Federation. The struggle between the advocates and opponents of this policy was carried on with intense vigour. The metropolitan morning paper, the *Brisbane Courier*, earnestly advocated it. Opposition equally earnest was waged by the evening paper, the *Telegraph*. The result was that on a referendum vote cast by the whole Colony, voting as one electorate, the metropolitan area rejected Federation, but its negative majority was overborne by the aggregate vote of country places, especially in the North. Dissensions in the Cabinet compelled Mr. Dickson to tender his resignation as Premier to the Governor. The disorganisation of the old parties consequent on the partial fusion effected by the coalition between Sir Thomas McIlwraith and Sir Samuel Griffith had brought about a curious condition on the Opposition benches. Shortly after the great shearing strike the organisations among the working classes had assumed political form, and a determination had been arrived at to secure direct representation in Parliament by such men only as would subscribe a political programme framed by deputies from the various Labour leagues and crafts. This scheme worked so far successfully that members of the former popular or Liberal party, who declined to be bound by a rigid ready-made programme, found their former support in the electorates transferred to candidates endorsed by the new organisation. General elections reduced their numbers and substituted for some, Labour members, till the number of the latter on the Opposition side of the House of Assembly



VICTORIA BRIDGE, BRISBANE.



TREASURY BUILDINGS, BRISBANE.

outnumbered that of the old Liberals. As a necessary consequence, the leader of the Labour members became leader of the Opposition. When Mr. Dickson resigned the Premiership, the Governor, in accordance with constitutional usage, sent for the leader of the Opposition, Mr. Andrew Dawson, who was also leader of the Labour members. Mr. Dawson, after some abortive negotiations with members of both Chambers not belonging to his own organisations, formed a Ministry of Labour members exclusively, and formally assumed office. He was, however, on the Assembly meeting after the customary adjournment, assailed with a direct motion of no-confidence, moved by Mr. Philp. The motion was carried by a crushing majority, and the mover being "sent for" formed an Administration which, a few days later, was joined by Mr. Dickson. The chief interest in the conduct of affairs by the Philp Government has been its inclusion in the Ministerial measures of several Bills to confer authority upon private companies to construct lines of railway or tramway from mines owned by the latter to convey their products towards the seaboard. These concessions the Labour Opposition resisted with the utmost determination, availing themselves of the rules governing debate so effectively that the Government, in order to secure effect to the will of the majority, introduced and carried additional rules of a drastic sort, which, being unflinchingly put into practice, effectually frustrated the tactics of the Opposition, and secured the passage of such of the Railway Bills as the Government did not, owing to extraneous happenings, withdraw.

Another proceeding which will render the Philp Administration memorable was the decisive fashion in which the Premier tendered military assistance to Great Britain in the war in South Africa. Five contingents were despatched in rapid succession, as the difficulties experienced by the British regulars in dealing with the determined Dutch colonists of the Transvaal and Orange Free State became increasingly apparent. The participation of Queenslanders in this war was not approved by the leaders of the Labour Opposition, but the party was not unanimous, and among the electors there appeared too general a consensus of opinion favourable to the Ministerial action to encourage any very determined resistance in Parliament.

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### CONSTITUTION AND GOVERNMENT.

Prior to Separation, what is now Queensland shared with New South Wales, as a component of that Colony, the advantages of representative government. On the 10th December, 1859, when this Colony was proclaimed, a form of government of a like nature was established, based on similar lines to that obtaining in the Mother Colony. It consists of three Estates, the Crown and two Houses of Parliament, called the Legislative Council and the Legislative Assembly respectively. Since the foundation of the Colony there have been thirteen Parliaments. Parliaments were originally elected for five years, but are now triennial. The first Parliament opened on the 29th May, 1860, and the last on the 16th May, 1899.

THE CROWN is represented by a Governor who has personally the power of assenting to or vetoing Bills, except with respect to such as deal with a limited number of subjects, and which are duly specified in

the Letters Patent of appointment, whilst the general administration of the Government is vested in the Governor in Council. The first Governor of Queensland was Sir G. F. Bowen, and the present Governor is Lord Lamington, who vacates office, however, at the termination of his leave. The Government is being administered by the Lieutenant-Governor, the Right Honourable Sir Samuel W. Griffith, P.C., G.C.M.G. The salary of the Governor is £5,000 per annum.

THE LEGISLATIVE COUNCIL consists of about forty members, who are nominated for life by the Governor in Council. The members are unpaid. The present President is the Right Honourable Sir Hugh M. Nelson, P.C., K.C.M.G., D.C.L.; salary, £1,000 per annum.

THE LEGISLATIVE ASSEMBLY consists of seventy-two members, representing sixty-one electorates, eleven returning two members, the remainder being single electorates. The members receive £300 per annum each for their services. The Speaker is Arthur Morgan, Esquire, M.L.A. for Warwick. The salary attached to the office of Speaker is £1,000 per annum. The suffrage is practically male adult, but not one man one vote, as representation is accorded to certain property rights.

THE ADMINISTRATION is carried on by the Governor with the advice of an Executive Council consisting of eight salaried members and two members without portfolio. The Premier is usually, but not invariably, also the Vice-President of the Executive Council. The portfolios at present are—the Chief Secretary and the Secretary for Mines (Vice-President of Executive Council), the Attorney-General, the Home Secretary, the Secretary for Agriculture, the Postmaster-General, the Secretary for Public Instruction, the Secretary for Public Lands, the Secretary for Railways, and the Secretary for Public Works. The salary of Ministers is £1,000 per annum. The Vice-President of the Executive Council also receives £300 per annum.

LOCAL GOVERNMENT.—The carrying out of public works of a municipal or parochial character such as water supply, roads, bridges, sanitation, &c., is provided for by special and elaborate legislation, by which municipalities, shires, and divisional boards have been established. These now number respectively, 30, 6, and 120, and together embrace the whole of the mainland of the State. Aldermen, councillors, and members are elected by the ratepayers, and with the aid of executive officers undertake the supervision and control of all necessary constructions and improvements within their local authority.

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### LOCAL GOVERNMENT.

For purposes of local self-government the whole of Queensland is divided into the following forms of local authorities :—Municipal boroughs, municipal shires, divisions.

Of the municipal boroughs there are 30, which aggregate ratable property to the total value of £13,039,889, the total amount of whose rates levied for 1900 amounted to £130,802, whose total assets were valued at £1,104,299, and whose total liabilities represented £805,215. The total number of inhabitants according to the census of 1901 was 175,279 persons, and the amount of whose indebtedness per capita was equal to £4 11s. 11d.

Of municipal shires there are 6 whose aggregate ratable property was valued at £1,547,102, the total amount of whose rates levied for 1900 amounted £14,763, whose total assets were valued at £15,747, and whose total liabilities represented £30,488. The total number of inhabitants, according to the last census, amounted to 29,592 persons, and the indebtedness per capita was equal to £1 0s. 7d.

Of divisional boards there are 120, whose aggregate ratable property was valued at £28,135,052, and who levied rates in 1900 amounting to £129,717, whose total liabilities amounted to £343,572, whose total assets were valued at £328,544. The population of these divisions at the census of 1901 amounted to 296,639 persons, and the amount of public indebtedness per capita was equal to £1 3s. 2d.

Fourteen of the towns of the State have waterworks of sufficient magnitude to require a considerable outlay of capital upon them, of which 5 are artesian, 7 are dependent upon pumping, and 2 are both gravitation and pumping. Upon the various systems in use an amount of £1,096,716 had been expended up to 31st December, 1900. The total balance of outstanding loans from the Government on that date was £794,318, and the value of the assets amounted to £981,033. The amount of annual income for 1900 was £111,166.

The fact of being a payer of rates entitles any adult to vote at all elections of the municipality, shire, or division, to whose revenue he or she contributes, provided that such rates are not in arrears, and also qualifies any male adult for election as alderman, councillor, or member.

All rates are levied on the unimproved value of the land, which alone forms the basis of local taxation. Property carrying buildings worth thousands of pounds pays the same rate of taxes as the vacant land near them. This is intended as a protection to owners who utilise their properties against others who only hold for speculative purposes.

A Government endowment is paid on the amount of rates collected, which in 1900 amounted to £107,893.

The State government is now relieved to a very great extent of the carrying out of public works, roads, bridges, &c., and is only charged with the maintainance of those of a public as distinguished from a parochial character.

Loans are granted to municipal and other local bodies for the construction of works of a permanent character, interest being charged at the rate of 4 per cent.

In addition to the rate of interest payable, a further annual payment is made to provide a sinking fund for the extinction of the loan at a period regulated according to the character of the work for which the loan is obtained.

The State Legislature is now divested of many of the matters of purely local concern with which it formerly had to deal, whilst local authorities have to show their ability to pay the interest on proposed works before they can obtain the money necessary for their construction. This latter provision forms a wholesome check on the tendency of some bodies towards a lavish, or as it may be called by them, a spirited works policy.

Local authorities, when desirous of obtaining loans, have to advertise their intention to borrow, stating the amount of the proposed loan, and the purpose or purposes for which it is required, and a provision is made in the Local Government Act by which the proposal can be negatived, if the ratepayers do not approve of it.

If not negated by the ratepayers of the municipality, shire, or division, application is made to the Government for the amount required and full information submitted as to the nature of the works, character of construction, plans, &c., and the ability of the applicant to meet the interest and charges.

This procedure ensures proper care and caution in incurring expenditure, and ensures the local wants being met by local taxation, and as the governing bodies are composed of the residents of each district, who are familiar with the locality and its requirements, and are in most cases owners of property themselves, every inducement exists for careful supervision and economical administration.

The accounts of these bodies are audited by the Government auditors as well as by the auditors appointed under their own Act.

Name of Municipality.	Population— Census, 1901.	Estimated Capital Value of Rateable Property.	Amount of Rates Levied.	Taxation per Capita.
<i>Municipal Boroughs—</i>		£	£ s. d.	£ s. d.
Allora ... ..	1,086	56,299	468 12 8	0 8 8
Blackall ... ..	750	21,770	272 12 6	0 7 3
Bowen ... ..	1,130	62,917	512 9 7	0 9 1
Brisbane ... ..	28,953	5,842,283	36,213 13 10	1 5 0
Bundaberg ... ..	5,200	234,177	3,775 8 11	0 14 6
Cairns ... ..	3,557	278,404	4,174 19 10	1 3 6
Charleville ... ..	1,419	52,007	433 7 10	0 6 1
Charters Towers ... ..	5,523	261,644	4,876 3 0	0 17 8
Clermont ... ..	1,955	72,831	814 15 7	0 8 4
Cooktown ... ..	1,936	111,133	1,389 3 3	0 14 4
Croydon ... ..	1,672	89,595	1,306 11 11	0 15 8
Dalby ... ..	1,416	35,012	364 14 2	0 5 2
Gayndah ... ..	606	33,909	211 18 7	0 7 0
Gladstone ... ..	1,566	65,401	1,021 5 2	0 13 1
Goondiwindi ... ..	732	26,730	222 13 4	0 6 1
Gympie ... ..	11,959	259,410	4,522 8 11	0 7 7
Hughenden ... ..	1,672	36,604	457 11 0	0 5 6
Ipswich ... ..	8,637	251,373	3,472 16 6	0 8 1
Mackay ... ..	4,091	195,402	3,256 14 0	0 15 11
Maryborough ... ..	10,159	370,988	6,782 3 2	0 13 4
Mount Morgan ... ..	6,280	168,377	3,365 5 0	0 10 9
Normanton ... ..	838	30,810	383 2 6	0 9 2
North Rockhampton ... ..	2,865	155,932	1,624 5 10	0 11 4
Rockhampton ... ..	15,461	1,064,706	13,308 16 6	0 17 3
Roma ... ..	2,371	60,803	760 0 9	0 6 5
Sandgate ... ..	2,274	147,454	1,536 13 8	0 13 6
South Brisbane ... ..	25,481	1,422,637	19,078 15 7	0 15 0
Toowoomba ... ..	9,137	599,296	5,411 1 0	0 11 10
Townsville ... ..	12,717	874,744	9,161 18 4	0 14 5
Warwick ... ..	3,836	157,241	1,620 0 3	0 8 5
Total ... ..	175,279	13,039,889	130,802 3 2	0 14 11
<i>Municipal Shires—</i>				
Coorparoo ... ..	2,543	219,032	1,931 19 7	0 15 2
Drayton ... ..	1,032	100,899	420 8 3	0 8 2
Ithaca ... ..	13,333	522,700	5,444 15 10	0 8 2
Middle Ridge ... ..	1,142	62,916	262 4 0	0 4 7
Toowong ... ..	4,841	271,867	3,373 3 2	0 13 11
Windsor ... ..	6,701	369,688	3,330 8 8	0 9 11
Total ... ..	29,592	1,547,102	14,762 19 6	0 10 0
Grand Total ... ..	204,871	14,586,991	145,565 2 8	0 14 3

### Part III.

## POPULATION AND VITAL STATISTICS.

Just seventy-eight years ago, when first visited by the handful of men who commenced its subjugation, the territory that is now known as Queensland was a vast wilderness unoccupied, save in a most ineffective manner by a nomadic race, who, as compared with the extent of country over which they roamed, were insignificant in numbers, notwithstanding that the land possessed vast resources of natural wealth which needed only the hand of civilised man, acting like the touch of the magician, to be poured forth with unstinted liberality.

Queensland was originally peopled by a coloured race ethnologically considered to be a branch of the Papuan or Austral negro. As to the numbers inhabiting the country when first occupied by Europeans, differences of opinion have obtained, and no reliable data are available. It appears certain, however, that the country on the eastern coast and throughout the Cape York Peninsula was fairly populated. Here the water supply was reasonably reliable, and food obtained direct from Nature—unaided by any effort except for its procurement—was plentiful. Judging from the accounts of explorers, the interior would appear to have been more sparsely occupied.

The vices of the white man, only too readily adopted, coupled with increasing difficulties experienced in obtaining food, have, from the first settlement of the country, resulted in decreasing the numbers of a race of great interest to the ethnologist, and, as already is the case in the Southern colonies, the time is not distant in Queensland when the original population will have practically disappeared.

There has never been wanting from amongst their successors in the occupation of the country some who have endeavoured to do what was in their power to ameliorate the condition of a fast-expiring race. For many years such action was only of an isolated character, and only too frequently the treatment accorded to them by their dispossessors was far from creditable to the latter. Legislation and administration have now, however, been enlisted on their behalf, and provision is made for the future, which may retard, but cannot stay, the hand of fate.

Provision was made at the taking of the recent Census to enumerate such of them as were engaged in industrial pursuits or were located on the reserves established or endowed by the Government for their occupation. No steps were, or indeed could, be taken to record those leading a purely nomadic life.

The number returned by Census on the 31st March, 1901, as engaged in industrial pursuits, or as living in fixed abode, and who had abandoned the nomadic habits of the ordinary aboriginal, was 6,670, of whom 3,862 were males and 2,808 were females.

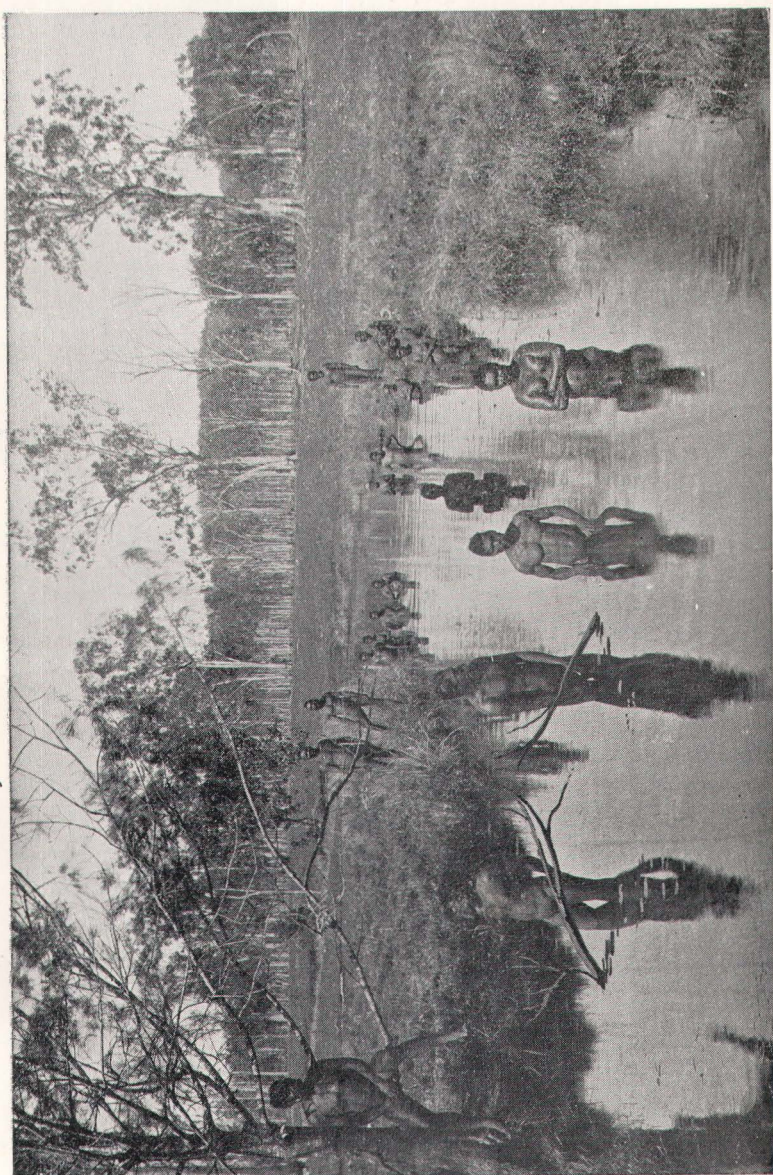
The two primary elements from which nations are evolved, and which are essential to civilisation and progress, are land and population.

Australia possessed vast quantities of virgin soil of a quality unexcelled for either agricultural or pastoral purposes, and charged with mineral wealth which is now known to have been prodigious, and the fringe only of which has as yet been touched.

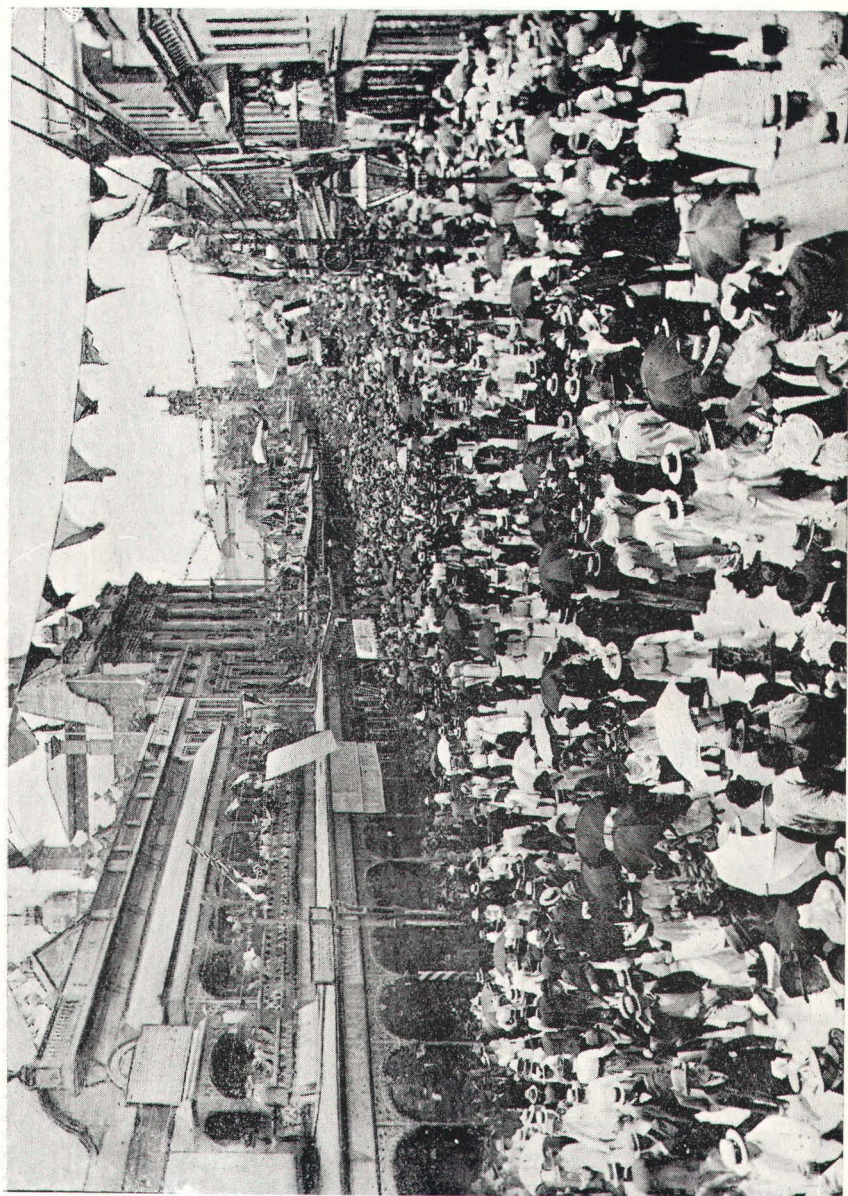
In the overcrowded countries of Europe, the average denizen becomes used to a condition of things under which man is frequently deemed the insignificant and land the important contributor to material prosperity. It is well nigh impossible for such an one to conceive of things as they obtain in Australia, and more especially in Queensland, where land rich in resource is available in abundance, and paucity of population alone retards its development. It is within the memory of persons now living that the civilised settlement of Queensland was commenced, so that fractional as is its present population—which at the recent Census was determined at some half-million souls—when compared with the vast areas included within the boundaries of the State, comprising as they do 427,838,080 acres, yet, all things considered, the progress of the State with respect to the expansion of its population has been as great as could be expected. Dependent for the bulk of the population increment upon the overflow from the densely-peopled countries of the old world, the State found itself brought into competition with the nearer and more accessible fields for colonisation offering in America and Africa. Intending colonists for the most part consisted of persons to whom the £10 to £20 per head required for a passage to Queensland was an entirely unattainable amount, consequently the State was compelled to provide the necessary outlay, and a sum of £3,232,750 has from first to last been expended from the public funds upon the introduction of colonists from Europe. It was, however, after a time found impossible, for financial reasons, to continue at the expense of the Government the extensive system of immigration that had been inaugurated. The accompanying illustrations afford a comparison of the two races, the past and present owners of Queensland: to the one it was a happy hunting-ground; to the other it presents possibilities of development into the home of a great nation.

Passing any further reference to its original inhabitants as not coming within the scope of "population" as intended by this article, the colony was first occupied in 1823, when a few soldiers and some convicts became its earliest denizens. For some time after this humble beginning but little advance was made, and eight years later (in 1831) the population was estimated at 1,241, of whom 1,066 were convicts. It was just twenty years after this that the first Census was taken, and, on the 1st March, 1851, the population was found to comprise 8,575 persons, 6,012 males and 2,563 females, and from this date the foundation of the colony may be considered as established. This is just fifty years ago, and in the intervening period between then and now the population has expanded fifty-eight fold. The 7th April, 1861, just one year three months and twenty-nine days after the proclamation of Queensland as a colony with representative Government, found her in possession of a population of 30,059 souls of whom 18,121 were males and 11,938 females.

For the next few years the increase of population was very rapid; State funds were freely employed to provide passages for those, who, wishing to escape the struggle for existence, induced by the surplus age of populations in the United Kingdom and on the Continent, sought to attain a wider scope for their energies by joining their fortunes with the dwellers in more favoured lands, and by the 1st January, 1864, or two years and nine months from the date of the previous Census, the population of the young colony had more than doubled.



ABORIGINAL QUEENSLAND.



MODERN QUEENSLAND.

Such a rapid rate of progress could not of course be maintained, without an expenditure beyond what the taxable resources of the colony would justify, but although the progress of population expansion was reduced, yet by the early months of 1868 its numbers exceeded 100,000, just one-fifth of its present number, and in 1871 or three years later a population of 120,104 persons was enumerated.

Information as to the results of each Census since Separation is contained in the following statement:—

Date of Census.	POPULATION.			CENTESIMAL RATIO OF—		
	Males.	Females.	Persons.	Increase since Previous Census.	Males to Persons.	Females to Persons.
1 April, 1861...	18,121	11,938	30,059	77·79	60·28	39·72
1 January, 1864...	37,425	24,042	61,467	104·49	60·89	39·11
2 March, 1868...	60,746	39,155	99,901	62·53	60·81	39·19
1 September, 1871...	71,767	48,337	120,104	20·22	59·75	40·25
1 May, 1876...	105,009	68,274	173,283	44·28	60·60	39·40
3 April, 1881...	125,325	88,200	213,525	23·22	58·69	41·31
1 May, 1886...	190,344	132,509	322,853	51·20	58·96	41·04
5 April, 1891...	223,779	169,939	393,718	21·95	56·84	43·16
31 March, 1901...	280,092	223,174	503,266	27·82	55·65	44·35

It would be natural to suppose, as has already been referred to, that such rapid population progression could not be secured by the natural processes of increment, but that much of it must be due to a surplus of immigration over emigration. During the forty-one years, from 1859 to 1900, no less than 873,146 persons were recorded (and the records of the earlier years are not quite complete) as landing in Queensland, of whom 623,030 were males and 250,116 females, the departures during the same period numbered 571,111—males, 419,980; females, 151,131; so that the accessions to the populations from this source were 203,050 males, 98,985 females, 302,035 persons.

The following table shows the actual and relative increase to the population for each of the past ten years, due both to excess of births over deaths, and to excess of arrivals over departures, and the proportion of each source of increase to the total increase:—

Year.	NATURAL INCREASE.				MIGRATION INCREASE.				Centesimal Ratio of Total Increase to the Population of the Previous Year.
	Excess of Births over Deaths.			Centesimal Proportion of Natural Increase to Total Increase.	Excess of Arrivals over Departures.			Centesimal Proportion of Migration Increase to Total Increase.	
	Males.	Females.	Persons.		Males.	Females.	Persons.		
1891	4,162	5,383	9,545.	85·87	1,122	448	1,570	14·13	*
1892	4,383	5,254	9,637	87·87	1,024	306	1,330	12·13	2·67
1893	3,773	4,926	8,699	79·07	2,055	248	2,303	20·93	2·61
1894	3,840	4,839	8,679	67·51	3,201	976	4,177	32·49	2·97
1895	4,367	5,355	9,722	63·15	3,959	1,714	5,673	36·85	3·45
1896	3,512	4,860	8,372	71·99	1,941	1,316	3,257	28·01	2·53
1897	3,794	5,096	8,890	71·00	2,965	666	3,631	29·00	2·65
1898	3,312	4,378	7,690	55·63	4,986	1,147	6,133	44·37	2·85
1899	3,185	4,570	7,755	55·07	4,657	1,669	6,326	44·93	2·82
1900	3,921	5,133	9,054	90·82	419	496	915	9·18	*

\* The estimated populations for 1891 and 1900 were based on the censuses of 1891 and 1901, and showed a decrease on the estimated populations for the preceding years.

The very small excess of arrivals in 1900 was due to the departures being swelled by the military contingents sent to South Africa, and to the fact that a number of persons left the colony during the latter weeks of the year to be present at Federation celebrations in the Southern States.

Although the population of the State has reached its present number mainly from an excess of arrivals from abroad, yet this very fact brought about a large natural increase. Those who most readily found the energy to break away from old ties to seek a new life in a distant, and to them at least, an uncivilised shore, consisted for the most part of the virile and the young, and as a natural consequence the birth rate was for a number of years an exceptionally high one, and as, owing partly to the exceedingly healthy character of the climate, the death rate was also very low, the natural increase—that is, the addition to the population due to an excess of births over deaths—has not been an unimportant element in causing the rapid increase in population, and 210,141 persons (87,280 males and 122,861 females) have been added thereto from this source during the 41 years from 1859 to 1900. The births during that period have numbered 186,891 males, 178,497 females, and 365,388 persons, and the deaths 99,611 males, 55,636 females, and 155,247 persons.

It was the intention of the Legislature that the population of the State should be enumerated quinquennially, and the better to secure the automatic carrying out of the idea without the necessity for periodical legislation, in 1875 an Act was passed (39 Victoria No. 2) providing that a Census should be taken every five years. For reasons of economy the Census which, according to the provisions of this statute, should have been taken in 1896 was, by special enactment, postponed. It is therefore after a lapse of ten years that the Census of 1901 has been taken. The date determined upon was the night of Sunday, the 31st of March, the same as that selected by the Imperial Parliament, as it was deemed desirable that the Census should be taken simultaneously throughout the Empire. For several reasons the date was not a happy one, as the Easter holidays fell so close to that date, and much difficulty and inconvenience was occasioned in consequence of the movement of persons to the seaside and other holiday resorts, and a considerable amount of recording of persons out of their usual habitat resulted. This objection was common to all parts of the Empire, but in addition in Queensland (more especially in the north of the State) climatic conditions are always uncertain about March, and severe floods are not infrequently experienced at that period of the year. In the western portions of the State, however, the severe and prolonged drought that there obtained necessitated a considerably increased expenditure, but did not impair, appreciably at least, the accuracy of the work.

The final results of the Census just concluded are not yet available for all the States, but the figures published show that the population of Australasia numbered 4,554,188 persons, viz., 2,388,885 males, and 2,165,303 females, and of the Commonwealth of Australia 3,781,469 persons, comprising 1,982,893 males and 1,798,576 females. There may in one or two instances be slight revision of numbers, but the alterations will not be of a magnitude to materially affect the results.

Particulars for each State of the Federation and for New Zealand were as follow :—

State or Colony.	POPULATION—CENSUS, 1901.				
	Males.	Females.	Persons.	Centesimal Proportion to Total Population.	
				Males.	Females.
Queensland ... ..	280,092	223,174	503,266	55·65	44·35
New South Wales ... ..	712,456	646,677	1,359,133	52·42	47·58
Victoria* ... ..	604,205	597,233	1,201,438	52·07	47·93
South Australia ... ..	184,422	178,182	362,604	50·86	49·14
Western Australia* ... ..	112,094	70,459	182,553	61·40	38·60
Tasmania ... ..	89,624	82,851	172,475	51·96	48·04
Total, Federation ... ..	1,982,893	1,798,576	3,781,469	52·44	47·56
New Zealand ... ..	405,992	366,727	772,719	52·54	47·46
Total, Australasia ... ..	2,388,885	2,165,303	4,554,188	52·45	47·55

\* Subject to slight revision. When going to press final figures were not available.

#### DENSITY.

The area of the State is 668,497 square miles ; so that taking 1860, the year after the separation of Queensland from New South Wales, as a starting point, the then population of 28,056 persons occupied an area nearly twelve times as great as that of England and Wales, giving a density of 0·04 persons to each square mile, or 15,249 acres to each individual of the population. When, on the other hand, it is remembered that the population density of England and Wales is 521 persons to each square mile, and that the natural resources of Queensland are possibly equal acre for acre to those of Britain, it will be readily seen what enormous capabilities for the absorption of population this State possesses. Since 1860, it is true, as previously pointed out, that the population has increased some eighteenfold ; but this is but as a drop in the ocean, and at the Census taken on the 31st March, 1901, the population density still stood at 0·75 per square mile.

#### DWELLINGS.

To the historic castles or seats of England's nobility there are, of course, no parallels in Queensland, and persons accustomed to the palatial mansions of the wealthy in Great Britain as represented, either by their country houses or by their town residences, cannot reasonably expect to find many of the dwellings of Queensland to compare with these, although here and there are to be met with in the suburbs of the larger towns, or on the large freehold pastoral holdings, homes of stone or brick that would rank as handsome structures anywhere, and do no discredit to any country.

The brick villas, of what are termed the middle classes of the old country, are perhaps but poorly represented on the score of appearance or stability by the wooden dwellings of their *confrères* in Queensland, but the latter are better suited to the climate—their spacious verandas,

so conspicuously wanting in their British prototypes, are alone sufficient to weigh the scale in their favour during the prolonged summer season of sunny Queensland; whilst he must be prejudiced, indeed, who will not give the palm to the comfortable and healthy wooden cottages of the artisan and the labourer, which, usually detached and raised above the ground, avoid some of the worst evils of the dwelling of the same class as found in the small towns and villages of the old land.

The overcrowding of dwellings, which obtains to so great an extent in the United Kingdom, exists but slightly, as might be expected in a country where land is plentiful; and the dwellings, for the most part constructed of wood, are not very costly. At the Census of 1901 there were throughout the State 98,940 inhabited dwellings, the average number of persons to each inhabited dwelling being 5.09. The various materials of which the 98,940 inhabited dwellings of the State were comprised, and the number of each were—Stone, 300; brick, 2,248; wood, 77,419; metal, 6,215; other, 12,758.

Those recorded as built of metal were chiefly constructed of galvanised iron, and would principally consist of dwellings on newly-discovered goldfields and other centres of population only recently formed. "Other" would comprise a large number of tents occupied by prospectors, navvies, roadmakers, drovers, &c.

In addition to the dwellings, thus briefly referred to, in Brisbane and other important towns of the State are to be found many handsome stone or brick structures occupied as warehouses and shops, not to mention a number of fine places of worship and buildings occupied as public institutions, including those the property of the State, and used by the various Government Departments.

#### URBAN POPULATION.

The tendency of population to gravitate to fixed centres is a problem occupying much thought in the present day, and its solution is one of grave importance to Queensland, although, perhaps, in a less degree than in some other countries. Get the people on to the land is the cry, but how to do it is the question. At the first Census after Separation the urban and the rural population formed 51 and 49 per cent. of the total population respectively. Seven years later—viz., in 1868—the population in the meantime having been augmented by numerous arrivals from the United Kingdom and Germany, the rural population increased relatively by 11 per cent. From that time onward the proportions have exhibited considerable fluctuations, but the general trend has been in the direction of a decline in the proportion of the rural population. The ratios for 1891 were 58.32 urban and 41.68 rural, and for 1901 the figures are not yet available.

A comprehensive system of local government with respect to matters of a parochial nature obtains.

In 1901 there were 30 municipalities and 6 shires, with populations of 175,279 and 29,592, respectively.

The population at the Census of 1901 in each of the municipal boroughs and municipal shires of the State of Queensland was as follows:—

Name of Municipality.	POPULATION—CENSUS OF 1901.			Name of Municipality.	POPULATION—CENSUS OF 1901.		
	Males.	Females	Persons.		Males.	Females	Persons.
Allora ... ..	557	529	1,086	Normanton ... ..	469	369	838
Blackall ... ..	397	353	750	North Rockhampton	1,491	1,374	2,865
Bowen ... ..	567	563	1,130	Rockhampton ... ..	7,604	7,857	15,461
Brisbane ... ..	14,644	14,309	28,953	Roma ... ..	1,207	1,164	2,371
Bundaberg ... ..	2,662	2,538	5,200	Sandgate ... ..	986	1,288	2,274
Cairns ... ..	2,264	1,293	3,557	South Brisbane ...	12,327	13,154	25,481
Charleville ... ..	735	684	1,419	Toowoomba ... ..	4,355	4,782	9,137
Charters Towers ...	2,897	2,626	5,523	Townsville ... ..	6,973	5,744	12,717
Clermont ... ..	1,017	938	1,955	Warwick ... ..	1,859	1,977	3,836
Cooktown ... ..	1,064	872	1,936				
Croydon ... ..	935	737	1,672	Total Municipalities	88,892	86,397	175,279
Dalby ... ..	650	766	1,416				
Gayndah ... ..	306	300	606	Name of Shire.			
Gladstone ... ..	827	739	1,566	Coorparoo ... ..	1,246	1,297	2,543
Goondiwindi ... ..	381	351	732	Drayton ... ..	541	491	1,032
Gympie ... ..	6,025	5,934	11,959	Ithaca ... ..	6,474	6,859	13,333
Hughenden ... ..	963	709	1,672	Middle Ridge ... ..	535	607	1,142
Ipswich ... ..	4,124	4,509	8,637	Toowong ... ..	2,276	2,565	4,841
Mackay ... ..	2,141	1,950	4,091	Windsor ... ..	3,224	3,477	6,701
Maryborough ... ..	5,121	5,038	10,159				
Mount Morgan ...	3,340	2,940	6,280	Total Shires ... ..	14,296	15,296	29,592

The local requirements with respect to roads, bridges, and public works of a like nature, within the boundaries of the municipalities and shires, are carried out under the direction of the aldermen and councillors elected for the purpose by the ratepayers. The needs of the rest of the State in this direction are provided for by the establishment of local authorities of a similar character designated divisional boards. These numbered 120 at the time of the last Census, and embraced a population of 296,639 persons.

#### POPULATION IN ELECTORATES.

Parliamentary representation is of a dual nature—Federal and State—the former (inasmuch as the Federal Senate is an elective body) involves two sets of electorates. For the purpose of this Senate, to which Queensland returns six senators, the whole State is one electorate, the electoral qualifications being practically one man one vote. The possible electors—that is, the adult males exclusive of ineligible—at the 1901 Census numbered 156,972, whilst the number of electors on the rolls at the Federal elections in 1901 numbered 97,739, or 62·27 per cent. of the former. The votes polled for all candidates numbered 288,160; of these, however, 3,371 were rejected as informal. For the Federal House of Representatives the State is divided into nine electorates of one member each, nine members being the representation allowed to Queensland. The qualification, and, consequently, the possible number of electors and the actual number of electors on the roll, were the same as with regard to the Senate. The votes recorded numbered 62,683, or 64·13 per cent. of the voters on the roll. Of these 1,602 were informal.

For the State Parliament, the Upper House, or Legislative Council, consists of nominee members, appointed by the Governor in Council for life. The Lower House, or Legislative Assembly, is, however, elective. There are seventy-two members, and the qualifications for a voter are: Full age of twenty-one years, British male subject, together with six months' residence; a further vote may also be had in any other electorate on the following property qualifications: Three

months' possession of a freehold of a clear value of £100, or of a leasehold of £10 annual value. The following table gives the present electorates, with information respecting their population, number of voters, &c., at the time of the Census of 1901:—

Electorate.	Population.	Adult Population.	Adult Male Population.	Adult Male Population (exclusive of those ineligible to become a Voter).	Votes on Roll.
Albert ... ..	7,433	3,606	2,145	2,053	1,534
Aubigny ... ..	7,904	3,642	2,177	2,170	1,532
Balonne ... ..	4,970	2,897	2,129	2,005	1,278
Barcoo ... ..	5,285	2,890	1,960	1,819	1,411
Bowen ... ..	5,132	3,174	2,357	1,296	862
Brisbane, North ... ..	13,494	8,382	4,505	4,355	3,074
South ... ..	18,355	9,634	4,693	4,337	3,457
Bulimba* ... ..	14,044	7,705	4,646	3,519	2,468
Bulloo ... ..	2,773	1,812	1,484	1,325	614
Bundaberg* ... ..	7,565	3,818	2,109	1,679	1,410
Bundamba ... ..	5,483	2,464	1,290	1,283	1,218
Burke ... ..	1,716	1,135	933	720	468
Burnett ... ..	7,166	3,488	2,241	2,146	1,503
Burrum ... ..	8,472	4,209	2,718	1,888	1,585
Cairns ... ..	8,568	5,821	4,580	2,101	1,335
Cambooya ... ..	7,631	3,555	2,135	2,108	1,587
Carnarvon ... ..	4,907	2,468	1,543	1,281	973
Carpentaria ... ..	2,538	1,533	1,161	872	513
Charters Towers ... ..	22,059	10,561	5,985	5,578	4,881
Clermont ... ..	5,727	3,413	2,539	2,398	1,501
Cook ... ..	10,058	6,539	5,186	1,711	896
Croydon ... ..	3,500	1,875	1,295	1,111	1,096
Cunningham ... ..	8,681	3,950	2,310	2,250	1,767
Dalby ... ..	4,500	2,289	1,356	1,286	1,074
Drayton and Toowoomba	14,108	7,309	3,513	3,168	3,121
Enoggera ... ..	7,431	3,647	1,737	1,678	1,356
Fassifern ... ..	6,289	2,681	1,447	1,410	1,303
Fassifern ... ..	10,485	5,107	3,128	3,041	2,329
Fitzroy ... ..	5,081	3,158	2,352	2,062	1,518
Flinders ... ..	18,604	9,852	4,615	4,517	3,390
Fortitude Valley ... ..	2,705	1,763	1,403	1,233	722
Gregory ... ..	14,319	6,478	3,362	3,318	3,126
Gympie ... ..	9,191	6,475	5,389	1,956	1,160
Herbert ... ..	11,540	5,683	2,766	2,610	2,147
Ipswich ... ..	5,995	3,432	2,523	2,274	900
Kennedy ... ..	4,852	2,574	1,780	1,691	803
Leichhardt ... ..	9,852	4,240	2,386	2,376	1,859
Lockyer ... ..	4,834	2,221	1,234	1,146	1,117
Logan ... ..	11,144	6,013	4,118	2,374	2,086
Mackay ... ..	6,034	2,933	1,685	1,612	1,472
Maranoa ... ..	11,731	5,420	2,690	2,631	2,289
Maryborough ... ..	5,301	3,047	2,193	2,035	1,486
Mitchell ... ..	8,692	4,087	2,364	2,216	1,857
Moreton ... ..	4,214	2,223	1,571	1,508	720
Murilla ... ..	7,829	4,270	3,073	1,718	1,266
Musgrave ... ..	3,957	2,036	1,361	1,290	747
Normanby ... ..	8,154	3,528	1,751	1,708	1,504
Nundah ... ..	7,947	4,327	2,204	1,546	1,373
Oxley ... ..	5,783	3,107	2,040	1,931	1,112
Port Curtis ... ..	15,461	7,728	3,911	3,621	2,845
Rockhampton ... ..	6,795	3,394	1,989	1,777	1,325
North ... ..	5,538	2,468	1,343	1,332	1,101
Rosewood ... ..	4,960	2,362	1,385	1,378	1,220
Stanley ... ..	13,108	6,500	3,194	3,061	2,031
Toombul ... ..	12,436	5,991	2,793	2,764	2,235
Toowoong ... ..	15,266	8,017	4,722	4,200	3,073
Townsville ... ..	4,004	2,231	1,565	1,448	1,025
Warrego ... ..	5,043	2,561	1,300	1,255	1,021
Warwick ... ..	6,221	3,050	2,028	1,928	1,445
Wide Bay ... ..	10,970	5,367	2,502	2,849	2,128
Woolloongabba ... ..	7,771	5,123	4,178	3,324	1,533
Woothakata ... ..					
Unrepresented (being persons on board vessels in Moreton Bay, Brisbane River, &c., not in any electorate) ...	502,415	261,303	156,972	132,897	99,982
	851	692	634	481	..
TOTAL ... ..	503,266	261,995	157,606	133,378	99,982

\* Includes 372 adult males, members Sixth Contingent, and Permanent Defence Force in camp.

## THE SEX PROPORTION OF THE POPULATION.

Out of the total population of 503,266 persons at the recent Census there were 280,092 males and 223,174 females, or centesimal proportions of 55.65 and 44.35 respectively. At the time of Separation the like proportions were 58.90 males and 41.10 females; the present figures therefore show a decrease or increase in the relative number of males and females respectively, of 3.25. Whilst State-aided immigration was at its height the greater number of males arriving in the State counterbalanced the excess of females in the natural increase, so that the disproportion of the sex continued. Since the cessation of assisted and free immigration, however, natural increase has had more sway, and the proportion of females in the population has increased.

## BIRTHPLACES.

The native-born population now comprises more than one-half of the total number, the proportion of persons of different nationalities as shown at the recent Census being—

	Number.	Ratio per 100.		Number.	Ratio per 100.
Queensland ...	289,531	57.53	Other British Possessions	3,371	0.67
Australasia (rest of) ...	40,613	8.07	Germany ...	13,163	2.62
England...	68,589	13.63	Other European Countries	7,935	1.58
Scotland...	19,934	3.96	Other Foreign Countries	22,171	4.40
Ireland ...	37,636	7.48	Birthplace not specified	323	0.06

The increase in the proportion of the population, which consists of those born in the State, has been very pronounced during recent years. The ratios of these at each Census since Separation were as follow:—1861, 20.64; 1864, 15.61; 1868, 23.25; 1871, 30.32; 1876, 33.92; 1881, 40.39; 1886, 38.43; 1891, 44.95; and 1901, 57.53.

The coloured aliens numbered 23,635, or 4.70 per cent. of the total population. The number and centesimal ratio borne by each of the component races were as follow:—

Race.	POPULATION—CENSUS, 1901.			
	Males.	Females.	Persons.	Centesimal Proportion to Total Population.
Chinese ...	8,783	530	9,313	1.85
Pacific Islanders ...	8,656	671	9,327	1.85
Japanese ...	2,115	154	2,269	0.45
Natives of India and Ceylon (coloured) ...	927	12	939	0.19
Other Asiatics ...	1,557	230	1,787	0.36
Total Coloured Asiatics ...	22,038	1,597	23,635	4.70
Aborigines, not including those living in camps or of migratory habits	3,862	2,808	6,670	1.32
Other Nationalities ...	254,192	218,769	472,961	93.98
TOTAL POPULATION ...	280,092	223,174	503,266	100.00

As only British subjects can hold land in fee-simple, a large number of aliens take out letters of naturalisation. Since 1884—the earliest date at which records are available—to the present time 6,368 foreign subjects have been naturalised. Of these 3,750 were Germans, 983 Danes, 455 Swedes, 234 Norwegians, and 127 were natives of Switzerland.

“Coloured alien” is a term taken to signify Pacific Islanders and coloured Asiatics. Of the 23,635 coloured aliens shown in the foregoing statement 9,327 were Pacific Islanders, 9,313 Chinese, 2,269 Japanese, and 2,726 people of other Asiatic race. These figures give proportions

to each 100 of the whole population of 1·85 Pacific Islanders, 1·85 Chinese, 0·45 Japanese, and 0·55 other Asiatics, leaving 93·98 per cent. who were practically of European extraction, and 1·32 per cent. aborigines.

#### AGES OF THE PEOPLE.

One of the most important questions with respect to statistics bearing upon population is that which relates to the ages of the people. Amongst the many purposes in dealing with which information on this head is imperative the following may be briefly mentioned:—Matters relating to the number of persons qualified to vote for parliamentary representation; the number of males available for military service; numbers affecting questions dealing with marriage; questions relating to actuarial computations respecting life assurances; the propounding of legislation dealing with social, commercial, and industrial relations; also in investigating many matters dealing with industrial progress, and many other points which involve the necessity of exact knowledge as to the age of the inhabitants.

At the Census of 1901 the number of males and females at the various ages quoted was:—

* AGE.	MALES.		FEMALES.	
	Not Married.	Married.	Not Married.	Married.
Under 1 year ... ..	6,606	...	6,398	...
1 to 5 years ... ..	25,020	...	24,602	...
5 to 15 " ... ..	61,710	...	60,150	...
15 to 18 " ... ..	14,637	2	14,298	138
18 to 21 " ... ..	14,379	127	11,604	1,582
21 to 30 " ... ..	34,657	9,573	17,643	17,986
30 to 45 " ... ..	27,793	35,859	7,016	33,911
45 to 60 " ... ..	12,363	19,003	4,432	14,047
60 and upwards ... ..	6,611	8,109	4,468	4,465

\* Adults whose age, or persons of an age to marry whose conjugal condition was not returned on the census schedules, are omitted from this table. The numbers would not be sufficient to affect calculations.

† Including children whose age was not stated.

The figures in the above statement are most comprehensive. From the first line may be approximately deduced the annual number of births in the State. By deducting the sum of the first two lines from five times the amount of the first line, the number of children born who die under five years of age is very closely arrived at. The third line gives the number of children of school age. The fourth to seventh lines inclusive supply, in the female columns, the number of women of child-bearing age who may be further divided as to connubial condition. In the male column of the statement, lines five to eight inclusive show, ignoring the few exemptions, the number of men available for military service; and, passing a trivial dislocation brought about by the regulations respecting widowers with children, &c., the numbers available for each class of the reserve, namely—

Class 1, 49,036; Class 2, 27,793; Class 3, 45,559; Class 4, 31,366.

The electoral qualification of Queensland is practically male adult suffrage, consequently the 6th to 9th lines inclusive give, in the male column, the number of possible voters, subject to a slight reduction on account of the few who, for certain causes, are disqualified by the statute; but these are probably more than counterbalanced, with respect to the number of possible voters, by the fact that the franchise

provides for plural voting on property qualifications. Information is also afforded as to the possible additions to the rolls that would result from the adoption of an adult franchise.

The populations of the Australian States have not yet reached a normal condition with respect to ages. Even at the present time migration is sufficient to seriously disturb the age condition, and in the past the same cause has worked much more extensively, and a considerable time must naturally elapse before the proportions of both young and old have attained to the position usually found in countries practically entirely dependent upon natural increase for population maintenance or increment.

Sweden has been accepted by statisticians as presenting an ideal condition in this respect, and the position of Queensland in the matter is shown as follows:—

Age Group.	CENTESIMAL PROPORTION NUMBER AT EACH AGE GROUP TO TOTAL POPULATION.			
	Sweden.	Queensland.		
		1901.	1881.	1861.
Under 1 year ... ..	2·55	2·60	3·34	4·30
1 to 20 years ... ..	39·80	43·79	44·11	38·71
20 to 40 „ ... ..	26·96	32·98	34·63	41·57
40 to 60 „ ... ..	19·23	15·88	15·53	14·20
60 and upwards ... ..	11·46	4·75	2·39	1·22
Total population ... ..	100·00	100·00	100·00	100·00

#### CONJUGAL CONDITION.

The Census Schedules provide for securing information as to the connubial condition of every person under the following heads:— Never married, married, widowed, and divorced. Of course, with regard to a certain number, no information is obtainable; consequently in tabulating, these are classed as unspecified. The number and proportion of each class at each of three Census enumerations were as follow:—

Conjugal Condition.	CENSUS, 1861.		CENSUS, 1881.		CENSUS, 1901.	
	Number.	Proportion per cent.	Number.	Proportion per cent.	Number.	Proportion per cent.
Never married ... ..	19,508	64·93	147,016	69·15	340,275	67·69
Married ... ..	9,891	32·92	60,246	28·33	145,081	28·86
Widowed ... ..	647	2·15	5,352	2·52	17,188	3·42
Divorced ... ..	*	*	*	*	145	0·03
	30,046	100·00	212,614	100·00	502,689	100·00
Unspecified ... ..	13	...	911	...	577	...
Totals ... ..	30,059	...	213,525	...	503,266	...

\* Not stated.

#### EDUCATION.

In but very few countries, if in any, has greater regard been had for education than in Queensland. One of the first Acts of the first Legislature of the Colony of Queensland was to provide a State system of primary education; facilities were at the same time afforded for the establishment of secondary schools. The administration was placed in the hands of a nominee board. The schools at this time numbered 41 and the scholars 1,890. In 1860 the adult population

comprised a large proportion of persons drawn from the labouring classes of the British Isles, where the education of the people was not then so well provided for as is now the case. Consequently, a considerable number were illiterate, about one out of each seven persons married being unable to sign their name, and of course with many more their educational qualifications were rudimentary in the extreme. In spite of this, or perhaps because of it, these parents were determined that better conditions should prevail for their children, and through their Parliamentary representatives provided for the disposal of large sums of money for the primary education of the young. During the fifteen succeeding years 1860-75, £434,966 was spent by the State in the advancement of education. It was now felt that education had assumed such prominence, and such large sums were being expended on it annually, that Ministerial responsibility should be attached to its administration. The Legislature, largely at the instance of Mr., now Sir S. W. Griffith, P.C., G.C.M.G., and the present Lieutenant-Governor of the State, passed "*The State Education Act of 1875*" (39 Vic., No. 11). By this measure a State Department for Public Instruction was established with a Minister at its head responsible to Parliament, Mr. Griffith holding the first portfolio in conjunction with that of Attorney-General; and primary education—free, secular, and, with certain reservations, compulsory—was provided for.

At the last Census (1901) the educational attainments of the people were returned as follow:—Able to read and write, males 204,866 or 73·14 per cent.; females 170,280, or 76·30 per cent.; able to read only, males 5,827 or 2·08 per cent.; and females 5,874 or 2·63 per cent.; unable even to read, males 68,452 or 24·44 per cent.; females 46,447 or 20·81 per cent.

As, however, children under five years of age numbered—males 31,626, females 31,000, the numbers and proportions of those who, being of an age to read, were yet unable to do so, is reduced to—males 36,826 or 13·15 per cent., and females 15,447 or 6·92 per cent.

#### ARRIVALS AND DEPARTURES.

The following table shows the arrivals into and the departures from the State by sea and by rail during each of the past ten years:—

Year.	ARRIVALS.			DEPARTURES.		
	Males.	Females.	Persons.	Males.	Females.	Persons.
1891 ... ..	19,536	8,546	28,082	18,414	8,098	26,512
1892 ... ..	16,391	7,220	23,611	15,367	6,914	22,281
1893 ... ..	15,771	6,236	22,007	13,716	5,988	19,704
1894 ... ..	17,749	7,498	25,247	14,548	6,522	21,070
1895 ... ..	20,694	9,372	30,066	16,735	7,658	24,393
1896 ... ..	18,765	8,958	27,723	16,824	7,642	24,466
1897 ... ..	20,536	8,574	29,110	17,571	7,908	25,479
1898 ... ..	23,999	10,244	34,243	19,013	9,097	28,110
1899 ... ..	27,751	12,165	39,916	23,094	10,496	33,590
1900 ... ..	25,053	11,295	36,348	24,634	10,799	35,433

#### VITAL STATISTICS.

During the earlier years of the occupation of Australia, when the whole Continent was comprised in but one Administration, and even later on when partition had taken place, but whilst the territory that

is now Queensland still formed a portion of the Colony of New South Wales, records with respect to certain social events were only to be found in the Register of Baptisms, Marriages, and Burials kept by Ministers of the various religious denominations. These, of course, did not cover the whole ground, nor has experience shown that such records so kept possess a degree of accuracy at all commensurate with the importance of the affairs they purport to chronicle. Australian experience proved no exception, and the exigencies of the case demanding a drastic remedy, it was found expedient to bring the registration of such events under the control of the State. At the latter end of 1855 a Statute was passed by the Legislature of New South Wales, designated "An Act for Registering Births, Deaths, and Marriages," which rendered compulsory, under penalty for default, the registration of all such taking place within the Colony. This Statute, inherited from the Mother Colony, has ever since been the law regulating such registrations in Queensland, except as to a slight modification under "*The Marriage Act of 1864*." The liability to register a birth rests primarily with the parent, and of a death with the tenant or occupier of the house or place where such death takes place. The former must be registered within 60 and the latter within 30 days. The maximum penalty for neglect is £10. A person burying a body, or performing a religious service at the burial of a body, must also give notice, under a like penalty for default. The onus of notifying a marriage to the registrar by "*The Marriage Act of 1864*" rests with the officiating Minister, who must do so within 30 days, or become liable to a fine of not less than £10 nor more than £50. Civil marriage is provided for—registrars and magistrates especially appointed for the purpose being empowered in that behalf.

#### BIRTHS.

All newly-occupied countries are naturally at first peopled largely by adults, consisting mostly of males, afterwards of adults of both sexes. This was the case with Queensland prior to Separation, and the introduction of large numbers of immigrants at the cost of the State retarded much change from this condition during the first fifteen or twenty years of the colony's existence as a self-governing country.

This state of things, especially the age condition of the people, led to the occurrence of an abnormal number of births compared to the population, and birth rates, ranging between 40 and 50 per 1,000, obtained from 1858 to 1874, but gradually declining during the later years of that period. The declining rate—disturbed by periodic fluctuations—continued until the very low birth rate for 1899 was reached; last year, however, witnessed a pronounced reaction, the births for 1900 exceeding those for 1899 by nearly 1,000. It has already been shown in a previous portion of this article that the age condition of the population of Queensland is more favourable to a high birth rate than is that of Sweden: it is therefore a matter for regret that the State in common with the rest of Australasia is faced with a declining birth rate, which points to a desire of the people to avoid the responsibilities of parentage.

There have been 368,187 births registered in Queensland since the inception of registration in 1857—namely, 188,306 males and 179,881 females. This gives a proportion of 95·53 females to each 100 males, or, read the other way, 104·68 males to each 100 females.

The number of births registered during each of the past ten years, the number and proportion to the total of each sex, and the birth rates, are furnished in the following table:—

Year.	BIRTHS.			CENTESIMAL RATIO OF EACH SEX TO TOTAL BIRTHS.		Birth Rate.
	Males.	Females.	Persons.	Males.	Females.	
1891 ... ..	7,506	7,209	14,715	51·01	48·99	36·4
1892 ... ..	7,738	7,165	14,903	51·92	48·08	35·8
1893 ... ..	7,356	7,038	14,394	51·10	48·90	33·7
1894 ... ..	7,207	6,770	13,977	51·56	48·44	31·9
1895 ... ..	7,604	7,270	14,874	51·12	48·88	32·8
1896 ... ..	7,086	6,931	14,017	50·55	49·45	30·1
1897 ... ..	7,277	7,036	14,313	50·84	49·16	29·9
1898 ... ..	7,083	6,850	13,933	50·84	49·16	28·3
1899 ... ..	7,128	6,771	13,899	51·28	48·72	27·3
1900 ... ..	7,599	7,202	14,801	51·34	48·66	30·2

The birth rate for 1900 was 3 per 1,000 of the population better than in 1899, when the proportion 27·3 was the lowest ever recorded, a very marked reduction in the number of births registered being experienced in that and the previous year. The rate for 1900 was, however, 6·2 per 1,000 below that of the year commencing the decade.

The birth rate of Queensland for 1900, however, compares most favourably with that of the other Colonies of Australasia, Western Australia being the only one which for that year showed a higher birth rate. The rate for the Commonwealth was 27·30, and for Australasia 27·02; New Zealand having the exceptionally low birth rate of 25·60, which was below that of all the other Colonies except South Australia, where it amounted to 25·58 only.

The following table gives particulars for each Colony for 1900:—

## BIRTHS, 1900.

Colony.	NUMBER.			CENTESIMAL RATIO BIRTHS EACH SEX TO TOTAL BIRTHS.		RATE.
	Males.	Females.	Persons.			
Queensland ... ..	7,599	7,202	14,801	51·34	48·66	30·19
New South Wales ...	18,964	18,182	37,146	51·05	48·95	27·43
Victoria ... ..	15,849	14,964	30,813	51·44	48·56	25·86
South Australia ...	4,660	4,517	9,177	50·78	49·22	25·58
Western Australia ...	2,789	2,665	5,454	51·14	48·86	30·73
Tasmania ... ..	2,494	2,370	4,864	51·27	48·73	28·15
Total Federation ...	52,355	49,900	102,255	51·20	48·80	27·30
New Zealand ... ..	10,107	9,439	19,546	51·71	48·29	25·60
Total Australasia ...	62,462	59,339	121,801	51·28	48·72	27·02

The total number of births registered throughout the Commonwealth last year was 102,255, of whom 52,355 were males and 49,900 were females, giving, with 19,546 recorded in New Zealand, 121,801 for the whole of Australasia.

In 1899 an Act was passed "Making Provision for the Legitimation of Children Born before Marriage on the subsequent Marriage of their

Parents." From the 1st January, 1900, to the 30th June, 1901, 50 children have been legitimated under this statute. The following are the particulars :—

Year.	1st Quarter.		2nd Quarter.		3rd Quarter.		4th Quarter.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1900 ... ..	1	1	4	6	4	4	7	5
1901 ... ..	6	1	4	7	12	8	*	*

\* Information not yet available.

The average number of illegitimate births has increased in recent years, and it is to be feared that the facilities afforded by the operation of the Orphanages Act, and which is largely availed of, whereby the cost of maintaining illegitimate offspring may be readily transferred from their parent to the State, does not tend to bring about a reduction in the degree of bastardy. The number of illegitimate births, and their proportion to each 100 total births of the last ten years, were as follow :—

#### ILLEGITIMATE BIRTHS, 1891-1900.

Year.	Males.	Females.	Persons.	Centesimal Ratio to Total Births.
1891 ... ..	333	351	684	4·65
1892 ... ..	403	349	752	5·05
1893 ... ..	380	335	715	4·91
1894 ... ..	359	273	632	4·52
1895 ... ..	340	393	733	4·93
1896 ... ..	344	388	732	5·22
1897 ... ..	441	421	862	6·02
1898 ... ..	442	399	841	6·04
1899 ... ..	407	423	830	5·97
1900 ... ..	496	452	948	6·40
Total .. ..	3,945	3,784	7,729	5·37

Thus, during the decade, the proportion of illegitimate births has increased from 4·65 in 1891 to 6·40 in 1900. The rate for the ten years was 5·37. The mean of the rate for the first five years of the decennium was 4·81, and for the last five years 5·93.

#### MARRIAGES.

At the separation of the Colony of Queensland the rite of marriage was celebrated under the authority of an Act of New South Wales framed in 1855, but in 1864 a Queensland Act was passed, the essence of which differs from the law obtaining in England, the authorisation of the celebrant of the marriage, and not of the building where celebrated, being the distinctive feature. All ministers of religion prior to celebrating a marriage are required to secure official registration: further provision is made by the appointment of registrars and of certain justices of the peace to perform a civil marriage. To guard against fraud, whilst none other than a person so registered or appointed can lawfully celebrate a marriage, and provision is made for severe penalties for wilful breach of the law, a marriage celebrated

by a person not legally authorised may yet be declared legal provided either party to the marriage *bonâ fide* believed that the celebrant was duly and properly authorised, but such celebrant would be liable to penalties.

The large relative number of adults contained in the population which as already shown conduced to a high birth rate, of course, also resulted in a proportionately large number of marriages, and for some years after the separation of the colony from New South Wales marriage rates of 10 to 15 per 1,000 of the population obtained. From then, following the increase in the ratios in the population of both the young and the old the marriage rate has gradually fallen to an average of rather over 6 per 1,000. The actual figures for the past five years being—1896, 6·1; 1897, 6·0; 1898, 6·0; 1899, 6·8; 1900, 6·9.

The total number of marriages registered, the marriage rate, together with the mean age at marriage of husbands and wives (five years) and bachelors and spinsters (five years) for each of the last ten years were as follow :—

Year.	Marriages.		Mean Age at Marriage.	
	Number.	Rate.	Males.	Females.
1891	2,905	7·1	* 27·86	* 23·60
1892	2,774	6·7	* 28·40	* 23·52
1893	2,524	5·9	* 28·38	* 23·61
1894	2,502	5·7	* 28·57	* 23·91
1895	2,821	6·2	* 28·70	* 23·81
1896	2,823	6·1	† 27·66	† 23·08
1897	2,894	6·0	† 27·57	† 22·95
1898	2,972	6·0	† 28·01	† 23·46
1899	3,449	6·8	† 27·69	† 23·24
1900	3,371	6·9	† 28·00	† 23·36

\* All marriages.

† First marriages.

The marriage rate for 1900 was about the same as for 1891, although considerable fluctuations took place during the intervening period. With respect to the mean age of persons married, particulars were formerly compiled for all marriages. As these contained a number of re-marriages, the results obviously failed to give the true mean age at marriage. For the past five years, however, this information is available, as the average ages at marriage of bachelors and spinsters have also been tabulated. In Queensland, evidently, the average age for men to marry is about twenty-eight and for women about five years younger.

There are a considerable number of persons who marry at an early age, and the proportion of these is increasing. Bridegrooms of 17 and brides of 14 are not unknown. Males under 21 and females under 17 comprise slightly over 2 per cent. of all persons married. The mean age at marriage is 29 for husbands and 24 for wives, if all marriages are included, but somewhat below these figures with respect to first marriages—i.e., counting marriages of bachelors and spinsters only. The ratios for these for the past five years were:—Bachelors, 1896—27·66, 1897—27·57, 1898—28·01, 1899—27·69, and 1900—28·00. Spinsters, 1896—23·08, 1897—22·95, 1898—23·46, 1899—23·24, and 1900—23·36.

Queensland compares somewhat unfavourably with the other States as regards marriage rate. This will be readily seen from the following table which furnishes particulars on this subject for 1900:—

Colony.	MARRIAGES.	
	Number.	Rate.
Queensland ... ..	3,371	6·88
New South Wales ... ..	9,996	7·38
Victoria ... ..	8,308	6·97
South Australia ... ..	2,313	6·45
Western Australia ... ..	1,781	10·03
Tasmania ... ..	1,332	7·71
Total Federation ... ..	27,101	7·24
New Zealand ... ..	5,860	7·67
Total Australasian ... ..	32,961	7·31

The rate for the Commonwealth was 7·24, which, as the rate for New Zealand was a high one (7·67), was raised to 7·31 for the whole of Australasia. The highest rate of all was in Western Australia—namely, 10·03, the age condition of the people there being calculated to bring about a relatively large number of marriages. Of all marriages registered about one-fourth are celebrated by ministers of the Church of England, one-fifth by ministers of the Roman Catholic Church, whilst ministers of the Methodist and of the Presbyterian Churches each celebrate about one-sixth; of the remaining thirteen-sixtieths, the Lutheran, the Baptist, and the Congregational Churches together, take seven, leaving six-sixtieths to civil marriages and other religious denominations.

About one-half of all persons now married each year were born in the colony, 18·7 per cent. were born in England, 7·1 per cent. in New South Wales, 7·4 per cent. in Ireland, 4·5 per cent. in Scotland, and 3·3 per cent. in Germany. These six countries of birth comprise 87·57 per cent. of all males married and 93·18 per cent. of all females married.

The average number of children to each family in Queensland lies between  $4\frac{1}{2}$  and 5. The actual figures, based on a comparison of the births with the marriages for each of the past ten years, were: 1891—4·39, 1892—4·87, 1893—4·93, 1894—5·29, 1895—5·65, 1896—4·71, 1897—4·76, 1898—4·52, 1899—4·40, and 1900—4·02.

The mean for the ten years was 4·75. According to Mulhall's "Dictionary of Statistics," the following are the figures for some of the countries of Europe:—England, 4·20; Scotland, 4·39; Ireland, 5·40; Germany, 4·39; Switzerland, 3·98; Denmark, 3·76; and France, 3·05. Queensland thus compares favourably with most of the countries named.

According to the returns for 1900, 3,111 or 92·29 per cent. married were bachelors, 253 or 7·50 per cent. widowers, and 7 or 0·21 were divorced. Of the women the like figures were 3,103 or 92·05 per cent. spinsters, 260 or 7·71 per cent. widows, and 8 or 0·24 per cent. were divorced.

Argument as to the degree of illiteracy of the people from the number of persons married who sign the register by mark has ceased to carry any significance, owing to the fact that practically all can at least read and write; only 2·17 per cent. of all persons married during 1900 placed their mark to the marriage registers, a proportion that would be further reduced were the marriages of coloured aliens excluded from the computation.

#### DEATHS.

The climate of Queensland is an exceptionally healthy one, and the death rate amongst young children is consequently low. The general death rate is also most favourable, especially when the hardships and risks which inevitably attend the avocations of the pioneer are taken into account, and to which so many of the adult males of the State are frequently exposed, and yet probably in no country in the world would the privations and exposure which of necessity so often attend the miner, the grazier, and the lumberer in Queensland, be accompanied by so little harmful consequences. That the first opening up of new country—the breaking of virgin soil—should induce a certain amount of malarial fever is to be expected; but, as a rule, with ordinary care, the attacks are not severe, and in a short time such localities assume the healthful character which exists in the localities longer in occupation.

There were 5,747 deaths recorded during 1900—3,678 males and 2,069 females. These figures give death rates to each 1,000 of the mean population of 11·72 persons—13·45 males and 9·54 females.

The following table furnishes information as to the number of deaths and the rate for each of the past ten years:—

DEATHS.								
Year.	NUMBER.			RATE OR PROPORTION PER 1,000 MEAN POPULATION.				
	Males.	Females.	Persons.	Males.	Females.	Persons.		
1891 ... ..	3,344	1,826	5,170	14·54	10·44	12·77		
1892 ... ..	3,355	1,911	5,266	14·26	10·58	12·66		
1893 ... ..	3,583	2,112	5,695	14·87	11·36	13·34		
1894 ... ..	3,367	1,931	5,298	13·61	10·09	12·08		
1895 ... ..	3,237	1,915	5,152	12·69	9·68	11·38		
1896 ... ..	3,574	2,071	5,645	13·65	10·13	12·10		
1897 ... ..	3,483	1,940	5,423	13·00	9·22	11·33		
1898 ... ..	3,771	2,472	6,243	13·66	11·42	12·67		
1899 ... ..	3,943	2,201	6,144	13·80	9·87	12·07		
1900 ... ..	3,678	2,069	5,747	13·45	9·54	11·72		

Although there were fewer deaths registered in 1900 than in either 1898 or 1899, yet they exceeded those of any other year of the decade. The smallest death roll for the period was recorded in 1895. The death rate of males is of course much in excess of that of females, the experience of the past ten years showing that 173 males die to each 100 females. Four times during the last decade the death rate of the latter has been below 10 per 1,000—namely, in 1897, 1895, 1899, and 1900, when it amounted to 9·22, 9·68, 9·87, and 9·54 respectively.

The number of deaths and the death rates—males, females, and persons—in each of the States of Australasia during 1900 are shown in the following table:—

DEATHS, 1900.						
Colony.	NUMBER.			RATE OR NUMBER PER 1,000 MEAN POPULATION.		
	Males.	Females.	Persons.	Males.	Females.	Persons.
Queensland ... ..	3,678	2,069	5,747	13·45	9·54	11·72
New South Wales ... ..	8,951	6,167	15,118	12·52	9·64	11·16
Victoria ... ..	8,627	6,588	15,215	14·34	11·17	12·77
South Australia ... ..	2,054	1,783	3,837	11·21	10·15	10·69
Western Australia ... ..	1,487	753	2,240	12·82	12·24	12·62
Tasmania ... ..	1,070	832	1,902	11·92	10·02	11·01
Total Federation ... ..	25,867	18,192	44,059	13·07	10·30	11·76
New Zealand ... ..	4,153	3,047	7,200	10·33	8·43	9·43
Total Australasia ... ..	30,020	21,239	51,259	12·61	9·98	11·37

The death rate of Queensland is slightly more favourable than the average for the other States of the Commonwealth, but rather less favourable than the average for Australasia. New Zealand alone excepted, the rate for females was below that of either of the States, whilst the relative rate amongst males was greater than in any State except Victoria.

Favourable as is the death rate of the State, the average mortality would be still further reduced but for the presence of coloured aliens. This section of the population contributes out of all proportion to their number, and thus adversely affects the general death rate. Pacific Islanders, Chinese, and coloured Asiatics of all kinds numbered 24,682, and their deaths 481, giving a rate of 19·49 per 1,000; and if these figures are eliminated from the calculation, the ratio per 1,000 of deaths amongst the population of European extraction was 11·31 only. The average of the ten years ended 1900 shows that there were not quite 39 deaths to each 100 births.

The numbers of deaths, male and female, at various age, grouped, so as to show infants, children under and over school age, and females of reproductive age, for each of the last ten years, are shown in the following table:—

DEATHS—AGES.										
YEAR.	UNDER 1 YEAR OF AGE.		UNDER 5 YEARS OF AGE.		5 AND UNDER 15 YEARS OF AGE.		15 AND UNDER 45 YEARS OF AGE.		UPWARDS OF 45 YEARS OF AGE, INCLUDING AGE UNSPECIFIED.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
1891 ...	852	637	1,174	938	133	90	1,204	464	833	334
1892 ...	893	698	1,150	976	147	100	1,120	427	938	408
1893 ...	918	773	1,292	1,105	148	143	1,172	465	971	399
1894 ...	779	590	1,112	926	152	98	1,073	470	1,030	437
1895 ...	765	591	1,027	872	150	154	1,066	450	994	439
1896 ...	793	673	1,105	925	152	107	1,145	482	1,172	557
1897 ...	764	590	1,013	821	134	120	1,166	499	1,170	500
1898 ...	804	736	1,177	1,104	176	177	1,105	546	1,313	645
1899 ...	826	695	1,131	994	149	151	1,402	482	1,261	574
1900 ...	834	622	1,031	859	134	109	1,188	524	1,325	577

The effects of an unhealthy climate are invariably more severely felt by the young than by adults. The true infant mortality—i.e., the deaths of children under one year—affords a fair test as to the salubrity or otherwise of a country's climate, and the mortality statistics of Queensland stand out well under this proof. The true infant mortality mean of ten years ended 1900 was 10·31. The difficulty of gauging the death rates amongst persons of different ages is brought about by the absence, except at Census periods, of data as to the number of persons living at the different ages. No such difficulty, however, exists with respect to infants under one year, as under normal conditions the births afford a very fair guide to the number living at that age. The enumeration just completed enables an estimate to be made as to the death rates per 1,000 of the population at the following ages:—

	Males.	Females.	Persons.
Under 1 year ... ..	126·25	97·22	111·97
Under 5 years ... ..	32·60	27·71	30·18
From 5 to 15 years ... ..	2·17	1·81	1·99
From 15 to 45 years ... ..	8·66	5·03	7·09
From 45 and upwards ... ..	28·29	20·96	25·56

Similar information respecting deaths of persons at various ages, grouped in accordance with the Scheme:—

DEATH RATES FOR CERTAIN AGE PERIODS—CENSUS YEARS.

Year.*	Under 1 Year.	1 to 20 Years.	20 to 40 Years.	40 to 60 Years.	60 Years and Upwards.
1861 ... ..	105·51	8·27	10·51	21·36	60·11
1864 ... ..	168·59	16·51	13·31	29·48	94·00
1868 ... ..	...	...	8·84	17·57	68·86
1871 ... ..	111·33	8·19	8·74	15·54	59·37
1876 ... ..	167·34	11·23	11·16	18·42	60·76
1881 ... ..	130·43	7·69	11·57	16·47	46·95
1886 ... ..	151·78	8·82	12·56	16·99	55·63
1891 ... ..	112·68	6·23	8·99	14·03	47·45
†1900-1 ... ..	126·25	4·00	7·33	13·77	46·27

Unspecified ages and deaths not included in above table.

\* On Census figures.

† On Deaths of 1900 and Population of 31st March, 1901.

#### BIRTHPLACES.

At the Census of 1901 57·53 per cent. of the population were returned as born in the State, and during the preceding year 44·70 per cent. of all persons who died were also born in the Colony. Similar ratios for persons of some of the more numerous nationalities represented in the population are shown in the following table:—

	Centesimal Ratio to Total Population, Census 1901.	Centesimal Ratio to Total Deaths of 1900.
Queenslanders ... ..	57·53	44·70
Other Australians ... ..	8·07	5·92
English ... ..	13·63	16·69
Scotch ... ..	3·96	4·79
Irish ... ..	7·48	11·59
Germans ... ..	2·62	3·55
Chinese ... ..	1·68	1·91
Pacific Islanders ... ..	1·74	4·94
Others ... ..	3·29	5·91
	100·00	100·00

## CAUSES OF DEATH.

Reliable data as to the mortality due to each of the various "ills that flesh is heir to," is amongst the most valuable of the results of the statistician's work. This is fully recognised in the reports on the vital statistics of the Colony, which are annually published and laid before Parliament. The fullest information obtainable is collected, and extended tables are compiled therefrom, illustrative of every phase of the subject. For this purpose each death is brought under one or the other of a variety of heads comprised in a scheme of classification, especially composed for such a purpose by a committee consisting of a number of the leading members of the various medical colleges of the United Kingdom. This divides all deaths into eight classes, and these classes are further subdivided into twenty-six orders. The number and the proportion of all deaths in each of the eight classes for each of the last five years were as follow:—

CAUSES OF DEATHS IN CLASSES (FARR'S NOSOLOGY).

Class.				YEAR.					
				1896.	1897.	1898.	1899.	1900.	
Zymotic	...	...	...	Number	857	914	1,402	1,061	869
				Rate %	15·18	16·85	22·46	17·27	15·12
Parasitic	...	...	...	Number	25	21	17	23	19
				Rate %	0·44	0·39	0·27	0·37	0·33
Dietetic	...	...	...	Number	128	143	111	123	169
				Rate %	2·27	2·64	1·78	2·00	2·94
Constitutional	...	...	...	Number	888	844	921	939	904
				Rate %	15·73	15·56	14·75	15·28	15·73
Developmental	...	...	...	Number	364	339	350	364	404
				Rate %	6·45	6·25	5·61	5·92	7·03
Local	...	...	...	Number	2,679	2,513	2,762	2,727	2,698
				Rate %	47·46	46·34	44·24	44·39	46·95
Violence	...	...	...	Number	621	556	570	815	5·97
				Rate %	11·00	10·25	9·13	13·27	10·39
Unspecified or Ill-defined				Number	83	93	110	92	87
				Rate %	1·47	1·72	1·76	1·50	1·51
All Causes	...	..		Number	5,645	5,423	6,243	6,144	5,747
				Rate %	100·00	100·00	100·00	100·00	100·00

Thus 869, or nearly one-sixth of all deaths during 1900, were due to zymotic diseases. Of these 427 were of the miasmatic and 335 were diarrhoeal. Deaths due to parasites numbered 19. Dietetic diseases were responsible for 169 deaths, of which 61 were of infants—victims to the want of natural diet, 35 were of persons lost in the bush, and 73 the result of the abuse of alcohol or of opium. So-called constitutional diseases caused 904 deaths, of which 427 were from phthisis, 229 from cancer, and 159 to other forms of tuberculosis. Of the 404 deaths caused by developmental diseases, 198 were due to immaturity at birth and 124 to old age. There were 2,698, or nearly one-half of all deaths, classed as from local causes—533 of these from diseases of the nervous, 510 of the circulatory, 563 of the respiratory, 734 of the digestive, and 232 of the urinary systems. There were also 62 deaths of females due to parturition. Of the deaths due to violence, 491 were ascribed to accident, 15 to murder or homicide, and 91 to suicide.

Of the accidents, 101 were caused by drowning. There were 87 deaths in which the cause was unspecified or ill-defined.

Further information respecting the 20 most fatal of the clearly definite causes is furnished in the following table :—

THE TWENTY MOST FATAL CAUSES (DEFINITE) OF DEATH—1900.

Cause.	Number.	Proportion to each 1,000 Total Deaths.	Proportion to each 10,000 Mean Population.
Phthisis ... ..	427	74.3	8.7
Enteritis ... ..	357	62.1	7.3
Pneumonia ... ..	334	58.1	6.8
Cancer ... ..	229	39.8	4.7
Diarrhoea ... ..	201	35.0	4.1
Endocarditis and Valvular Disease ... ..	198	34.5	4.0
Bright's Disease ... ..	148	25.8	3.0
Typhoid or Enteric Fever ... ..	136	23.7	2.8
Bronchitis ... ..	131	22.8	2.7
Dysentery ... ..	117	20.4	2.4
Apoplexy ... ..	105	18.3	2.1
Drowning (Accident) ... ..	102	17.7	2.1
Whooping Cough ... ..	73	12.7	1.5
Inflammation of Brain and Membrane ... ..	61	10.6	1.2
Influenza ... ..	60	10.4	1.2
Typhoid Mesenterica ... ..	55	9.6	1.1
Diphtheria ... ..	48	8.4	1.0
Hemiplegia (Brain Paralysis) ... ..	37	6.4	0.7
Aneurism ... ..	35	6.1	0.7
Scarlet Fever ... ..	11	1.9	0.2

Rather more than 1 death in every 13 was due to phthisis—9 persons out of every 10,000 living die from this cause every year. Enteritis and pneumonia were a little less fatal, followed at a somewhat greater distance by cancer, the deaths from this cause numbering 229, or rather more than one-half as many as were caused by phthisis: the 20 diseases recorded in the above table causing 2,865 deaths, or 50 per cent. of all the deaths of the State.

## Part IV.

# BOTANY.

Contributed by F. MANSON BAILEY, F.L.S., Colonial Botanist.

Taking into consideration the long line of seaboard and the extensive fertile plains of the State of Queensland, the idea is at once suggested that the vegetation must be numerous in species, and such really is the case. The plains are clothed with the richest of fodder-herbs and grasses, and the scrubs and forests contain timbers of the highest value; thus the present notice on the flora is confined to an economic view.

Under different headings will be found enumerated some of the commonest, and at the same time most suitable species for various works and also those producing substances of a marketable value. To have gone deeper into the matter would have extended the paper beyond the bounds allotted to it.

### WOODS.

Considering the large number of the indigenous woods, it must be acknowledged that a very scanty number find their way into the market, and those cut are generally known in the trade only as "soft-woods" or "hard-woods." The saw-millers' further classification is most perplexing, for they may frequently be found using the same name for half-a-dozen species. As yet no one in the trade keeps a stock of ornamental woods. There probably would not be a great demand for such at first, but this would increase as the woods became known, for many are of considerable beauty.

The arrangement here used is to point out that there are woods adapted for the various uses to which this material is applied. The kinds mentioned are a few only out of the number suitable for the particular purpose, and many are adapted for other work besides that under which they may be placed.

#### TURNERY—

- Owenia acidula, *F. v. M.* Sour Plum.
- Pleiogynium Solandri, *Eng.* Burdekin Plum.
- Acacia pendula, *A. Cunn.* Weeping Myall.
- Acacia glaucescens, *Willd.* Rosewood.
- Pygeum Turnerianum, *Bail.*
- Canthium buxifolia, *Benth.*
- Cassinia lævis, *R. Br.* Wild Rosemary.

#### BUILDING WOODS—

##### Hard Woods—

- Eucalyptus Planchoniana, *F. v. M.*
- E. eugenioides, *Sieb.* Stringybark.
- E. pilularis, *Sm.* Blackbutt.
- E. microcorys, *F. v. M.* Tallow-wood.
- E. siderophloia, *Benth.* Ironbark.
- E. crebra, *F. v. M.* Narrow-leaved Ironbark.
- E. Raveretiana, *F. v. M.* Thozet's Box.

*Hard Woods—continued—*

- E. tereticornis*, *Sm.* Queensland Blue Gum.  
*E. saligna*, *Sm.* Grey Gum.  
*E. resinifera*, *Sm.* Jimmy Low, or Red Stringybark.  
*E. maculata*, *Hook.* Spotted Gum.  
*Syncarpia Hillii*, *Bail.* Peebeen.  
*Xanthostemon oppositifolius*, *Bail.* Penda.  
*Backhousia Bancroftii*, *Bail. and F. v. M.* Johnstone River  
 Hardwood.

*Soft Woods—*

- Alstonia scholaris*, *R. Br.* Whitewood or Milkwood.  
*Diplanthera tetraphylla*, *R. Br.*  
*Cinnamomum Oliveri*, *Bail.* Sassafras-tree of South Queens-  
 land.  
*Cinnamomum Tamala*, *Nes.* Northern Cinnamon.  
*Agathis robusta*, *C. Moore.* Southern Kauri Pine.  
*A. Palmerstoni*, *F. v. M.* Northern Kauri Pine.  
*Podocarpus pedunculata*, *Bail.* Black Pine.  
*Araucaria Cunninghamii*, *Ait.* Hoop Pine.  
*A. Bidwilli*, *Hook.* Bunya Pine.

*Lining-boards—*

- Echinocarpus australis*, *Benth.* Maiden's Blush.  
*Nauclea Gordoniana*, *Bail.*  
*Cryptocarya cinnamomifolia*, *Benth.*  
*Daphnandra aromatica*, *Bail.* Northern Sassafras.  
*Panax elegans*, *F. v. M.* Mowbullan Whitewood.

*Veranda Floors—*

- Flindersia australis*, *R. Br.* Crow's Ash.  
*Gmelina Leichardtii*, *F. v. M.* Beech.

*Piles, House Stumps, and Underground Work—*

- Melaleuca leucadendron*, *Linn.* Broad-leaved Tea-tree.  
*Eucalyptus corymbosa*, *Sm.* Bloodwood.  
*Tristania suaveolens*, *Sm.* Swamp Mahogany.  
*Syncarpia laurifolia*, *Ten.* Turpentine.  
*Dissiliaria baloghioides*, *F. v. M.* Southern Teak.  
*Callitris robusta*, *R. Br.* Cypress Pine.

## CABINET FURNITURE AND JOINERY WORK—

- Wormia alata*, *R. Br.*  
*Calophyllum inophyllum*, *Linn.* Domba-tree.  
*Erythroxylon ellipticum*, *R. Br.*  
*Zanthoxylum brachyacanthum*, *F. v. M.* Satinwood.  
*Geijera Muellieri*, *Benth.*  
*Cedrela Toona*, *Roxb.* Red Cedar.  
*Siphonodon australe*, *Benth.* Ivorywood.  
*Harpullia pendula*, *Planch.* Tulipwood.  
*Rhodospheera rhodanthema*, *Eng.* Deep Yellowwood.  
*Daviesia arborea*, *Hill.*  
*Castanospermum australe*, *A. Cunn.* Bean-tree.  
*Bauhinia Hookeri*, *F. v. M.* }  
*B. Carronii*, *F. v. M.* } Queensland Ebony.

CABINET FURNITURE AND JOINERY WORK—*continued*—

- Albizzia Toona*, *Bail.* Acacia Cedar.  
*A. basaltica*, *Benth.* Dead Finish.  
*Terminalia busarina*, *F. v. M.*  
*Lycarpus ternifolius*, *F. v. M.* Tom Russell's Mahogany.  
*Sarcocephalus cordatus*, *Miq.* Canarywood.  
*Eremophila Mitchelli*, *Benth.* Sandalwood of Central Queensland.  
*Macadamia Whelani*, *Bail.*  
*M. ternifolia*, *F. v. M.* Queensland Nut.  
*M. praealta*, *Bail.*  
*Embothrium Wickhami*, *F. v. M.* Red Silky Oak.  
*Helicia ferruginea*, *F. v. M.*  
*Cryptocarya Palmerstoni*, *Bail.* Black Walnut.  
*C. Bancroftii*, *Bail.* Red Walnut.  
*Banksia integrifolia*, *Linn.* Honeysuckle.  
*B. aemula*, *R. Br.* Honeysuckle.  
*Marlea vitiensis*, var. *tomentosa*. Muskwood.  
*Exocarpus latifolia*, *R. Br.* Scrub Sandalwood.  
*Baloghia lucida*, *Endl.* Scrub Bloodwood.  
*Excæcaria parvifolia*, *Muell.* Arg. Gutta-percha of Gulf country.  
*Cudrania javanensis*, *Tréc.* Cockspur-thorn.  
*Casuarina inophloia*, *F. v. M. and Bail.* Thready-barked Oak.  
*Casuarina torulosa*, *Ait.* Forest Oak.

## CHAIR-MAKING—

- Terminalia sericocarpa*, *F. v. M.*  
*Chrysophyllum pruniferum*, *F. v. M.*  
*Dysoxylon Pettigrewianum*, *Bail.* Cairns Satinwood.  
*Synoum glandulosum*, *A. Juss.* Rosewood.  
*Canarium Muelleri*, *Bail.* Queensland Elemi-tree.

## CARVING AND ENGRAVING—

- Capparis nobilis*, *F. v. M.*  
*C. Mitchelli*, *Lindl.* Native Pomegranate.  
*Pittosporum rhombifolium*, *A. Cunn.*  
*Geijera salicifolia*, *Schott.*  
*Citrus australis*, *Planch.* Native Orange.  
*Ximenia americana*, *Linn.* Yellow Plum.  
*Denhamia pittosporoides*, *F. v. M.*  
*D. obscura*, *Meisn.*  
*Heterodendron oleæfolium*, *Desf.*  
*H. diversifolium*, *Desf.*  
*Guettarda putaminosa*, *F. v. M.*  
*Lucuma galactoxylon*, *F. v. M.* Cairns Pencil-cedar.  
*Sideroxylon Pohlmanianum*, *Benth. and Hook.*  
*Wrightia Millgar*, *Bail.*  
*Daphnandra micrantha*, *Benth.*  
*D. repandula*, *F. v. M.*

## TOOL-HANDLES—

- Tarrietia actinophylla*, *Bail.*  
*Elæodendron australe*, *Vent.*  
*Cupania pseudorhus*, *Rich.*

TOOL-HANDLES—*continued*—

- Nephelium* Lautererianum, *Bail.*  
*Barklya* syringifolia, *F. v. M.*  
*Davidsonia* pruriens, *F. v. M.* Davidson's Plum.  
*Weinmannia* lachnocarpa, *F. v. M.*  
*Bruguiera* Rheedii, *Blume.* Red Mangrove.  
*Eucalyptus* Baileyana, *F. v. M.* Rough Stringybark.  
*Tristania* laurina, *R. Br.*  
*Avicennia* officinalis, *Linn.* White Mangrove.  
*Mallotus* polyadenus, *F. v. M.*  
*Excæcaria* Dallachyana, *Baill.* Scrub Poison-tree.

## WHEELWRIGHT'S WORK—

- Callistemon* lanceolatus, *D. C.* Bottle-brush.  
*Angophora* subvelutina, *F. v. M.* Apple-tree.  
*A. intermedia*, *D. C.* Apple-tree.  
*Eucalyptus* botryoides, *F. v. M.* Woolly-butt.  
*Tristania* conferta, *R. Br.* Brisbane Box.

## BUGGY-SHAFTS—

- Eucalyptus* maculata, *Hook.* Spotted Gum.  
*Flindersia* Oxleyana, *F. v. M.* Yellowwood.

## PACKING-CASES—

- Ficus* colossea, *F. v. M.*  
*F. Cunninghamii*, *Miq.*  
*F. macrophylla*, *Desf.* Moreton Bay Fig.  
*F. pleurocarpa*, *F. v. M.* Johnstone River Ribbed Fig.  
*F. Watkinsiana*, *Bail.*  
*F. crassipes*, *Bail.*  
*F. glomerata*, *Willd.*

These fig-trees all attain a very large size and furnish an abundant supply of soft wood well suited for the purpose above alluded to.

## SPARS—

- Calophyllum* tomentosum, *Wight.* Poonspar-tree.  
*Podocarpus* elata, *R. Br.* She Pine.

## SHEAVES FOR BLOCKS—

- Elæocarpus* Bancroftii, *F. v. M. and Bail.* Johnstone River Almond.

## OARS—

- Grewia* pleiostigma, *F. v. M.*  
*Euroschinus* falcatus, *Hook.* Maiden's Blush.

## STAVES—

- Tarrietia* argyrodendron, *Benth.* Stave-wood.  
*Acacia* decurrens, *Willd.* Green Wattle.  
*Alstonia* villosa, *Blume.*  
*Litsea* reticulata, *Benth.* Bally-gum.  
*Grevillea* robusta, *A. Cunn.* Silky Oak.  
*Carnarvon* araliaefolia, *F. v. M.* Red Oak.  
*Darlingia* spectatissima, *F. v. M.*  
*Cardwellia* sublimis, *F. v. M.* Northern Silky Oak.  
*Musgravea* leptostachya, *F. v. M.*  
*Stenocarpus* sinuatus, *Endl.* Tulip-flower.  
*Stenocarpus* salignus, *R. Br.*

## GRASSES AND AUXILIARY FODDERS.

All pastoralists will agree that a mixture of herbage is necessary to keep their animals in good health and condition; the grasses, however, should always preponderate. This was the state of the Queensland pasture during the early years of the industry. The condition has sadly changed since, so that in some localities the inferior grasses and undesirable herbage have run out the superior ones and the best herbage; of course, this state of things applies only to the pasture near settlements, where it has been brought about principally by overstocking, neglect, and drought. There are plenty, however, of excellent pasture grasses left, some few of which are here referred to under headings indicative of the situations where they are usually met with in the wild state.

No part of Queensland can be said to be destitute of good grass; the kinds are numerous, but it is only a few of the superior kinds that can be mentioned in the present notice.

On wet land subject to flooding *Isachne australis* and *Sporobolus Benthami* stand a good deal of close feeding, and *Panicum crus-galli*, a tall kind, affords succulent fodder, which might be cut for feeding, but it is not so suitable for grazing.

Along the margins of rivers and lagoons, often in a few feet of water, in the tropics may be found a strong growth of *Panicum myurus*, the indigenous Rice (*Oryza sativa*), and the Rice-grass (*Leersia hexandra*); in the south, *Chamæraphis spinescens*, which is often around waterholes, the stems float out on the surface of the water, and as this dries up, they take root in the mud and form good feed. *Panicum melananthum* is another excellent grass in this situation. In and about brackish swamps, three good grasses met with are *Paspalum distichum*, var. *littorale*, and *Sporobolus virginicus* and the variety *minor*.

The grasses of the large inland downs are numerous in kind and most of them very nutritious; *Agropyrum scabrum* is an early spring kind. *Andropogon sericeus*, the Blue grass, also *A. refractus*, and *A. pertusus*, *Eleusine ægyptica* the button grass, *Anthistiria avenacea* the tall oat-grass, *Astrebula pectinata* and the two varieties *elymoides* and *curvifolia* the famed Mitchell grasses. *Danthonias* three species, the commonest *D. pallida*, known as "White-top grass," *Dichelachne crinita*, or "Long-hair Plume-grass," *Eriochloa annulata* and *E. punctata*, two early quick-growing spring kinds, *Eragrostis*, three or more kinds. *Leptochloa chinensis*, *Microlæna stipoides*, an excellent early grass, *Panicums*, six or more, all valuable grasses, *Pollinia fulva*, "Brown-top," which like the Mitchell grasses sprouts quickly after rain, thus affording feed quicker than when springing from the root-stock alone. This is the reason why they are so much liked by pastoralists. *Setaria glauca*, an annual species, *Sporobolus actinocladius*, *S. indicus*, and *S. Lindleyi*, all good grazing species, the seed of which is very abundant and at times provides the aborigines with food.

The four following species might be recommended for growing to cut for green fodder, viz.:—*Panicum crus-galli*, var. *sabulicolium*, *Paspalum galmarra*, *Poa cæspitosa*, var. *latifolia*, and *Setaria macrostachya*.

The kinds usually found binding sandy coast land and in such localities affording a bite for cattle are, *Eragrostis Brownii*, var.

interrupta, *Lepturus repens*, *Spinifex hirsutus*, *Thuarea sarmentosa*, and *Zoysia pungens*. The following species have been observed to form the most compact turf, *Cynodon dactylon* the common "couch," *Eragrostis leptostachya* a Love-grass, *Ischaemum pectinatum*, *Panicum flavidum*, and *Paspalum brevifolium* in the south, and *Paspalum platycaule* in the tropics.

### HERBS.

The following may be taken as a brief summary of the most wholesome herbage plants, which, in conjunction with the grasses, constitute the fodder of the open pasture lands of Queensland:—

All the kinds of the cruciferous genera, *Cardamine*, *Alyssum*, *Blennodia*, *Stenopetalum*, *Capsella*, *Senebiera*, *Lepidium*, &c., which abound on our open plains, are quite wholesome plants, partaking much of the properties of their allies, the common garden vegetables, turnip, cress, &c.

*Frankenia pauciflora* is a plant which does not seem to have been dilated upon by writers upon fodders, yet few plants on a run are of greater importance to the stockowner. A form growing on the Georgina has much the habit of one of the dwarf heaths or the thyme of the herb garden, but is thickly encrusted with a pure-flavoured salt. It grows upon dry, poor spots, and is closely cropped by the stock, thus it may be assumed that the plant is relished by them. This locality abounds with the various kinds of saltbush, but none of these bear anything like the amount of salt produced by this little herb.

Species of the genera *Portulaca* and *Calandrinia* are useful succulent herbs which often are met with on grassy plains, affording an agreeable bite for the stock. The first-named includes the well-known pig-weed.

The genera *Sida*, *Abutilon*, and *Hibiscus*, of the Mallow family, furnish many small herby kinds which may be acknowledged as valuable adjuncts to the grasses of a pasture. All plants of the order are wholesome, but some are tough, and therefore may be somewhat indigestible.

Of the Beancapers we have many representatives of the genera *Tribulus* and *Zygophyllum*; wholesome plants, but species of the first-named, when in seed, are objectionable to the sheep-farmer on account of their spiny fruits injuring the sheep's feet.

Several plants of the *Geranium* family are highly extolled by the stockowner, in particular the kinds of *Erodium* and *Geranium*, one of the forms of this latter being known by the name of "Native Carrot."

The leguminous plants which may be considered as useful additions to the pasture are mostly belonging to the genera *Lotus*, *Psoralea*, *Desmodium*, *Phaseolus*, and *Vigna*.

*Umbelliferae* (the Parsley family) furnish plants of the genera *Hydrocotyle*, *Trachymene* (some of these have carrot-like roots, for which vegetable they have been used as a substitute), *Apium*, and *Daucus brachiatus*, the Australian representative of the true carrot.

Of the large order *Compositae*, we find a great number of both genera and species growing amongst the grasses of downs or plains country; and as the order is nearly free of poisonous properties, no doubt these plants are of advantage to the pasture, except, perhaps, such as produce burr-like fruits.

The form of the Boraginaceous plant *Trichodesma zeylanicum*, which is often met with in large patches on the Western downs, is there very highly spoken of as a fodder herb. It generally chooses rather rough rocky spots, and there furnishes fodder where other plants would scarcely exist.

On damp spots several kinds of *Ipomæa* and *Polymeria*, genera of the Morning Glory family (*Convolvulacæ*) are well spoken of as fodder producers about the Georgina River, where at times they are in great abundance.

Of the plants belonging to the *Acanthus* family, we find several of herbaceous growth amongst the grasses assisting to make up the food supply of stock. There is one, however, which is worthy of more than a passing notice, and this is *Ruellia primulacea*. This plant forms a dense mass of green foliage from 12 or 18 inches in height, and covers the ground under the shade of the gidgee trees to their stems, selecting generally those trees growing upon dry, stony, or rocky land, from the Middleton to the Georgina Rivers. Stock seem fond of the plant, and thus it is well cropped down at all seasons of the year.

The procumbent plant *Boerhaavia diffusa*, a near ally of the well-known "Four o'clock," is often very plentiful on downs country, and there closely cropped by stock. The plant possesses purgative properties, but seems not to be of harm to stock.

The *Amaranth* family furnishes many herbs of a mucilaginous character, particularly plants of the genera *Amarantus* and *Alternanthera*.

Amongst the *Chenopods* are four genera which contribute valuable pastoral plants—viz., *Rhagodia* and *Atriplex*, the many kinds of Saltbushes; *Chenopodium*, the Bluebush; and *Kochia*, the Cotton-bush.

#### FRUITS.

A rather large number of the trees and shrubs bear fruits that are worthy of the attention of cultivators. Little regard, however, is likely to be paid to them on account of the ready way in which the greater number of exotic fruits adapt themselves to the climate. It may be said, however, for our indigenous fruits that there are some amongst them that rank as valuable additions or auxiliaries to the fruit list. In only a few instances are these brought into the towns for sale, therefore they are but little known to townspeople; but to the country people they are not only well known but highly appreciated. Out of the goodly number known a few are here enumerated:—

#### ORDER GUTTIFERÆ—

*Garcinia Mestoni*, *Bail.*, of the Bellenden Ker Range.

#### ORDER RUTACÆ—

*Acronychia Scortechinii*, *Bail.* Logan Apple.

*Acronychia imperforata*, *F. v. M.* Fraser Island Apple.

*Atalantia glauca*, *Hook.* Downs country Lime.

*Citrus australis*, *Planch.* Round Orange.

*Citrus australasica*, *F. v. M.* Finger Lime.

(This latter has a red-fruited variety on Tambourine Mountain.)

*Citrus inodora*, *Bail.* A tropical species.

#### ORDER AMPELIDÆE—

Several of the indigenous species of *Vitis* are used in jam-making. *V. Gardineri*, *Bail.*, a Walsh River species, is said to produce

bunches of fruit from 1 to 2 lb. in weight, the berries being large and well-flavoured.

#### ORDER ROSACEÆ—

In this the only fruit worthy of notice is the indigenous Raspberry, *Rubus rosæfolius*, *Linn.*

#### ORDER SAXIFRAGÆÆ—

*Davidsonia pruriens*, *F. v. M.*, Davidson's plum, and *Schizomeria ovata*, *D. Don.*; both bear nice acid fruits, that of the former being of large size.

#### ORDER MYRTACEÆ—

Several of the *Eugenias* bear fruits which are used in jam-making.

#### ORDER PROTEACEÆ—

This order furnished two nut-bearing trees, *Macadamia ternifolia*, *F. v. M.*, the Queensland Nut, and *Hicksbeachia pinnatifolia*, *F. v. M.*

#### ORDER EUPHORBIACEÆ—

Most of the species of *Antidesma*, a genus of shrubs and trees belonging to this order, bear edible fruits; *A. Dallachynum*, *Baill.*, the Herbert River cherry, *A. parvifolium*, *F. v. M.*, the Gilbert River currant, and *A. erostre*, *F. v. M.*, are those of which the fruit is principally used.

#### ORDER URTICACEÆ—

Here we have the large genus *Ficus* (the fig); the fruits of several of our species are used, and that of *F. gracilipes*, *Bail.*, makes an excellent preserve.

### FOOD PRODUCING PLANTS.

A very large number of plants supplied the indigenous inhabitants with food; none of these, however, are likely to find favour with Europeans; although many are quite as wholesome, but often not so productive, as the better known vegetable foods. For instance, the green pods of some of the *Vignas* are quite equal, if gathered in a fit state for use, to the common French bean. The large tubers of *Ipomæa Calobra*, *Hill* and *F. v. M.*, are not a bad substitute for the sweet potato. The young shoots of *Geitonoplesium cymosum*, *A. Cunn.*, are considered by some a good substitute for the garden asparagus. The Australian *Scorzonera*, *Microseris Forsteri*, *Hook.*, the rootstock of which is about the size of a man's thumb, is one of the most delicious foods, and formed the principal root food of the aborigines about the Torrens River, when Adelaide was first settled. It is not plentiful in Queensland, except between Stanthorpe and the border of New South Wales.

*Tacca pinnatifida*, *Forst.*, is plentiful on sandy lands in the tropics, and the tubers furnish a superior kind of arrowroot.

In the tropical parts two or three forms of *Dioscorea sativa*, *Linn.*, the common Yam, abound; these wild forms are, however, too fibrous to be much used by the whites. The same may be said of the native *Tara*, *Colocasia antiquiorum*, *Schott.* The small tubers of *Aponogeton monostachyus*, *Linn.*, are said to be starchy and of pleasant taste.

As table vegetables have frequently to be used in the bush, various kinds of *Amarantus*, *Chenopodium*, *Nasturtium terrestre* *R. Br.*, a Cress, *Tetragonia expansa* N.Z. Spinach, *Portulaca*, Pigweed, are used.

#### PERFUMERY PLANTS.

Under this heading may be given a large number of the indigenous plants, the flowers of which are highly fragrant.

If the subject is taken up commercially, the flowers would have to be abundant and easily obtained, and such would be the case with the following, viz.:—Some of the *Pittosporums*, *Hymenosporum flavum*, *F. v. M.*, a very fragrant and prolific flowering tree, often blooming when only a few feet high; several *Boronias*, *Acacia linifolia*, and others of the genus; *Randia chartacea*; *Jasminums* several, *Tabernæmontana orientalis*, and many other plants.

#### RUBBER PLANTS.

These have never been practically tested so as to obtain an estimate of their value, although a very great number of our indigenous species are of this character. For instance, in *Urticaceæ*, there are over forty kinds of fig-trees (*Ficus*); in *Euphorbiaceæ* there are three species of *Excæcaria* known to yield rubber, and several trees of *Apocynaceæ*, particularly the *Alstonias* and *Wrightias*. In *Sapotaceæ* the three genera *Lucuma*, *Sideroxylon*, and *Mimusops* number eighteen rubbers. The above are all trees, but here, as in other countries, there are also a large number of climbing rubber-producing plants. However, in this, as in several other commercial products, the labour question will have to be considered before it is known whether the collecting of rubber will pay or not. All that can be here stated is that the plants of the State number amongst them many from which the material is obtainable.

#### TANNING PLANTS.

The supply has been hitherto principally drawn from a few of the *Acacias*, and the sample has not proved equal to that imported from the south, but then it must be acknowledged that only a very few out of the large number of indigenous *Acacias* have as yet been tested for tanning. The bark of the *Eucalypts* is at times used mixed in certain proportions with *Acacia* bark.

Barks of the following trees met with in Queensland are used for tanning:—*Alphitonia*, *Banksia*, *Casuarina*, *Cedrela*, *Elæocarpus*, *Mallotus*, *Syncarpia*, *Bauhinia*, *Bruguiera*, *Eremophila*, *Buchanania*, *Cassia*, *Carallia*, *Careya*, *Diospyros*, *Rhizophora*, *Eugenia*, and *Terminalia*. The leaves also of the *Uncaria* of the tropical scrubs were found by Dr. T. L. Bancroft to contain Catechu, like the Gambier or *terra-japonica* of commerce. Finally experiments might be made with our *Polygonums*, several of which furnish tanning material elsewhere.

Dyes are obtainable from the following (the colour of the dye is given in parenthesis):—

Oil of fruit of *Calophyllum inophyllum*, *Linn.*, a tree of the tropical coast (bright yellow).

Leaves of *Erythroxylon australe*, *F. v. M.*, a small tree of brigalow scrubs (yellow).

Bark of *Geijera Muelleri*, *Benth.* (Nankeen).

Flowers of *Cedrela Toona*, *Rowb.*, the red cedar (yellow).

Woods of *Afzelia australis*, *Bail.* (purplish); *Cynometra ramiflora*, var. *bijuga*, a tree common to the tropical coastal swamps (purplish); *Sarcocephalus cordatus*, *Miq.*, the Leichhardt tree, a large tree of the tropical scrubs (yellowish).

Bark of *Cassia pruinosa* *F. v. M.*, a western species (red), and that of *Cœlospermum reticulatum*, *Benth.*, a crooked-stemmed shrub (reddish).

Roots of *Morinda citrifolia*, *Linn.*, a small tree of the tropics (red), and those of *M. umbellata*, *Linn.* (red).

Shells of fruit of *Hernandia bivalvis*, *Benth.*, a tree of the southern coast scrubs.

Sap of *Baloghia lucida*, *Endl.*, the scrub bloodwood (red).

Red powder of the capsules, and the roots also of *Mallotus philippinensis*, *Muell. Arg.*, a small tree common in open country (red); the similar substance of the capsules of *M. discolor*, *F. v. M.*, a tall timber tree of the southern scrubs (bright yellow).

Wood and bark of *Cudrania javanensis*, *Trec.*, a large rambling shrub of the coastal scrubs (yellow).

Resin of the various species of *Xanthorrhœa*, the grass-trees (brownish).

#### GUMS, GUM-RESINS, AND RESINS.

Gum of various quality is exuded in quantity by the numerous *Acacias* and their allies; gum-resins by the *Araucarias*, and some of the *Grevillias* and *Eucalyptus*; resins by *Xanthorrhœas*, *Ailanthus*, *Syncarpia*, *Canariums* (when the stem of *C. Muelleri*, *Bail.*, is cut, it flows in considerable quantities in a pure liquid state), *Pittosporums*, *Evodias*, *Grevillias*, *Callitris*, and *Agathis*.

In some few localities both in the north and south, deposits of what is probably the resin from former trees of *Agathis* are met with in a fossil state.

#### OILS.

From a large number of the indigenous plants oil can be obtained either from the foliage, fruit, wood, or bark. Those brought under notice are arranged according to the source of supply—viz., the foliage of a large number of *Myrtaceous* plants is rich in essential oil, particularly the genera *Eucalyptus*, *Melaleuca*, *Backhousia*; also several *Rutaceous* plants, particularly the *Zierias*, *Boronias*, *Pagettias*, *Geijeras*. The *Menthas* and other *Labiatae* yield large quantities of good useful oil.

The fruits of the following genera are also rich in oil:—*Calophyllum*, *Atalantia*, *Citrus*, *Hernandia*, *Aleurites*, *Omphalea*, *Terminalia*, *Semecarpus*, *Pongamia*, *Cerbera*. *Omphalea Queenslandiæ*, *Bail.*, is one of the largest climbers of the tropical scrubs, and bears a large fruit, containing usually three round nuts of considerable size, which are very rich in oil.

The barks of some trees also give oil—for instance, the two species of *Cinnamomum*.

#### SPICES

Are represented by a few barks, roots, and fruits.

The barks of the *Monimiaceous* tree, *Daphnandra aromatica*, *Bail.*, and the two *Lauraceous* trees, *Cinnamomum Oliveri*, *Bail.*, and *C. Tamala*, *Nees.*, when ground have an agreeable flavour and fragrance somewhat like a mixture of Cinnamon and Allspice.

The indigenous Nutmeg (*Myristica insipida*, *R. Br.*), bears a fruit somewhat resembling the Nutmeg of commerce, but of poorer flavour and of less size.

There are several species of *Piper*, which yield heavy crops of fruit, little if at all inferior to that which provides the Black and White Pepper of the shops.

At the extreme North an indigenous Ginger, a true *Zingiber*, is met with, the rhizomes of which are of a very good quality, being pungent and fairly free from fibre.

#### FIBRES.

Plants producing good fibre are abundant, but to produce a marketable article would have to be cultivated. The Malvaceous genera *Sida*, *Abutilon*, *Urena*, and *Hibiscus* are good yielders of such material. The allied order, *Sterculiaceæ*, contains also a number of trees and shrubs whose inner bark is used in rope-making, and often stripped from the *Sterculias* in thin narrow ribbon-like pieces, plaited and worked up into hats. It has a beautiful lace-like appearance, and the articles made of it are light and durable. A good number of the order *Leguminosæ*, particularly of the genera *Crotalaria*, *Psoralea*, and *Sesbania* give fine strong fibre; the *Acacias* have fibre of a coarser character.

In the large order *Urticaceæ* are many trees and shrubs notable for the valuable character of their fibre, one of which, *Bœhmeria nivea*, the "Rhea," is indigenous in some parts of tropical Queensland, and *B. platyphylla* may be seen in some of the southern scrubs. The inner bark of the stems, and also of the large roots of many of our Fig-trees, is very fibrous, and is the part from which the "Blackfellows' blankets" are made. The common tree *Pipturus argenteus* also furnishes a fine fibre.

Among the indigenous *Monocotyledons* fibre is obtainable in abundance from the *Musas* (Bananas), *Doryanthes*, &c., and an Aroid *Gymnostachys anceps*, the "Boorgay" of the aborigines, would probably be worthy of cultivation for its fibre, which is very strong.

#### PAPER MAKING.

There are many plants in the Queensland Flora admirably adapted for the manufacture of paper. Those of the following genera have been specially recommended, viz.:—*Hibiscus*, *Sterculia*, *Acacia*, *Eucalyptus*, *Lysicarpus*, *Melaleuca*, *Xerotes*, *Alpinia*, *Typha*, *Doryanthes*, *Laportea*, *Juncus*, *Lepidosperma* and other sedges, besides several of the grasses.

#### MEDICINAL PLANTS, DOMESTIC AND OTHERS.

*Sideroxylon laurifolium*, *F. v. M.*, Dr. Joseph Bancroft suggests that the sweet astrigent bark of this tree might be useful in throat diseases.

*Achyranthes aspera*, *Linn.*, is used medicinally in India.

*Alstonia constricta*, *F. v. M.* A valuable tonic in case of fever.

*A. scholaris*, *R. Br.* Extract of bark used in fever.

*Duboisia Hopwoodii*, *F. v. M.* "Pituri" of Western parts.

*D. myoporoides*, *R. Br.* Extract used in ophthalmic surgery.

*Erythraea australis*, *R. Br.* A domestic tonic medicine.

*Eucalypts*, the gum and essential oil are used medicinally.

*Eugenia jambolana*, *Linn.* In India the seed is used in cases of diabetes.

*Euphorbia pilulifera*, *Linn.*, is a remedy for asthma and bronchitis.  
*Euphorbia alsinæflora*, *Baill.*, used in cases of dysentery and low fever.

*Callitris calcarata*, *R. Br.* The twigs are said to be used to expel worms in horses.

*Gratiola pedunculata*, *R. Br.*, used in liver complaints.

*Hardenbergia monophylla*, *Benth.*, root is used as a substitute for "Sarsaparilla."

*Hydrocotyle asiatica*, *Linn.*, juice used in skin diseases.

*Ipomæa Pes-capræ*, *Roth.*, juice and leaves used in dropsy.

*Mallotus philippinensis*, *Muell. Arg.*, produces the "Kamala" used in cases of tapeworm.

*Centipeda orbicularis*, *Lour.*, whole plant used in ophthalmia.

*Smilax glycyphylla*, *Sm.*, supposed useful in scurvy.

#### EDIBLE FUNGI.

[After each name is given the locality where specimens of the species have been obtained, either by the writer or others.]

Although I have drawn attention to the subject previously in a Bulletin, it is not as generally known as is desirable how large a number of these plants are available for food. In the following list will be found the majority of our edible species, viz.:—

*Agaricus* (*Amanitopsis*) *vaginatus*, *Bull.* The Sheathed Mushroom; Indooroopilly and Rockhampton.

*A. (Lepiota) procerus*, *Scop.* Parasol Mushroom; Brisbane district.

*A. (Lepiota) excoriatus*, *Schæff.* The Fawn-coloured Parasol Mushroom.

*A. (Lepiota) naucinus*, *Fries.* The Nut-tree Mushroom; in a Brisbane garden.

*A. (Armillaria) melleus*, *Vahl.* Stump Mushroom; Enoggera Creek.

*A. (Clitocybe) cerussatus*, *Fries.* The White-lead Coloured Mushroom; Albert Park, Brisbane.

*A. (Collybia) fusipes*, *Bull.* The Spindle-stemmed Mushroom; Eight-mile Plains.

*A. (Pleurotus) ostreatus*, *Jacq.* The Oyster Mushroom.

*A. (Psalliota) campestris*, *Linn.* Common Mushroom.

*Lactarius piperatus*, *Scop.* The Peppery Lactarius; Endeavour River. This is eaten on the continent of Europe and in America, but rejected in England, probably from prejudice.

*Cantharellus cibarius*, *Fries.* The Chantarelle; about Oxley Creek. This is eaten in many parts of Europe, but seems not to be a general favourite.

*Panus torulosus*, *Fries.* Islands of Moreton Bay. This species is eaten upon the continent of Europe, but is only fit for food when very young.

*Boletus luteus*, *Fries.* The Yellow Boletus; about Brisbane.

*B. elegans*, *Fries.* The Bright Yellow Boletus; Oxley Creek.

*B. granulatus*, *Linn.* The Granular Boletus; Eight-mile Plains.

*B. badius*, *Fries.* The Bay Boletus; about Brisbane.

*B. edulis*, *Bull.* The edible Boletus; about Brisbane.

*B. æneus*, *Bull.* (*B. æneus*, *Fries.*) About Brisbane.

*B. æstivalis*, *Fries*. The Summer Boletus; about Brisbane. Dr. Cooke says that species of this genus are amongst the most common of the dried fungi. The stem is discarded, the pores cleared away from the underside of the cap, and then the white fleshy cap is cut in slices about the thickness of a penny-piece, and thoroughly dried in the air.

*Polyporus tumulosus*, *Cooke*. This species is used for food by the aborigines at Burpengary. Specimens of this fungus have also been gathered near Brisbane.

*P. intybaceus*, *Fries*. Near Brisbane.

*Hydnum coralloides*, *Scop*. The Cauliflower Spring Cap; Mount Mistake. All writers recommend stewing as the best method of cooking *Hydnums*.

*Craterellus cornucopioides*, *Linn*. Horn of Plenty; Petrie's Quarries, Brisbane River. This fungus is by no means plentiful in Queensland, which is to be regretted, for Dr. Cooke speaks highly of it, and says that he knew a fungus-eater who would think nothing of a walk of six or eight miles with the prospect of a dish of *Craterellus*.

*Clavaria flava*, *Schæff*. The Yellow Fairy Club; Brisbane.

*C. botrytis*, *Pers*. The Branched Fairy Club; Taylor's Range.

*C. fastigiata*, *Linn*. The Branched Fairy Club; near Brisbane.

*C. cristata*, *Pers*. The Crested Fairy Club; near O'Connelltown.

*C. rugosa*, *Bull*. The Rough Fairy Club; near Brisbane.

*C. aurea*, *Schæff*. The Golden Fairy Club; near Brisbane.

*Hirneola auricula-judææ*, *Linn.*, Jew's Ear; and *H. polytricha*, *Mont.*, Jew's Ear. On the logs and damp scrubs throughout the colony this fungus, which is so plentiful during some seasons, seems never gathered in this Colony, although it has for years formed an important export in New Zealand.

*Tremella lutescens*, *Pers.*, and *T. mesenterica*, *Retz*. Brain Fungus. These two are esculent, but not plentiful, and too small usually to be worth the trouble of gathering. Like the *Hirneola*, this is found on the logs in damp scrubs.

*Clathrus cibarius*, *Fischer*. The odour of this and allied species is of such a disagreeable character as to cause it to be rejected by most persons.

*Lycoperdon lilacinum*, *Berk*. (*Bovista lilacina*, *Berk*.) This Puff-ball is common to many parts of Queensland. It is used for food in India, but only in a young state.

*L. gemmatum*, *Batsch*. Warted Puff-ball; Logan.

*L. Bovista*, *Linn*. (*L. giganteum*, *Batsch*.) The Giant Puff-ball; very abundant about Milora. This species when properly prepared is said to be universally relished. The mode recommended by Dr. Cooke is this: cut the ball in slices less than half-an-inch thick, cover them with egg beaten up, and sprinkle with bread-crumbs; fry them until the surface is browned, and then serve. Of course pepper and salt are better sprinkled over before frying.

*Morchella deliciosa*, *Fries*. The delicious Morel, found at Gladfield. This and others of the genus are dried both in Europe and India, and sold as articles of food.

*Peziza cochleata*, *Linn*. Earth-cups; Brisbane. These are prepared for food by simply stewing, but Dr. Cooke does not speak very highly of them.

## NATURAL HISTORY.

[Contributed by C. W. DE VIS, M.A., Curator of Museum, Brisbane.]

The indefinite phrase, "Natural History," is very frequently and very properly replaced by its practical equivalent—the word "Biology," the science of life in animal and plant—and, therefore, as the task before the writer is to treat solely of the animal life of the State, the critical reader will please to understand that by "the Natural History of Queensland" is here meant its Zoology merely, although the looser term is for reasons used in the title. The topic is large—to exhaust it would require volumes—and the volumes will not be written this century. In a few other countries of equal or even less extent, but with a profuser clothing of vegetation, animal life may be more intense, more gorgeous, but in this of ours it is expressed in so great a diversity of form, with such a strange commingling of venerable old fashions, with quaint new fashions, that in one or other of its phases in particular, and relations in general, it bids fair to offer materials of study to generations of naturalists. If the question should arise what rank in the associated faunas of Australia does it confer on its own region, the North-eastern portion of the continent; and if it be not too heinous a crime to honestly support one's own land as a candidate for the highest, the writer will venture to affirm, on the authority of zoological statistics, that in her wealth of animal life, even so far as this is known, Queensland has no superior in any other region of the continent. In the compass of a few pages it would be possible to a skilful pen alone to give an account of the Queensland fauna which would, in its way, commend itself to zoological experts, though perhaps not in any way to the specialist, whose habit it is to look for precise and systematised information on any subject in which he is interested. It may, however, even in a superficial account of it, be possible to whet the appetite of some young student abroad for the detailed information to be found in scientific literature, or, better still, induce him to come out here and see things for himself. He will, in that case, be heartily welcome. At least it may not be impossible without much use of those scientific "tools," as a famous zoologist called them, long classical or pseudo-classical names, to give the intending emigrant some idea of the living things he may expect to see around him in his new home, or, to no less purpose, arouse in our own minds so much interest in the wild inhabitants of our country as to give birth to a desire for a closer acquaintance with them, a desire whose fulfilment is a new pleasure, an allurements from less refining indulgences, a refuge from the toils and cares of life. Like almost every other part of the world, Queensland nurtures representatives of each of the more comprehensive groups into which animal life has been sorted by, and for the convenience of, its students. Rightly considered, native man is as truly an animated product of the land as anything else; but man has had a science devoted to himself apart from other animals, and it is hoped that an exponent of it who has paid much attention to the aboriginal tribes of Queensland will instruct us concerning them.

It would be presumptuous to suppose that any reader nowadays is not conversant with the reason for separating all animals into two fundamental groups—vertebrates and invertebrates—or with the fact that there are various classes of each, *i.e.*, of the animals with backbones and of those without. It is obvious to all who see with their brains as well as their eyes that fishes, frogs, reptiles, birds, and beasts, all without exception have jointed backbones; whereas oysters, insects, crabs, worms, &c., have none. Thus far for the classification which, elementary as it is, seems sufficient for the purpose of a survey of the kind in view.

It is hardly necessary to say, and yet it would seem strange to leave it unsaid, that the great majority of the hairy-skinned, milk-yielding animals—in a word, Mammals—of Queensland, are marsupial, beasts which bring forth their young in a much more imperfect stage of development than other mammals, so helpless, indeed, that for a time they cannot so much as suck, but have to be placed by the mother on the nipple, within a protecting pouch or “marsupium,” and fed involuntarily. There are, indeed, people who conceive that all our mammals, one only excepted, are marsupial. An intelligent visitor lately expressed to the writer his surprise that the dingo was the only “animal” not marsupial in the country, and seemed to suffer from the loss of a cherished idea when reminded of the presence of certain other beasts of higher grade. Compared with the native dog, which he knows is not a marsupial, the bats and the rats and mice are to the bushman too insignificant to be remembered, if indeed he happens to be aware that they also are non-marsupial, while the whales, porpoises, and dugongs are “fish,” and therefore, out of the question. The dingo, said to be the only true wild dog extant, terror as he is to the shepherd, is a cowardly beast, and, fortunately, does not acquire courage by gathering in packs. One may sleep safely with three or four of them quarrelling over the bones left from the evening meal. Whence and where he found his way into Australia no one knows; the probability is that he came subsequently to the arrival of man, at no very distant date, since no trace of him is to be found among the relics of animals that have become extinct.

In a country favoured or otherwise with an abundance of insect life we naturally expect to find the increase of night-flying insects kept in check by bats, and numbers of these useful little creatures may be seen at eve flitting about in pursuit of their prey. There are many different and interesting kinds of these carnivorous bats, diminishing in size to that of a small mouse. But favourably as we should regard the smaller bats, we cannot give the like approval to their gigantic cousins (which extend a wing two feet or more in length), the fruit bat or flying foxes. Before civilisation brought fruitgrowers in its train the flying foxes, which in reality feed more largely on honey than fruit, did good service to native forestry by scattering the pollen of the flowering Eucalypts, as in their search of honey they distributed, with much bickering and scolding, the masses of bloom, and in their flight by carrying it as they do now from tree to tree. But they have also a natural appetite for fruit, and do not fail to indulge it whenever they find an opportunity, and the grower thereof votes them a pest accordingly, and slays them without mercy. As the forest disappears so will the flying fox; meanwhile wholesale massacres of them are

made in their daytime sleeping-places, or "camps," in which they congregate by thousands. Unfortunately not one of the several kinds native to the country commends itself as an article of food to the taste of anyone but the "blackfellow."

Indigenous rats and mice of several kinds are generally distributed over the State. To say that they are true representatives of the higher type of mammals called rodents, and carefully to be distinguished from so-called marsupial rats and mice, may be thought, but is not, quite unnecessary. None of them seem inclined to make themselves at home in dwelling-houses, and the great majority of them are quite unknown to our people. There are, indeed, two species which do obtrude themselves on notice. In the Northern districts there is a large rat which occasionally multiplies to so great an extent as to move about in swarms with unpleasant results to property. A more generally known rat, common throughout Queensland, and indeed Australia, is the water-rat, a large, strong, and bold haunter of pools and watercourses, and now and then venturing upon sanguinary frays into the poultry-house. One cannot refrain from including, in even so brief a notice of our rats and mice, some mention of the elegant little jumping mouse, like to nothing so much in form and gait as a miniature kangaroo or jerboa, extremely shy or extremely rare, indeed so rarely seen that the policy of drawing the attention of observers to it is the chief reason for speaking of it at all, as it is really doubtful whether it in any one of its kinds inhabits this State or not; should it be met with it is to be hoped the finder will make it better known.

In the tale of our more highly organised sucklers must necessarily be counted those which, in forms adapted to their mode of life, enjoy life and quit it in the seas upon our coasts, and are commonly not so much as suspected to be hairy-skinned, milk-yielding beasts, like the "milky mothers of the herd." We can boast of two families of them—whales and dugongs—each entirely foreign to the other. Of whales few beside bottle-nose whales and porpoises frequent our waters; it is but once in a generation or two that a sperm whale—or its carcass—some 60 or 70 feet long, finds its way to our shores to supply the Philistine with a backbone joint for a garden seat, or a pair of jaws for a gateway arch. The marine animal of more practical interest is the dugong, one of the three surviving members of an old race, which but lately lost another in the Arctic seas. The headquarters of the dugong are the tropical shores washed by the Western Pacific, whereon grow the sea-plants on which it feeds. From the Papuan end of its breeding-ground-in-chief wanderers pass along our eastern coast as far southwards as temperature and food permit—as far, that is, as Moreton Bay. Formerly the animal seems to have been not unfrequent in this bay; later on its oil, bacon, and hide maintained for a time a small "fishery," but in spite of a close season instituted for its protection fishing operations and steam traffic are rendering it scarce. Further north it is to be found in greater, but not permanent, numbers. Though from a commercial point of view unimportant, it will long continue to be to the zoologist a valuable object of research.

So far, then, from possessing almost no mammals but marsupials, it appears that we have, in addition to the wild dog, bats, rodents, whales, and dugongs. Further on we shall see that to these must be added two others. Nevertheless, the fact remains that by far the greatest

portion of our mammalian fauna consists of marsupials, and to these we pass.

The first known animals of this class were a few opossums, long ago discovered in America, and no others became anywhere known until they were found in strength, living and extinct, in Australasia. Of the ancient history of the class little is known, although it has evidently had somewhere on the earth an enormously long career. Traces of it appear in European deposits referred to the mediæval age of geologists, very long before mammals of a higher type entered the battlefield of life. How and when the marsupials of the old world, yielding place to their superiors, found refuge in the antipodes, we cannot say. Why they flourished in Australia, and why they fell into decay there, we may, perhaps, suspect later on. Of marsupial life Queensland has more than her full share, be they the vegetarian tribes—as wombats, kangaroos, wallabies, kangaroo rats, native bears, and the like; or the carnivorous—as the native cats and their kindred; or the more or less omnivorous—as the bandicoots and 'possums. Kangaroos are still plentiful, but anyone who would meet with them in their homes must now travel far from centres of population to see the great kangaroos in undisturbed enjoyment of their separate domains. True, the blackfellow, their one-time enemy, has gone, but the rifle of the scalp-hunter, and the kangaroo dogs of squatter and settler harry them and keep their numbers in check wherever interests are to be conserved. Still it is very possible here or there to watch a troop of great grey kangaroos descending at even from their midday camp on some stony ridge to feed on the surrounding plain; or to see the sturdy black wallaroo gazing surprisedly down from a mountain crag; or the graceful pretty-face bounding away over a rocky height with more than deer-like swiftness; or a startled rock-wallaby leap from boulder to ledge up the face of the cliff. Of the various other wallabies—and there are many of them—each has its favourite haunt; in scrub or forest, rock-strewn hill-side, or grassy creek bed. Now and then, as we pass on foot through a "paddock," a kangaroo-rat springs from the concealment of its nest in a clump of tall grass, runs with the nimbleness of a hare for some 20 yards, then suddenly stops and turns to look at its disturbers with mild reproach. If we examine the hind feet of all these animals we cannot but see how well adapted they are to leaping progression over the ground. It would seem then ridiculous to suppose that any such feet could hoist their owner's weighty body up a straight and tall tree; yet this is done. In a district of limited extent on the north-east coast, are found two, if not three, kinds of kangaroo, which for security and sleep climb the tallest and straightest of trees, only descending from them at the bidding of hunger and love. The interest with which these tree-climbing kangaroos are regarded by zoologists is, however, less perhaps on account of this curious faculty of theirs than on account of the fact that there are other kinds of them living in New Guinea, and that a land passage between the two seems the only probable way of accounting for the presence of such animals in both countries.

The only family of marsupials which, until quite lately, was supposed to be entirely absent from Queensland, is that of the wombats—burrowing, root-eating, tailless animals, comparable with young bear cubs. The family, once a large and powerful one, has now

dwindled down to three—some think four—kinds, including one recently discovered in this State. Carnivorous marsupials are few and very much degenerated. The so-called "native cats," three in kind, are, apart from the dingo, the only beasts of prey in Australia, and the largest of them, the spotted-tailed native cat, is not larger than some domestic cats, and even less obnoxious than the domestic cat run wild. It has a very evil reputation among settlers, whose poultry it is apt to destroy, and the blacks in some districts are said to accuse it, or something like it under the name of the tiger-cat, of attacking their infants. The brush-tailed rat is one of this family, and a very active and bloodthirsty little animal it is; though no larger than a small rat, it kills a hen with a single bite through the skull. The marsupial "mice" are shy little things, very rarely seen unless searched for, and deserving of a good name as great destroyers of insects. The opossums, innocent receivers of a name stolen from their distantly related marsupials of America, are animals as well fitted for arboreal life as monkeys, since they are practically four-handed, and have generally in the grasping tail a fifth hand as an additional means of safety. The common grey opossum of the forest is a staple food of the aboriginal who, climbing trees of any thickness, smoothness, and height, almost as well as itself, tracks it to its lair in some hollow branch. Its near relatives prefer the scrubs in which one of them makes for midday resort a well-built nest. The family includes the "flying squirrels," so-called, although they are neither squirrels nor capable of flight. They "fly" only to the same extent as does a bird in its descent from the air to the ground. To pass from tree to tree they launch themselves from a high bough into the air with outstretched feet, expanding in the act a broad sheet of skin between the limbs, and on this, as on a parachute, they float downwards, till with a sudden change of direction upward, they deftly alight upon their mark. A pretty little striped opossum, and in connection with this tribe a curious little mixture (superficially considered) of opossum and kangaroo, both from the north-east coast, would be worthy of being mentioned more at large were space permitting.

The koala, or native bear, which has a whole family to itself, is too frequently met with to be passed with thus lightly. Of all the animals in the bush it is surely, with its spider limbs, tailless body, and stupid countenance, the most grotesque. Its vitality is as extraordinary as its build. Seated, as usual, in the fork of a lofty tree it will receive bullet after bullet into its body with seeming equanimity till the gunner sometimes leaves it in disgust, to find it some hours later dead at the foot of the tree. A female koala with an exact model of herself riding on her back with its head between her ears is a sight not easily forgotten. There is good reason to believe that a koala of vastly greater size preceded the existing one. Last of the living marsupials to be noticed are the rat-like bandicoots; nocturnal like most of the others, omnivorous, a great pest from a gardener's point of view, and when roasted the most luscious of all native meats, though indeed a young wallaby makes a "rabbit pie" much superior to the genuine article.

It has been already intimated that, besides the higher mammals enumerated, there are two others that are non-marsupial. These are the monotremes—apparently the only group of mammals which has in the vernacular no distinctive name. The great inferiority of these

animals is established without recourse to internal structure by the fact that, like reptiles, they have but one posterior orifice, a state of things signified by their name; that again, like reptiles, they lay eggs, from which the young are hatched, and that their mammae, or milk glands, are not furnished with nipples. There are but two families of the description in existence. Of one of them but a single kind remains—the platypus, sometimes called in books the duck-billed mole, or water-mole, the only justification for so misleading a name as “mole” being that, like that animal, it is clothed with a short velvety pile of fur. To the careless eye merely one of the queerest of animals; to a more searching one it shows itself, of course, perfectly adapted to the aquatic life it leads. Even its duck’s bill, the most extraordinary known departure from the ordinary form of the jaws in mammals, becomes intelligible when we know that the animal takes the same food in the same way as the duck itself. Unwearied, motionless patience, must be his who would study from a river’s bank the ways of the platypus at home. Ever so slight a movement and the wary little heads dotting the surface of the water disappear with the bodies that were swimming merrily about and chasing each other a moment before. If we could sink with them and watch their doings below, we should see one perhaps busily passing the mud and sand of the bottom through his jaws, sifting out from it all he can find of food; another enter a hole in the bank, travel upwards along a subterranean passage, past the opening of another passage leading into the open air, and finally reach his destination—a chamber in which his mate is hatching her eggs or suckling her young. For details of the life history of the platypus, the reader who desires them must be left to consult a library.

The other monotreme inhabiting Queensland is the echidna, also known in the bush as the “hedgehog”—in books, as the “porcupine ant-eater.” It is almost needless, in view of the many misnomers already met with, to say the animal has nothing to do with either hedgehogs or porcupines. In outward form and mode of life the echidnas, which are found in New Guinea also, are entirely different to the platypus. Furnished with a complete suit of defensive armour in the shape of long sharp quills, the echidna quits at night its burrow or hollow log, and roams the forest where ant-hills abound, fearless of attack from dog or snake. Endowed with enormous strength and great claws it digs into the sun-baked hill, tears it open, and feasts on its helpless inmates, licking them up with its long tongue. If abroad in the daytime and alarmed, it burrows swiftly. Watching for game one day beside a small pool, the writer saw an echidna come down the opposite bank to drink; when on its departure it had reached the hard ground on the top of the bank he saluted it with a charge of small shot, which of course took not the slightest effect upon it. It at once began to burrow, and before its assailant could run round to it, a distance of about 30 yards, it had half buried itself, and was with difficulty dragged from the hole to be looked at and dismissed in safety.

Birds are general favourites. Those of Australia, and consequently of Queensland, have been frequently written about, pictured, kept in captivity, made objects of legislation, and withal keep themselves very much in evidence in forest and scrub, on mountain and plain, lake and sea. Yet it is not everyone, even in their native land, whose

knowledge of them is so complete as to make a bird's-eye view of them altogether superfluous. To the stranger in the land it may possibly be a guide to the portals of such knowledge.

Reversing the usual order adopted by ornithologists, the eye first falls on the great wingless birds, which Australasia shares with New Zealand on this side of the Southern Hemisphere, and Africa and America on the other. The cassowary, now restricted to one spot on our North-east coast where alone the scrub is dense and fruity enough to give it shelter and food, is an outlier of the cassowary group, a group restricted to and dispersed over the Papuan Islands, and at present no evidence is forthcoming of its having existed elsewhere in Australia, though such was probably the case formerly. One wonders that this grand bird has not been adopted as a distinctive emblem of the State. The emu was so honoured in preference, probably, because its general diffusion over the country made it better known, though not by the sheep-owner better loved. An ancestor of the emu was superior in size to the cassowary, and contemporary with a moa, long ages before that gigantic bird was found in New Zealand.

The headship of the birds of flight is here accorded to the parrot tribe—their intelligence claims it; their structure does not deny it. Of the parrots proper we have none, but their place is bountifully supplied by the cockatoos and parrakeets—cockatoos, white, black, and coloured; parrakeets, honey-sucking and otherwise. A lively feature in a Queensland landscape is a flock of sulphur-crested cockatoos clambering and flitting about the branches of a forest tree, which seems laden with masses of white bloom. Black cockatoos, of which there are several kinds, are not so sociable, but the naturalist may be fortunate enough to enjoy the charming sight of a company of them swooping down into an old swamp-oak on the bank of a creek, and before descending to drink disporting themselves with a great display of wing and tail blazing with red and yellow—a sight well remembered by the writer. The great palm cockatoo, with its fearsome crest and beak, is found only in the North. Small cockatoos, delicately coloured and more or less plentiful in their respective habitats, are objects of traffic, among them that favourite household pet, the galah, the best mimic we have, except, perhaps, the white cockatoo. Seed-eating parrakeets in a multitude of handsome liveries haunt the forests, but are not often seen till they join in an attack on a settler's crop, when they are better not seen. In spite of the demand for brevity, one cannot help recalling the delight with which the new chum riding through the bush saw for the first time a troop of green and crimson parrakeets dash into a small tree a few yards away, and watched them as with chatter and screech they climbed about its branches. Of this group the king lory, Moreton Bay rosella, and crimson-wing are the best known, the prettily marked grass parrakeets the least. But of all the parrakeets the most likely to greet the eye in the forest are the honey suckers. Their chosen food is the honey of the gum-tree flower. In some parts of the forest some kind of gum-tree is generally to be found in flower, and the parrakeets by day as well as the flying foxes by night make it their business to hunt them out. The wealthiest man is not on every account to be envied who, standing beneath a tree clothed with bloom, marks the birds—blue mountains, scaly-breasts, and musks—in busy silence and every posture, upside down as often as not,

searching every flower, whilst their vivid colours in beautiful contrast to the pale green foliage are glancing in the sun; and now and again watches a contingent of blue mountains dart with arrow-like swiftness and joyous cry into the midst—and turns away without gratification.

And what of the birds of prey? Compared with the whole bird population of the country their number is unusually low. Vultures there are none. The Australian eagle, otherwise eaglehawk, did what service of theirs there was to do before "cattle-beasts" died on the plain, and is a rather common bird, too common where young lambs are about. Of its nearest relative, the little crested eagle, we know far too little. Sea eagles and ospreys take their accustomed toll on lake and river; one of the sea eagles, indeed, is accused of killing lambs. Falcons, goshawks, hawks, kestrels, kites, harriers, &c., find sustenance on land. Above all, as an object of desire, the black-breasted buzzard, which the writer once saw on the wing, but personally knows no one else who has seen it, so extremely rare is the bird. The handsomest of all the birds of prey is the snow-white goshawk.

As no one knows where to place the owls rightly they may be given their usual rank, after the diurnal birds of prey—a phase which in reality fails to distinguish the great majority of birds one from another. Owls are not numerous in kind. It will suffice to note in particular the great scrub owl, the most powerful of all and the most tenacious of life; the Australian barn owl, scarcely distinguishable from the barn owl of England; and lastly, the boobook, whose cuckoo-like call may be commonly heard at dead of night in the bush, and even in the city—whence the statement that in Australia the cuckoo sings at night.

Moreporks, that is, nightjars and goatsuckers of several kinds, inhabit different parts of the country, and may not infrequently be seen after sunset taking their first flight in pursuit of a breakfast; in the daytime it needs a rather keen eye to distinguish them, as they crouch lengthwise on a bough of much the same colour as their plumage. The common and the spine-tailed swifts make their appearance here and there as food and other necessities prompt, and in Northern districts are met with the swiftlets—builders of the edible bird-nests so dear to the hearts of Chinamen. The dollar-bird, or roller, is in the South a summer visitant. In October we first hear his unmusical voice, and see him perched on a dead bough, making therefrom short excursions into the air after passing insects. When apiaries become more common inland, the bee-eater will be written down a pest.

Kingfishers of one kind or another are generally distributed, and are considered beautiful by those who think that it only requires fine feathers to make fine birds. Most of them are useful, but that notorious and belauded member of the family, the laughing jackass, must be excepted. He is a voracious destroyer of some of our best friends, lizards especially, and yet he is tolerated. There is a popular notion that he destroys snakes, and therefore, whatever his faults, he must be held sacred. One only of a number of persons of long experience in the bush who have been asked whether they ever saw the laughing jackass kill a snake has been able to say, "Yes, once!" and it is twenty to one that the snake killed was a harmless one. The name "laughing jackass" at least should be expunged from that antiquated crudity, the schedule to our Bird Protection Act.

Cuckoos plain and cuckoos bronzed are plentiful in their seasons and haunts. The large black fruit-eating cuckoo, the koel, comes to us in the spring, and announces his arrival with the sonorous cry from which it derives its dissyllabic name. Then we have the channel-bill, sometimes called, from instances of its voracity, the chicken cuckoo. The most curious and un-cuckoo-like is the swamp pheasant, which is not very dissimilar to the real pheasant, nestles its own young, and is a good table fowl. Of swallows we have but four, and of these the fairy martin is the only one which makes itself familiar, too familiar at times, by building under our verandahs.

A host of different kinds of birds, between two and three hundred in number, must be passed by hurriedly and reluctantly:—Flycatchers, shrikes, shrikelings, tree-swallows, tree-creepers, sun-birds, diamond-birds, honey-eaters, dragoon-birds, wrens, ground thrushes, finches, and others, among them the lyre bird, which is looked upon as a gigantic wren.

Passing in like manner over the crows and their next of kin, we may pause to note the large share possessed by Queensland in that remarkable group of New Guinea birds—the birds of paradise and bower birds. Three kinds of rifle bird and a manucode—none of them emulating in splendour the paradise birds of the northern island—serve to show that the North-east corner of Australia has either attracted or perpetuated members of the family beyond its present range. It may appear subsequently that the latter alternative is the more probable. The bower-birds, though represented in New Guinea by several interesting kinds, attain greater development in Queensland. The regent-bird, satin-bird, and spotted bower-birds are content with a playground, which is a gutter-shaped structure bounded by walls of grass-stems fixed nearly upright. Through this passage they run backwards and forwards carrying with them from side to side dead shells, pieces of bone, and other bric-a-brac valued by them. The crested bower-bird's idea of a playground is entirely different. A family of them select a spot where two saplings grow a short distance apart, with a raised vine stem or tree root stretching between them; around one sapling a column of interlaced horizontal sticks is built up to a height of six or eight feet and ornamented on the outside with flakes of moss and lichen. The other sapling is similarly surrounded, but only to a small height. While the birds are busy at work the chief of them struts up and down the vine stem with much flapping of wing and spreading of tail, as though he were instructing and encouraging the rest to work.

Next to the parrots no more lovely birds are to be found in Queensland than the pigeons. They are clearly another extension southwards of the tropical fauna of the New Guinea islands, which more than any other part of the world abound in ornate pigeons. The maroon-breasted fruit pigeons take the palm for size; the small fruit pigeons for vivid contrasted colouring; the plumed pigeon for elegance; the wonga-wonga for delicate flesh for table purposes. Before dismissing the pigeons it should be added that in former times a fore-runner of that splendid bird, the crowned pigeon of New Guinea jungles, was an inhabitant of this country. Strong-winged birds like the pigeons in general would, of course, have no difficulty in reaching it were they so inclined, but the crowned pigeon, a heavy ground bird,

and the bird next to be noticed, the scrub hen, are nearly as unlikely to pass the Straits as the cassowary itself, yet we find it in different forms distributed over the Papuan area.

The scrub hen and scrub turkey do what no other birds do—fail to make or find the means of hatching their eggs by the heat of the body, but, like reptiles, commit them to the earth. In any Queensland scrub may be found great heaps of rubbish, 15 feet or 20 feet across, piled up 3 or 4 feet high; these are the “egg ovens” of one of the mound builders—the scrub turkeys—in which, during construction, a large number of eggs are buried by the birds and left to hatch; the little heat generated by the slow fermentation of the dead leaves and the like suffices for the purpose, and the young birds come forth fully fledged and independent. Scrub hens, trusting to the heat of the sun as an “incubator,” raise mounds of sand over their eggs.

The stranger who visits us for sporting purposes will, perhaps, be disappointed to find that we have no “game birds” except quails; if the great variety of these and their frequency leave him discontented, the pursuit of the scrub turkey and the noble bustard, or plain turkey, in their respective haunts, will afford him diversion.

The birds are, perhaps, claiming from the reader more than their fair share of his attention. Plovers, shore-birds, rails, herons, bitterns, ibises, all must be passed lightly by with merely a gratulatory glance at the well-satisfied snipe-shooter, a glimpse of the lotus bird walking daintily on the lotus leaves, or of a great jabiru standing solemnly within the brink of some solitary lagoon—but at such a lagoon one must perforce linger for a moment, for its surface is alive with water-fowl of every description. There is the black swan in all his native majesty, surrounded by ducks, shovellers, widgeon, teal, divers; whistling ducks fly down from their perches in the trees, and geese in little “mobs” dot the shore, and if all this is not enough to glut the eye of sportsman or naturalist, here on their great wings come a troop of white pelicans, before whose splash into the water all lesser fowl scatter in consternation. As for cormorants, darters and grebes on inland waters, gulls and petrels, gannets, &c., on the coasts, we must leave them with the remark that Queensland harbours nearly three-fourths of all the birds in Australia, and descend to the reptiles—and what a descent this would seem if we did not recollect that birds, with all their vivacity, beauty, and other engaging qualities, are, after all, only warm-blooded reptiles, clothed so as to keep their blood warm.

To speak of the reptiles of a semi-tropical country to a native of a cooler climate is to suggest thoughts of vicious death-dealing creatures encountered abroad at every step—at home in every nook. The writer is probably not the only emigrant who, for a while after arrival in Queensland, shook his boots every morning to make sure that no prowling snake had found a lodging there. Whether this hereditary horror, confirmed by sensational story, is justified by experience of Queensland reptiles may appear later on.

The coast crocodile, the common crocodile of the Western Pacific, travels along our North-eastern coast and ascends our northern rivers as far south as Keppel Bay and the Fitzroy which empties into it—there its range terminates with remarkable abruptness. It attains a length of 25 feet, and what must be its age at that time may be judged from the fact that young ones taken from the egg only reach a length of 15

inches in as many months. It is a fiercely voracious animal, but, of course, only dangerous to those who risk attack by putting themselves within its reach. In fresh-water pools of the northern portion of the State there is a smaller kind of crocodile rarely exceeding 8 feet in length. It has a long slender snout, never descends to the sea, and is quite harmless. Alligators there are none, though the crocodile has the name misapplied to it very pertinaciously. Rivers and pools are tenanted by several kinds of fresh-water tortoises of small size; the coastal waters are frequented by the great marine turtles, which furnish tortoise-shell and culinary material, and by the ponderous but useless leatherback.

Lizards are extremely numerous and diversified. Lizards of one kind or another are not unfrequently sent to the writer with an inquiry whether they are poisonous; there seems, indeed, to be a general impression abroad that every reptile is or may be so—the fact, however, is that there is no venomous lizard in Australia; and elsewhere there are but one or two exceptions to the rule that all lizards are venomless. On the other hand, the best of good words should be said for our lizards, for without them the land would soon be uninhabitable; as foes to insects they are even more deserving of our respect than birds, since they are devoured by many insect-eating birds, but are, as a rule, too small or too slow to capture any of their feathered co-operators in the slaughter of insect pests.

It must, however, be confessed that this does not apply to the most prominent of them—the monitors—which go by the name of iguana, in more or less corrupted guise, the effect of another stupid inclusion of an Australian animal in an American name. Monitors of all kinds are perhaps the most pernicious animals on the whole that we have. Growing to a large size (6 or 7 feet), great roamers, expert climbers, they search out and devour every living thing they can swallow (which is saying a great deal), eggs and chickens included; they are not without cunning also—the writer has known one repeatedly wait till a laying hen had left her nest and then make off with the egg. It is fortunate for all interests that the race, which once boasted of members of 15 feet in length, and kindred of twice that size, has dwindled to its present dimensions. There is one peculiarity about the monitors, not met with in any other lizard, which deserves mention—their snake-like tongues. This very noticeable and by no means attractive feature is seen as the creature moves along, in the shape of two long forks repeatedly protruded downwards and vibrated as though they formed an organ of special sense outside the body.

The other lizards reckoned in their tribes amount to a surprising number. One of their major groups contain the skinks, whose obvious characteristic is a complete suit of overlapping scales. A familiar example of these is given by the tiny fellow that runs up our walls in quest of minute insects and clings to them in the hottest sunshine. Another we meet with in the sleeping lizard, one of the very few vegetarians of his class, a slow lethargic animal that, in self-defence, merely opens a wide mouth and shows a great blue tongue. In spite of a tongue impossible in a snake, the poor innocent creature is, by some strange misconception, often called the “death adder,” and killed on sight accordingly, an apt illustration of the adage about giving a dog a bad name. The skinks, as a group, are remarkable for

inconsistency of form and limb; there are short ones with four strong legs, longer ones with two little legs—a pair sometimes in front, sometimes behind—and very long ones with no legs at all, snakes to all outward appearance. A second group consists of geckos, a foreign name intended to give an idea of the sound of a peculiar chirp sometimes to be heard at evening in our houses, for these lizards are rather domestically inclined. They are all comparatively small, stumpy, large-headed, and large-eyed lizards, covered with little nobs in place of scales, and with toes so formed that they are able to climb on glass or walk like flies on a ceiling—the last seen alive by the writer was on a window trying perplexedly to seize a fly on the other side of the pane. The third group having no vernacular name one may, for the nonce, call raspers, as their scales, though present, do not overlap, but form prickles more or less pronounced. The jew-lizard, with its beard of long-pointed scales, a rather common object on a sunny day in the bush, is a fair sample of the whole. Another, about four inches long, covered from head to tail-tip with a formidable array of long spikes, has, perhaps, the most unearthly aspect possessed by a reptile, and its terrific name—*Moloch horridus*—suggests that it is inspired with a Satanic craving for victims, yet it is entirely harmless. In our State it is not found far within our western bounds. Even in a country studded with anomalies of the kind one would hardly expect to see a lizard walking on its hind legs, yet in Queensland this is quite possible. The writer once had that experience. We have here a member of the present group, about two feet long, furnished with an enormous frill on each side of its neck, and the power of erecting the frill so that it frames the head and reminds one (with all due respect) of Queen Elizabeth. A frilled lizard was seen from a veranda creeping quietly along the ground, suddenly it stood erect on its hind legs and looked about, then ran quickly in the same posture for ten or twelve yards, stopped, erected its frill and turned its head from side to side as though listening, ran some yards further on, stopped again and repeated the performance, then subsided and went on its way as a “creeping thing.” No other lizard, in Australia at least, can do the like, but the writer once came suddenly on a sleeping monitor (iguana) which, in its fright, made two or three steps with body erect to get away.

As addenda to the three groups foregoing we have a few very snake-like, practically limbless, lizards, which, not being skinks, systematists class by themselves. One living underground is frequently dug up in the suburbs of Brisbane, and almost invariably killed first and sent up for trial afterwards. What service or disservice it renders underground we do not know. Another, and a sprightly lizard above ground, suffers the same fate, though its long wedge-shaped head, so different to any snakes, ought to be sufficient protection to it.

In the snakes themselves everyone is interested—blacks from a gastronomic point of view, whites from an inbred detestation of them. Bushman's law is—“When you see a snake, kill it!” and the present writer is not disposed to decry the practice. He would spare no real snake above ground, not because some few of them carry dangerous weapons, but because all of them are foes of our friends the birds, lizards, and frogs; but he would stigmatise as “cruelty to animals,” as well as bad policy, the destruction of snake-like lizards, by those who will not take the little trouble, without risk, required for their recognition. A

glance at their short flat tongue is sufficient, even if no rudimentary legs are to be seen.

It has been frequently affirmed that almost all the snakes in Queensland are poisonous. So far from the fact being so about half of the fifty kinds, or thereabouts, domiciled in the State are innocuous. Nor does it by any means follow that all the venomous half are dangerous—in truth, nine-tenths of them are not so. Though they have in various degrees of efficiency the poison apparatus of their particular family, their actual innocuousness is proved by their complete immunity from blame. The few cases of fatal snake bite are debited most commonly to the brown snake or the black snake, very rarely to either of the three or four others known at present to be capable of a death bite. These are the death adder, the most vicious looking of all, but fortunately common only in certain localities; the orange-bellied black snake of the central coast districts, which grows to a length of 10 feet or more; a keel-backed snake, with a ridge down each scale, which should be carefully distinguished from a harmless water-snake of similar appearance; and a snake in the Western country, of which but a part of a specimen is known. The black snake, the worst offender, is an indication of water in the neighbourhood, frogs being a favourite article of diet. Its bite though as a rule severe or fatal in its effect is not always so. A dog has been known to be bitten severely by a large black snake in the middle of summer, lie in a comatose state for a time, rise, return home with its master, and recover completely in a few days. Few of the lesser venomous and sized snakes are familiar objects. The most frequent in the neighbourhood of Brisbane are the coralled or ringed snake, with close set black and white rings, and the coronet, with a white crescent on the crown.

Venomless snakes are better known to the generality. Among them are members of the constricting family, the pythons—the common carpet snake for example, which makes its presence known in the poultry yard, and has been found binding down the wings of a hen while it swallowed her chickens at leisure. Individuals of 20 feet and upwards have been reported, but it would appear that even that size may be exceeded by a snake in the Central district, where the black-headed rock-snake has its quarters, and is, or used to be, venerable, perhaps as a totem, in the eyes of the aborigines. Specimens of these 25 feet in length are said to have been measured. They are sluggish and harmless. Trees give food and cover to two kinds of the non-constricting venomless snakes—the green and the red tree-snakes. The long and slender green tree-snake is one of the most common reptiles of the kind we have, and is as much at home in the water as among the branches of the trees. The red tree-snake is little less frequent but much less innocent in appearance. Those who believe that a broad flat head in a snake indicates malice and the power of indulging it can hardly do justice to the red tree-snake. Water-snakes of various kinds are found in creek and lagoon, where they may now and then intrude with startling effect on the privacy of a bather, but do no further harm. Blind worms of many kinds are found in our gardens and ploughed fields. Our coasts are naturally not entirely without the sea-snakes which affect the warmer seas of the tropics, but our cooler waters are not so congenial to them as to allow of their production in any great number or diversity of form. They

are reputed venomous, and indeed are so. Accidents, however, from this cause do not seem to have occurred among our seafarers, though the snakes occasionally enter the nets of fishermen.

The amphibia of this country belong entirely to the tailless division of the order—no newt or eft has been yet discovered in it. Frogs and their near kindred are on the other hand plentiful, more especially tree-frogs. For the great green tree-frog the country housekeeper may contract almost a friendship, for it is apt to enter a room and mount to the top of a wall where it sleeps in close attachment to its perpendicular bed the day through. When darkness comes it falls through a dozen feet or so on to the floor with a thud which makes one wonder it is not killed outright, then calmly hops out to seek its nightly food. Looking casually upon the broad pale-green leaf of the native lily we see nothing more than its surface, but presently the eye becomes informed with something not lily, and discovers a miniature frog of exactly the same pale-green as the leaf squatting beside the mid-rib and, confiding in its mimicry, never moving until it is actually touched. Of toads also we have many kinds, one a perfect gem, or rather a brooch of gems of every colour, but most of the others, like toads in general, are remarkable for beauty neither in form nor colour. All the tribes of frogs and toads are, however, eminently serviceable to us and should be held in the highest respect.

It will surprise the naturalist, who is aware of the richness of our marine produce, not to speak of the social economist who expatiates on the value of a mixed diet, to hear that our shops, even in our seaport towns, are wretchedly supplied with fish, and offer the purchaser a poor, often a Hobson's choice, at prices much beyond the worth of fish as an article of food. This state of things is not due to natural causes, but to the want of any great recourse to the sea for food being unfelt by a prosperous people ordinarily supplied with meat at low rates. Should it ever unfortunately happen that we are in real and daily need of fish we have enterprise among us sufficient to create a fishing industry worthy of the name, and resources sufficient to make it profitable. Meanwhile the interest felt in this part of our fauna by those who make a special study of fish will naturally be left very much to them. In the country itself it cannot be called profound.

One of the most important of our fresh-water fishes is the Murray cod, a very ancient inhabitant of our south-western rivers, from the Macintyre to the Brisbane and the Mary, though these latter rivers are each severed from the others by mountain ranges. It is a fine large fish which may weigh 50 lb. or 60 lb., and very destructive to smaller fish. As its name indicates, it is found not only in the present and past branches of the great drainage system of Eastern Australia, but in the Murray itself. It serves to afford us some slight clue to the antecedents of a fish which among Australian fish is of surpassing interest to the zoologist—the ceratodus or Burnett salmon, sometimes confused with the barramundi. The Murray cod and ceratodus are now found in the same river, the Mary. They formerly existed together in a present tributary of the Murray, the Condamine, a fact affirmed by the presence of their fossil teeth and bones. The probability, therefore, is that together with the Murray cod the ceratodus inhabited at one time all the fresh waters of the Murray system. But the intervening time is a very small part of the whole duration of the ceratodus. This fish, now so well known in scientific circles, may be

called a living fossil, perpetuating a line that runs back through the ages to a time that is called distant even by geology, and an organisation which almost denies it a place among true fishes. First discovered by means of its teeth in European rocks, then in India, it has now, perhaps, reached the goal of its career in time and place in Eastern Queensland. It is inconceivable that such a fish should have crossed the ocean, but it is conceivable, nay, most probable, that Asia and Australasia were at one period united; otherwise, indeed, it would be difficult to account for the presence of marsupials in the latter, notwithstanding that these are not yet known to have existed in India. The *ceratodus* has been credited with the power of leaving the water to enjoy itself for a while upon dry land. It is difficult to surmise what can have given rise to such a notion. It is true the animal has a kind of rudimentary lung in addition to its gills, and it may possibly be able to breathe free air to some slight extent, but its short paddles (not fins as in true fishes) are incapable of hoisting its heavy body on to dry ground—at any rate, the habit has not, to the writer's knowledge, been observed, and the statement is merely, perhaps, a literary embellishment. It is a curious fact that no small individuals of the fish have ever been seen: we know the fry and the adult, but nothing between them. Like the cassowary the *ceratodus* has few relatives, and these surviving in distant portions of the earth. So it is also with another of our fresh-water fishes, the true barramundi of Northern rivers. They have a kinsman in Africa and nowhere else. The barramundi is said to be a good table-fish. It runs to a large size, and seems likely to offer sport to the fly-fisher as it feeds largely at the surface of the water on passing insects, a habit facilitated by the position of the mouth on the highest level of the head. The palmer, of North-eastern waters, is also an esteemed table-fish.

Without pretending to give a list of the tenth part of the edible fish on the coast we may mention a few of the better known examples of them. There is the giant perch, sometimes 70 lb. in weight, which, under the same influences as the crocodile, comes down our Eastern coast from the warmer seas as far as Keppel Bay, where, like the *ceratodus*, it is wrongfully called barramundi. In the South, gropers, attaining a weight of 3 cwt.; schnapper, in their season, affording abundant sport to fishing parties and highly esteemed; sea-bream, plentiful and much appreciated; and in the winter months swarms of sea-mullet in the rivers, ascending them on their way to their breeding grounds.

What there is awaiting our future needs outside our bays and headlands is almost utterly unknown. To assuage any thirst for the marvellous there are fish that leave the water to hop about on the beach in pursuit of prey; fish that shoot down flies with a drop of water ejected from the mouth; fish that fly; fish that float upside down and allow themselves to drift at the will of the waves, and bring quick death to him who eats them; fish who live inside other animals; fish that are said to be used in catching turtle; fish that look like sticks with seaweed growing on them; but these and others are but the grosser eccentricities among true fish to be met with. The inquiring eye will see a marvel in every fish that swims in the sea. Lastly, there is a little fish-like creature living in the sands of our coast—too little of a fish to be included in them, too much to be anything else, and therefore standing on the boundary line between

the two great realms of animals with, and animals without, a backbone; it is named the lancelet.

The small size of the generality of invertebrate animals gives so much greater facility for examination and preservation than the troublesome remains of mammals, reptiles, and fish, that for one student of the latter there are a score whose interests centre in shell, beetle, or butterfly. The like preference is, of course, shown by our local zoologists, with the result that our knowledge of these branches of animal life, more especially of the two which are the more important from an economical standpoint, is fast increasing. But since the shellfish have the priority in classification, have no despicable value in commerce, and are often choice embellishments of our dwellings, they deserve first notice.

Our seas are, fortunately, not infested with enormous cuttle-fishes, such as that on whose carcass, seen by the writer afloat on the Pacific, three albatrosses stood and gorged; better that they should produce only cuttles that form the exquisitely delicate fabric of the paper nautilus, or that afford to the local artist, on the polished surface of the pearly nautilus, scope for his talent, or the squids that form merely "cuttle-fish bone." We have to accept, with some surprise, the assurance of zoologists that these active, well-furnished, though loathsome, animals are in reality only a better class of snail. Sea-snails of humbler rank, secreting for their protection proper shells, whether single, double, or manifold, are so numerous that, as far as known, they are estimated to equal nearly three-fourths of all the other "mollusca" of Australia, though these latter have a coast range three times greater. Such an excess of molluscan life has been attributed to a higher aquatic temperature on the north-eastern than on the north-western coast, and it does not seem impossible to account for the fact, if fact it be. Wing-shells, scorpion shells, shells of the Venus' comb pattern, wampum shells, mitres, tops, whelks, harps, helmets, cowries, cones, and all the other cabinet shells dear to the collector down to the mighty clam, three feet in length, capable, as experience has shown, of holding down to death the diver whose hapless fate it is to put a foot within its grip. And there is still a mine of conchological wealth for the explorer of our waters. Shells of commercial importance, besides the clam, are the pearl oyster, which rewards a great industry in northern waters, and the table oyster. The oyster-banks of the South supply a small but well-flavoured oyster in quantity sufficient for exportation.

Kind as she is to the shell collector, to the student of insect life Queensland offers a still richer field of enjoyment. If he passes by the fine swallow-tail and other butterflies he meets with and devotes himself to the less brilliant moths, he will find that the labour of a lifetime in a single district will scarcely make him acquainted with every kind, so plentiful are they; some spreading wings inches across as they emerge from the chrysalis cases which protrude from the bases of the saplings in which their caterpillars have fed—those of them, that is, which have had the luck to escape the quest of aboriginal gourmands; others so tiny that it needs a very skilful hand to pin them out. Should his inclination draw him towards the beetles, he will discover kinds still more minute, and from them upwards every grade of size and variety of form within beetle bounds till he arrives at the great stag beetle.

Meanwhile he may have become the well-satisfied possessor of insects of considerable value, for some of our northern beetles are well nigh as costly to the purse as they are beautiful to the eye. As to their haunts, they are to be found everywhere—on the tops of the forest tree, in a roll of tobacco, in the mat beneath a lady's foot. Among the beetles the "old country" youth ranks the "lady-birds," and he would be astonished to hear that Queensland has "lady-birds" nine inches long. What induced anyone to apply the name of a little spotted beetle to the grandest Australian insect, as unlike a "lady-bird" as an insect can be, is inexplicable. The insects, so miscalled, go by various better names according to fancy—stick insects, ghosts, spectres, when mimicking dead twigs; leaf insects, when simulating green leaves—a good comprehensive name for them is wanted. Though vegetarians they are closely allied to the carnivorous. Soothsayers, so called from the peculiarly reverential fashion in which they hold their front legs. These, with the locust and cricket tribes, might well engage a closer attention than has been given to them hitherto.

Another group of insects of greater importance, the ants, indomitable scavengers as they are abroad, in the home insufferable intruders, are still imperfectly known to science, and the same may be said of the termites, or white ants (which have only a nominal connection with real ants), though what we do know of them is, to say the least, not prepossessing from a domestic point of view. Flies are very common—in certain months and places a pest. Of the superabundance of insect life in other forms—mosquitoes, dragon-flies, wasps, ichneumon-flies, and what not—we have not room to speak; we are still only on the threshold of our invertebrate fauna.

There is no department of Queensland zoology which can be recommended to anyone inclining towards such studies with more assurance of pleasure and credit than the spiders. Their numbers, variations, habitations, enemies, prey, their whole life history is so interesting that it is a matter of astonishment that no one among us has taken up the study of them. They are constantly before our eyes, and, being for the most part sedentary, are easily observed and collected. One of them, a black spider, should be distrusted, as the writer knows to his cost.

One of the bugbears often held forth in accounts of life in hot climates is the scorpion. We have scorpions here in Queensland, many of them, but the little injury they inflict is so little, or so infrequent, that it very rarely comes to our knowledge. The centipede, again, is said to bite with deadly effect elsewhere, but we are happily free from those of enormous size and lethal power which are reasonably dreaded in hot and humid climates. Yet ours are competent to kill a young chicken, and one has been known to enter a bird-cage and destroy the three finches, its inmates; but the effect of the bite on adult man is not more than would be suffered from the stings of a couple of hornets. The commoner kinds are a larger yellow and a smaller black one, and the latter is thought the more venomous. Whether from such difference or other causes the result of the bite is variable. The writer was once bitten by a centipede and felt no other ill effect than an itching about the wound for two or three days, while, at the same time, a man in a camp a few miles distant who while asleep was bitten on the forehead was, by the consequent swelling of his head, almost blinded for a time.

During the last few years a tick, known as the "cattle tick," has become a scourge amongst our herds. It is hoped by all, and by some expected, that the pest will subside into his former obscurity as quickly as it has become notorious.

Now that we have fallen upon disagreeable creatures of the kind we may as well quit them at once, merely remarking that, even when supplemented by leeches in congenial spots, they are scarcely able to mar our enjoyment of life and work in this beautiful land of ours. Let us return to the seaside (which we left with a farewell to the fishes) in search of the crusty animals exemplified by the crab. Lobsters and shrimps are not to be found, they are known only by memory or repute, and the place of the former is poorly supplied by sea crayfish, of which there are several kinds, but none of them in great demand. Shores and shallow water are the happy hunting grounds of the oddest assortment of crabs, each seeming to vie with the rest in grotesqueness; but here, again, the caterer is mostly disappointed—the animals are better fitted to yield a pabulum to science. Prawns, on the other hand, are much approved of by consumers, the kind commonly caught for sale being large and of excellent flavour. Other and scarcer kinds deserve more investigation by the zoologist than they have had, among them a veritable giant as prawns go.

Passing over the barnacles and the host of marine worms, whose existence is scarcely known to any but the zoologist, though some of them are full of beauty and interest, we meet with the prickly-skinned division of invertebrates, known to science by the equivalent name, echinoderms. The great number of shellfish inhabiting the coast is naturally the cause of the presence of a corresponding host of enemies. Of these none are more destructive than the voracious starfishes, of which some of their many kinds grow to a large size. Their allies, the brittle stars, are also numerous, their longed fringed arms looking like so many centipedes fasten on to a victim in their midst. Other kindred they have in the sea urchins which assume forms all the way from flat cake to a globe; some with great flattened spines as thick as a lead pencil; others, strange to say, in the form of the far-famed trepang (otherwise called *bêche-de-mer*, sea-slugs, &c.) so eagerly sought by soup-makers in China, and consequently an article of trade of no small value. At most times our waters are powdered with millions of jelly-fish drifting and redrifting with the tide, themselves scarce anything but water. A relative of theirs, the Portuguese man-of-war, handsome and graceful though it is, shows that it is not only in man that such qualities may be distrusted. The sea bather should beware lest he be touched by one of its long tentacles, for then he will find himself rapidly embraced by others, and the agony caused by their poisonous contact may give him a nervous shock of almost fatal strength.

If the interest of the reader has not been stirred by any form of life already brought to his memory, it must surely be so by the last to be spoken of, though by no means the least in the scale of life. No other has been so largely the means of thickening the crust of the earth, and in so doing preserving for man relics of past life, and, in the present day, of making fertile the soil on which he depends. No other has had the like beneficial influence on our own land as the lowly creatures which, like the leaves which have gradually formed the forest tree, have played their part generation after generation in building up the reef which, stretching in an almost continuous line from Cape York

to the Tropic of Capricorn, forms a breakwater against the rollers of the Pacific, and so embays and protects from wasting a coast-line of nearly a thousand miles, at the same time diminishing the perils of a lee shore to our coasting traders. The writer has never had the privilege of visiting the Great Barrier Reef, but what must be the brilliant beauty of the sight to be seen on its edge he and others, who can in the mind's eye see the lovely skeletons called corals arrayed in their native garb of colour, can well imagine.

A general idea of the nature and derivation of this fauna to be gained from a "flying survey" of it is naturally dim and confused. Clearer outlines may, perhaps, be given to its chief features if we put them forward as explicit statements, such as the following:—

1. The peculiar fauna of Australia at large is concentrated to a marked degree in the North-east corner of the continent, Queensland to wit.
- 2.—The Queensland fauna includes also animals intimately related to those of New Guinea, some of them incapable of passing the Straits, *e.g.*, tree-climbing kangaroos, cassowaries; also marine rangers from the Western tropics, *e.g.*, crocodile, dugong, great sea perch; also fresh-water fishes represented elsewhere only in Africa and America, *e.g.*, *ceratodus*, *osteoglossum*; also animals peculiar to itself.
- 3.—The old fauna of Queensland now extinct was far more extensive and vigorous than the present one.
- 4.—It contained at least one animal, a ground bird now restricted to New Guinea jungles (crowned pigeon), and a flightless bird (*moa*) peculiar to New Zealand.
- 5.—Individuals of two kinds of fresh-water fish (*Murray cod*, *ceratodus*) are in the south, found together living or extinct in two distinct drainage areas separated by mountain ranges.

Taking 1 and 3 together, the question arises whether the present preponderance and former exuberance of animal life may not be traceable to the same immediate cause—greater warmth now, and still greater, accompanied with great humidity, in past times. From 2, so far as it relates to New Guinea, and 4, we may gather that Australia and New Guinea were at one time united. The points of union could hardly have been other than Cape York and the opposite shore of New Guinea. From 5 we may surmise with probability that in the South there has been a rise of the land in degree roughly corresponding to the subsidence in the North, which brought about the formation of Torres Straits. The rise and fall may have been contemporaneous, one of the oscillations common in geological history. However this may be, the one time union of New Guinea with Queensland is a generally accepted fact, and from the exceeding richness of the old fauna it seems to the writer a fact equally to be accepted, that during the union this country was capable of sustaining a dense vegetation much more tropical in character than at present, and was therefore under climatic conditions very unlike those which now obtain. There would seem from this to have been some connection between the opening of the Straits and the decadence of animal and vegetable life south of them. In what way did the opening affect the climate, and what would be the climatic result of the closure of the Straits, were that practicable? Hydrographers, please tell us.

## Part VI.

# IMMIGRATION.

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[Contributed by J. O'N. BRENNAN, Immigration Agent.]

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Queensland is the only one of the Australasian States, except Western Australia, which, as colonies, have made recent provision for immigration from Great Britain and Ireland and the several countries of Europe.

And in Western Australia the system of immigration, as compared with Queensland, is only of a circumscribed and specialised character.

Queensland's immigration system partakes, indeed, of a manifold character, as may be seen by the following synopsis :—

### NOMINATED PASSENGERS.

Permanent residents in Queensland wishing to obtain passages for their friends or relatives in the United Kingdom or the Continent of Europe may do so under the provisions of the Immigration Act by making payments to the Immigration Agent in Brisbane, or the assistant immigration agents in Maryborough, Bundaberg, Rockhampton, Mackay, or Townsville, or to the clerks of petty sessions at any other town in the State, upon the following scale :—

**MALES.**—Between one and twelve years, £2 ; between twelve and forty, £4 ; over forty and under fifty-five, £8.

**FEMALES.**—Between one and twelve years, £1 ; between twelve and forty, £2 ; over forty and under fifty-five, £8.

**MALES OR FEMALES.**—Fifty-five and upwards, the full passage money, £13 13s. Ship-kits are supplied free to all nominated passengers. Infants free.

And it may be remarked here that this form of immigration, which is altogether desirable, is steadily on the increase. A guarantee is given by the Nominator which protects the Government against the expense of keeping these immigrants on arrival, and the class of people so introduced is always of a superior character.

### ASSISTED PASSENGERS.

The Agent-General will entertain applications for some assistance towards the total cost of passage from small capitalist farmers, market gardeners, dairymen, and orchardists—especially in the case of those having families.

Full particulars as to the occupations of the head and the members of the family, their available capital, and intentions as to pursuit on landing, &c., should be forwarded with the application, and each case will be considered on its merits.

Whatever money contributions it may be decided to grant towards the total cost of passage may apply to the case of persons wishing to proceed to the State by second as well as steerage ship accommodation.

#### FULL-PAYING PASSENGERS.

Any person whose application for an assisted passage cannot be entertained, can, as heretofore, avail himself of the third-class passenger rate—viz., £13 13s., including "ship-kit," granted by the British-India Company's direct line of steamers from London to Queensland.

#### "SHIP-KITS."

"Ship-kits," as supplied to nominated and full-paying passengers, are the property of the Queensland Government, and must be left aboard ship by passengers when disembarking.

#### QUEENSLAND AS A HOME.

The Climate is healthy and entirely free from rigorous extremes.

The Soil in many parts is rich and productive, and equal to anything to be found in the world.

A Splendid System of National Education prevails throughout the State, which is absolutely free to all classes.

Freehold Farms of from 160 to 640 acres, according to quality of soil and distance from market, can be bought at the rate of 2s. 6d. per acre, the purchase money being payable in yearly instalments of 3d. per acre, and extended over a period of ten years.

**WAGES.**—Farm servants command from £35 to £50 per annum; married couples command up to £80 per annum; female domestic servants (including cooks, housemaids, general servants, and dairy-maids), from 8s. to 25s. per week.

In all above cases "board and lodging" is found.

#### REGULATIONS.

The Regulations for the nomination of British subjects, who have resided continuously in Queensland for six months (and can satisfy the Immigration Agent upon the point), of personal friends or relatives, who must be of good character and free from mental or bodily defect, are as given above.

Upon the acceptance of the application, a Provisional Passage Warrant will be issued, available for twelve months from its date, which the Applicant or Nominator has to forward to his relative or friend.

But any application is liable to be refused by the Immigration Agent, and the nomination, even if granted, may be rejected by the Agent-General in London, should he think fit to do so.

This Passage Warrant the Nominee will have to present to the Agent-General in London, or to any Emigration Agent that may be appointed elsewhere in Europe. A passage-ticket will then be given him entitling him and the members of his family mentioned in the warrant to a free passage.

If the relative or friend do not make use of the Passage Warrant, the Nominator can get his deposit refunded less 10 per cent.

Originally it was intended, under the 9th section of the Act, that all classes of natural-born British subjects should be eligible for nomination without restriction, but it has since been found expedient to refer all applications for nominated passages to the Minister.

Applications to nominate must be in duplicate, one copy to be despatched to the Agent-General upon acceptance.

Assistant Immigration Agents and Clerks of Petty Sessions must personally satisfy themselves that the conditions set forth upon the face of each application are fulfilled; and the application, when submitted for the Minister's approval, must bear upon it the Immigration Agent's recommendation as to eligibility of each nominee.

The Minister may determine that a passage-warrant be not issued in respect of any person nominated. Passage-warrants are made out in duplicate. One copy marked "Provisional" is issued to the applicant, the other copy marked "Final" is sent to the Agent-General, who causes inquiries to be made by his agents as to the suitability of the person or persons named therein to be nominated.

When applying for a passage to the Agent-General, nominees must transmit the "Provisional" Warrant with the "Application Form" on back thereof duly signed and filled up by each nominee or head of a family, whereupon the Agent-General, if satisfied that all the conditions have been complied with, will issue the "Final" Warrant entitling the person or persons nominated to a "passage contract ticket."

#### FREE IMMIGRATION.

Free immigration to Queensland, which was resumed (after a suspension of some twelve years or so) in 1899, has again been discontinued for a season. It commenced with the arrival of the "Duke of Portland" in August, 1899, and has been the means of adding 4,975 persons to our permanent population. Of these, speaking roundly, 1,589 were single women, 2,111 single men, and the remainder married couples with children. This system, which was intended for the introduction of female domestic servants and farm labourers, was discontinued only through the consequences of the protracted drought reacting upon the market so seriously as to cause a glut of manual labour of all kinds. This condition refers, of course, to the male population, and does not in any way affect the demand for female workers of the domestic class, a large number of whom can always be absorbed.

#### RECEPTION AND EMPLOYMENT OF IMMIGRANTS.

All immigrants are accommodated "free of expense" in dépôts at the several ports of arrival for fourteen days, or such period as may enable them to complete their arrangements, and they are further entitled to receive a FREE PASS to any part of the State within rail communication.

The Immigration Agent, through the machinery of the Labour Bureau, of which he is Officer-in-Charge, provides ways and means for the distribution and placing of labour. In addition to the assistant immigration agents stationed at the leading ports, every clerk of petty sessions throughout the State is a Government labour agent, whose duty it is to register applications by employers or persons seeking

employment, and to assist by way of free passage by rail, male or female workers from one district to another. In this way, too, wives and families are sometimes aided to join their breadwinners.

#### EMIGRATION TO QUEENSLAND.

Emigration to Queensland is entirely under the control of the Agent-General in London, his offices being situated at No. 1 Victoria Street, Westminster, London, S.W. The present Agent-General is Sir Horace Tozer, K.C.M.G., and the Secretary, Charles S. Dicken, Esquire, C.M.G.

IMMIGRATION is administered through the Chief Secretary's Department, under the supervision of a Board consisting of Messrs. John McDonnell (Chairman), R. A. Ranking, P.M. (Acting Chairman), Hon. Dr. Marks, Dr. John Thomson, the Collector of Customs (W. H. Irving), and the Immigration Agent (J. O'N. Brennan), the offices being at the Headquarters, Immigration Dépôt, Kangaroo Point, Brisbane.

#### COST OF LIVING, RENT, ETC.

PRICES OF PROVISIONS.—Bacon, 9d. to 1s. 2d. per lb.; beer, 9s. to 12s. per dozen quarts; brandy, 7s. 6d. per bottle; bread, 6d. per 4-lb. loaf; butter, fresh, 1s. to 1s. 3d. per lb.; butter, salt, 6d. to 1s.; candles (sperm), 8d. per lb.; cheese, 9d. to 1s. 2d.; coffee, 1s. 6d. to 2s. per lb.; eggs, 6d. to 1s. per dozen (more in winter); flour, 1½d. to 2d. per lb.; milk, 4d. per quart; beef, 4d. to 6d. per lb.; beef, salt, 2½d. to 3½d. per lb.; mutton, 4d. to 6d. per lb.; pork, 6d. per lb.; veal, 6d. per lb.; mustard, 1s. per lb.; kerosene oil, 2s. 3d. per gallon; oatmeal, 2d. to 4d. per lb.; potatoes, 7s. to 9s. per cwt.; rice, 4d. per lb.; salt, 2d. per lb.; soap, 5d. and 6d. per lb.; starch, 6d. per lb.; sugar, 2d. to 4d. per lb.; tea, 1s. 6d. to 3s. per lb.; arrowroot, 3d. to 6d. per lb.; tobacco, 4s. to 8s. per lb.; colonial wines, 33s. to 36s. per dozen; coals, 17s. to 20s. per ton; firewood, 4s. to 6s. per load.

RENT.—Small houses can be procured from 5s. and upwards per week.

RATES OF WAGES.—As regards artisans, the ruling rates of wages are as follow:—Agricultural labourers, 14s. to 18s. per week and found; blacksmiths, 9s. to 11s.; butchers, 7s. to 10s.; masons, 8s. to 10s. a day; bullock-drivers, 17s. to 20s. per week and found; carpenters, 7s. to 9s. per day; cooks (male), 25s. to 50s. per week; coopers, 6s. to 10s. per day; coachmen and grooms, 15s. to 20s. per week and found; compositors, 1s. per 1,000, 50s. per week; engineers, 10s. to 12s. per day; boilermakers, shipbuilders, and other constructive ironworkers, from 9s. 4d. to 11s.; ironmoulders, 9s. to 10s.; pattern-makers, 10s. to 12s.; ploughmen, 20s. per week and found; glaziers and painters, 8s. to 9s. per day; gardeners, 5s. 6d. to 7s. 6d. per day; grooms, 12s. 6d. to 21s. per week and found; hutkeepers, £30 to £40 per year; house servants (male), £30 to £60 per year; labourers, 5s. 6d. to 7s. per day; miners, 8s. to 10s. per day; plasterers, 10s. to 12s. per day; plumbers, 7s. to 10s.; bricklayers, 8s. to 12s. per day; bricklayers' labourers, 5s. to 7s.; wheelwrights, 8s. 6d. to 10s.; coach-builders, 7s. to 10s.; cabinetmakers, 5s. to 9s.; quarrymen, 25s. to 45s. per week; shoemakers, 4s. 6d. to 7s. 6d. per day; shearers, 17s. 6d. to 20s. per 100, hand or machine; shepherds, £30 to £45 per year, with board and lodging; tailors, 6s. to 10s. per day; cutters, 80s. to 120s.

per week; tin and iron plate workers, 35s. to £3 per week; upholsterers, 7s. 6d. to 9s. per day; bookbinders, 6s. to 9s.; watchmakers, 8s. to 10s. Upon sugar plantations and in the mills the ordinary rate for unskilled white labour is £1 per week and found.

In all trades eight hours is counted a day's work, and overtime is generally paid for at the rate of time and a-half.

The movement to establish a compulsory weekly half-holiday in respect of all shop and factory trades has culminated in the passing of an Early Closing Act which, within the Metropolitan area, applies to Saturday. In country towns and rural districts the fixation of the weekly half-holiday is subject, like the licensing of public-houses, to a Local Option Vote. There is a strong indication on the part of small shopkeepers and not an inconsiderable section of the public to move Parliament towards the amendment of the Early Closing Act in the direction of substituting some other afternoon in the week for that of Saturday.

FEMALES.—Plain cooks, 15s. to 21s. per week; general servants, 8s. to 15s.; laundresses, 12s. to 20s.; milliners, 15s. to 30s.; nursery-maids, 7s. to 10s.; dressmakers, 15s. to 30s. per week; barmaids, 15s. to 30s.; cook and laundress, 12s. to 20s.; nurse-needlewoman, 10s. to 15s.; house-parlourmaid, 10s. to 15s. per week.

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## Part VII.

# FACTORIES AND SHOPS.

[Contributed by CHAS. McLAY, Chief Inspector.]

Legislation for the supervision of the conditions under which manual labour is carried on in Queensland first took definite shape—after some abortive efforts—in the passing of “*The Factories and Shops Act of 1896*,” which came into operation on the 1st of May, 1897.

The provisions of that Act were embraced under the following heads:—

- I.—Appointments—Registration and Inspection;
- II.—Records;
- III.—Sanitary Arrangements;
- IV.—Fencing of Machinery—Protection from fire;
- V.—Ages of Persons Employed and Certificates;
- VI.—Shops;
- VII.—Miscellaneous.

A factory was defined therein as a place where four or more persons were engaged working at any handicraft, and records of all employees were required to be kept for the information of Inspectors, showing the ages of those under eighteen years, the average weekly earnings, working hours, &c., together with a further record of all overtime worked by male young persons (under sixteen years of age), and all females. In addition to these, records were required to be kept of all materials issued for the purpose of being manufactured outside the factory.

The employment in a factory of any person under fourteen years of age was prohibited, and the working hours of male young persons and females were limited ordinarily to 48 hours per week, with the proviso that overtime might be worked three hours per day fifty-two times per annum. Young persons seeking employment in certain specified industries were required to obtain a medical certificate of their physical fitness for the work required.

Limitations were also imposed upon the working hours of male young persons and females in shops, these being limited to fifty-two hours per week, with an additional three hours per day overtime on a maximum of fifty-two times per annum in the option of the employer, a record of such overtime was also required to be kept for the information of Inspectors.

Under the provisions of this Act the area comprised within the boundaries of the metropolitan traffic area was constituted a district, and some few months subsequently the following additional districts were constituted, viz.:—Ipswich, Maryborough, Bundaberg, Rockhampton, and Townsville, and in 1900 the district of Toowoomba was added to the list.

At the end of 1898—after the Act had been in operation for a period of a little over a year and a-half, and after it was fairly in working order—the numbers of factories then registered were:—Metropolitan, 670; Ipswich, 51; Maryborough, 56; Bundaberg, 34; Rockhampton, 96; Townsville, 60; and the total employees therein, 14,052. The number of steam boilers in operation in these factories was 299, with a total horse-power of 5,946, in addition to which there were 116 gas-engines, with a horse-power of 347.

This legislation beneficially affected the conditions under which a large proportion of the existing factories were then working, and secured better conditions in a great majority of the new factories erected during its operations. It was, however, found to have defects in this respect: that, while practically all reputable occupiers of factories readily acknowledged their obligations with regard to the sanitary requirements of the law and the health of their employees, and so expended considerable sums in efforts to improve these, the terms of the provisions of the law were not sufficiently specific to enable the Department to force those less disposed to consider these obligations to make corresponding improvements, with the result that many of the better class of employer felt they were being penalised to the advantage of the others, and without doubt there was a great deal of truth in the assertion.

In one other respect—the testing of boilers—the provisions of the law were found to be very unsatisfactory. It was provided that every boiler should be tested by hydraulic pressure to a pressure of one-half more than the working steam pressure, but such a provision was held by the majority of experts on the subject to be quite inadequate as a guarantee of the safety of a boiler or immunity from explosion.

In the meantime, also, there had been a growing desire in certain sections of the community for some limitation of the hours of business in shops, and the combined weight of these influences induced the Government to introduce the Act of 1900, which passed through both Houses of Parliament with comparatively little amendment.

This measure, which repealed that of 1896, is much more comprehensive and specific in its provision than its predecessor. It came into operation on the 1st of January, 1901, and is the law now in force.

It is divided into nine parts, and, in addition to the provisions of the Act of 1896, comprises the registration and inspection of boilers, holding of examinations, and granting of certificates of competency to engineers and boiler attendants, and the regulation of the hours of business in shops, as distinct from the hours of work of the employees.

Under this Act a factory is defined as a place where two persons are engaged at any handicraft, and includes every bakehouse, laundry, and kitchen of any restaurant or cookshop.

The records of employees, in addition to being kept for the information of Inspectors, are required to be forwarded to the Inspector at the end of September in each year, and the record of outside work must be forwarded at the end of each quarter. In addition to the sanitary requirements of the previous Act, a reasonable temperature must be maintained within the factory, and a suitable supply of drinking water provided, besides proper lavatory accommodation. Power is also

given to the Minister to require the erection of a suitable dining and dressing room, where necessary, for the employees. The occupier is also bound under a heavy penalty to report all cases of infectious disease occurring either among the factory employees or in the homes of those persons to whom goods may have been issued for manufacture outside.

Every employee must receive at least 2s. 6d. wages per week, and stringent conditions are imposed upon the working of overtime by young persons and females. These employees are debarred from working any overtime except upon written permission from the Inspector, the maximum allowed being three hours per day on forty days per annum. A record of the overtime worked must be forwarded to the Inspector each week when it is being worked, and payment therefor must be at the rate of time and a-half, with a minimum payment of 6d. per hour. Overtime must not be worked on more than two consecutive days, and must cease before 9.30 p.m. The total hours worked per week must not exceed fifty-six.

Boilers include all vessels under steam or gas pressure greater than that of the atmosphere, and are required to be thoroughly tested and inspected inside and out at least every twelve months, and no boiler is to be used without a certificate having been received stating the maximum pressure at which it may be used. Every boiler is to be provided with two safety valves, one of which must be locked up from access by the attendant. All changes of ownership, accident, or other circumstance affecting the boiler must be notified, and every engineer or boiler attendant must by examination or previous service obtain a certificate of competency—of which there are three classes—according to the nature and power of the boiler or engine of which he is in charge.

Provision is made for the constitution of districts for the purposes of the hours of business in shops only, apart from factories or boilers, and up to the present time there have been twenty such districts so constituted in addition to those previously constituted for the purposes of the whole Act.

The following classes of shops are exempted from the early-closing provisions, viz:—Chemists and druggists' shops, confectioners' shops, fish and oyster shops, fruit, vegetable, and temperance beverages shops, hairdressers' shops, restaurant and refreshment shops, tobacconists' shops, booksellers and newsagents' shops, undertakers' establishments, and premises respecting which a licensed victualler's or a wine-seller's license has been granted; but in these shops employees must not be employed more than sixty hours per week, except in hotel bars where they may be employed seventy-two hours per week. Each of these employees must, however, have one half-holiday per week from 2 p.m. All other classes of shops must—unless the ratepayers of the district decide by a majority at a poll upon the observance of some other day for the half-holiday—be closed at 1 p.m. on Saturday, at 10 p.m. on Friday, and 6 p.m. on every remaining evening of the week, and all employees must be off the premises within half-an-hour thereafter.

Provision is made for working overtime for the purposes of stock-taking, &c., for which the written permission of the Inspector must first be obtained—three hours per day on forty days per annum—and of which a record must be kept and forwarded to the Inspector.

This measure has been in operation since the first of January of the present year, and so far bids fair to prove itself upon the whole a very workable and beneficial one. It would be futile to say that it is perfect or that there are no sharp corners which have to be rounded off slightly in its administration. That some of its provisions have been found impracticable of administration in the strictest literal sense, and that some deserving persons have suffered from its operation, cannot be denied.

Legislation of a restrictive character, or such as sets up conditions governing the conduct of business within certain arbitrarily defined districts which do not apply in other areas which cannot in other respects be dissociated from these, must necessarily, in the readjustment of business which takes place, affect some persons prejudicially and others beneficially; but on the broad principle of affording persons hitherto unable to protect themselves some time for leisure or recreation probably all persons are agreed. Whether a better solution of the problem could have been devised than that adopted by the Queensland Parliament is a debatable matter upon which there is room for many schemes and differences of opinion, but that the present arrangement is deeply appreciated by a very large section of the public there can be no doubt.

At the end of the year 1900—the date at which the repeal of the Act of 1896 took effect—the statistics collected by the department afford an opportunity of noting the development of the State's industries in the two years since 1898, already given. In 1900 the factories in operation in the respective districts numbered:—Metropolitan, 817; Ipswich, 51; Maryborough, 65; Bundaberg, 46; Rockhampton, 114; Townsville, 83; and Toowoomba, 85. The total number of employees in these was 17,960. The number of steam-boilers was 493, with a horse-power of 11,349½. The gas-engines numbered 156 with a horse-power of 513½.

These statistics are slightly vitiated for purposes of comparison by the fact that the area of some of the districts had in the meantime been increased and the additional district of Toowoomba added, and also from the fact that all boilers, whether operating in factories or not, must now be registered, but for all practical purposes the figures may be taken as compiled upon the same basis.

From that point of view the wellwishers of the State will no doubt derive satisfaction from the comparison, indicating as it does a healthy progress; and although the recent disastrous drought in certain portions of the State will, no doubt, retard temporarily such rapid expansion as these two years show, the latent vitality of the forces making for the progress and development of its resources must assert itself and maintain a mean progress of healthy dimensions.

## Part VIII.

# CROWN LANDS.

## THE LAND LAWS.

[Contributed by P. W. SHANNON, Chief Clerk, Lands Department.]

IN Queensland, as might be expected in a country in which less than 4 per cent. of the land has been alienated, the Land Question is one of deep public concern. Not only is it that a considerable part of the public revenue is derived directly from land in the form of rent or purchase money, but the relation of the question to the primary industries of the country is so intimate, and the settlement and progress of the State so largely affected by the provision made for the occupation and ultimate disposal of the public estate, that the matter is rightly regarded as of the first importance.

The national solicitude on the subject may be gauged from the frequency with which it has demanded attention of Parliament, some forty-six land measures having become law since responsible Government was conceded to the State in 1859, to say nothing of attempts at legislation which did not secure Parliamentary approval, or of discussions of the subject not immediately connected with proposals for further legislation.

The earlier Acts were passed in the years 1860 to 1868, but interest to-day, except of a purely historical kind, scarcely extends further back than the passing of "*The Pastoral Leases Act of 1869*," which is the earliest enactment dealing with Crown lands now remaining in force, though the area at present subject to its provisions is considerably less than formerly, and is a constantly decreasing quantity.

## PASTORAL LEASES.

The total area of the State is 668,497 square miles, of which 271,987 square miles were, on 30th June, 1901, held under pastoral lease, and 72,311 square miles under grazing rights, held by pastoral lessees, or a total of 344,298 square miles. Of this area, however, only 66,618 square miles is now subject to the provisions of "*The Pastoral Leases Act of 1869*," the balance being held under later Acts.

### "THE PASTORAL LEASES ACT OF 1869."

This Act authorised the granting of leases for twenty-one years to lessees of runs in the Unsettled Districts who surrendered their existing leases or promises of lease before 1st January, 1871. It also provided that leases of vacant Crown lands, in blocks or runs of not less than 25 square miles or more than 100 square miles, might be obtained by any person who after occupying each of such runs with stock up to a fourth of the carrying capacity of the country, and obtaining from the Commissioner of Crown Lands a license to occupy the same for twelve months, applied before the expiration of that period for a lease of the land for pastoral purposes.

In the event of the land not being within 5 miles of permanent water, it could be applied for as an *unwatered run*, in which case the requirement that the country should be stocked prior to the issue of a

license became inoperative; the license to occupy could be renewed for two periods of twelve months each, and the payment required to be made with the original application and with each application for a renewal of the license was only 3s. per square mile instead of 5s. per square mile as in other cases. Before, however, the lease of an unwatered run could be applied for, the requirements as to stocking obtaining in the case of other runs had to be complied with, and on the granting of application for lease all legal distinction between runs unwatered and otherwise disappeared.

The leases granted to applicants for new country were for the same term as those granted to the lessees who had surrendered their old leases—viz., twenty-one years; but whereas the rent to the latter was fixed for the first period of the new leases in accordance with the rent payable by them on the 30th September, 1869, with successive increases of one-tenth for the second and third periods of seven years, the rent to be paid by the former was fixed at 5s., 10s., and 15s. per square mile per annum for the first, second, and third periods of seven years respectively. It was open to the Government or the lessee to demand that the rent during the second or third period of the lease should be determined by appraisalment, in which case the maximum and minimum rates of rent were for the second period 15s. and 7s. per square mile, and for the third period 25s. and 12s. per square mile respectively. Country unavailable for pastoral purposes was excluded from the area on which rent was payable.

The leases were subject to a condition that 4 square miles of any run might be resumed by the Governor in Council merely by notification in the *Gazette*, and that the whole run might be resumed after six months' notice to the lessee, provided that Parliament did not dissent within sixty days of the schedule of the lands to be resumed being laid before both Houses.

Though the area of each particular block or run was restricted to 100 square miles, there was no limitation to the number of runs which might be applied for by one person, and in a great number of cases individual lessees or "squatters" acquired a considerable number of contiguous runs, and so became the holders of stations of vast area, including in many cases several thousand square miles of country, and in one particular instance reaching almost to 6,000 square miles.

"*The Pastoral Leases Act of 1869*" is still in force in the more remote portions of the State, but its operation is practically confined to runs acquired in the past under its provisions, the new applications under the Act being now necessarily few and unimportant.

To meet the cases of lessees of runs in the remoter portions of the State whose leases under the Act of 1869 may expire without their having taken advantage of more recent legislation, to be presently referred to, a measure was passed in 1890 ("*The Pastoral Leases Extension Act of 1890*") providing that the leases under "*The Pastoral Leases Act of 1869*" may, on expiry, be extended by the Governor in Council on the recommendation of the Land Board (now the Land Court) for a period not exceeding five years on such conditions as to rent or otherwise as the Governor in Council, on the recommendation of the Court, may think fit, and that at the expiration of such period the power to extend the leases may be again exercised, and so on from time to time as may be expedient.

“THE CROWN LANDS ACT OF 1884.”

“*The Crown Lands Act of 1884*” effected a considerable change in the law with regard to pastoral leaseholds. It enacted that the total area held contiguously by any pastoral tenant, who elected to surrender his leases and take advantage of its provisions, was to be treated as a consolidated run; that a proportion thereof, varying from one-fourth to one-half, according to the period which had elapsed since the date of the first license to occupy the country, was to be resumed with the view of making provision for closer settlement, and that of the remainder of his run the pastoral tenant was to be granted a lease for a term of fifteen years at a rent to be determined by the Land Board for the three several periods of five years, such rent not to be more than 90s. nor less than 10s. per square mile per annum, during the first of such periods, and country determined by the Land Board to be unavailable not to be charged for. Until the resumed part was actually required for purposes of settlement, the lessee was to be allowed to occupy it on payment of a rent not exceeding the rate per square mile he had previously paid. Land could be resumed from the leased part only on the recommendation of the Land Board, and then only at the expiration of some year of the tenancy after six months’ notice to the lessee, and if resumption took place the lessee was to be entitled to compensation for all losses; he was also to be entitled to compensation for deprivation of the use of his improvements on the termination of his lease, such compensation to be a sum representing the value of the improvements to an incoming tenant or purchaser of the whole run or holding.

One of the objects of the framers of “*The Crown Lands Act of 1884*” was to give the pastoral lessee in respect of the portion of his run left to him a superior tenure to that which he had enjoyed under “*The Pastoral Leases Act of 1869*,” the insecurity of which had long been a runholder’s grievance. Complaints, however, were made both during the passage of the measure through Parliament and afterwards, that a lease term of fifteen years was too short; and these representations led to the passing of “*The Crown Lands Act Amendment Act of 1886*,” which extended the term of the leases held by lessees who elected to take advantage of it to twenty-one years. The concession was burdened with two important conditions:—

- (1) That, after the expiration of the first fifteen years of the term of the lease, one-fourth of the holding was to be resumable without compensation to the lessee except for improvements on the part resumed;
- (2) That the basis of compensation to the lessee for deprivation of the use of improvements, either on resumption or at the expiration of the lease, was to be the value of the improvements to an incoming tenant or purchaser of the part of the holding on which the improvements are, instead of their worth to an incoming tenant of the whole holding.

The vast majority, in fact all but a very small number of the lessees who took advantage of “*The Crown Lands Act of 1884*,” also elected to avail themselves of the Amendment Act of 1886, and it is subject to leases under these Acts that the bulk of the better pasture lands of the State is now held.

A seven years' extension of lease was secured by the lessees under "*The Crown Lands Act of 1884*" or "*The Crown Lands Acts 1884 to 1886*" of certain holdings in the Southern and Central portions of the State, who in compliance with the provisions of "*The Pastoral Leases Extension Acts 1892 to 1900*" enclosed their holdings, and so much of their resumed parts as they were in occupation of with a fence sufficient to prevent the passage of rabbits. In all 102 pastoral lessees erected the necessary fences to entitle them to extensions of their leases under these provisions.

#### THE LAND ACT, 1897."

To those lessees under "*The Pastoral Leases Act of 1869*" outside the portion of the State to which "*The Crown Lands Act of 1884*" specially applied, who did not avail themselves of the provisions of the latter Act, "*The Land Act, 1897*" offers a further opportunity of securing a twenty-one years' lease on conditions differing but little from those obtaining under the Act of 1884.

#### "THE PASTORAL LEASES ACT OF 1900."

The special circumstances affecting an area of about 77,000 square miles in the far Western portion of the State led to the passing of "*The Pastoral Leases Act of 1900*." This area, though possessing grazing capabilities of no mean order in anything approaching a good season, is so poorly favoured by Nature in the matter of rainfall that its normal condition has been described, not perhaps without justification, as one of drought. The adverse climatic conditions, the remote situation, the difficulties of communication, and last, though not least, a tenure which provided for automatic and indiscriminate increases of rent, and which was not only in this, but in other respects also a by no means satisfactory one from the standpoint of financial institutions, all combined to make the contrast between this and more highly favoured portions of the State a strong one, and a drought of exceptional severity had made urgent the claims of the lessees to some measure of relief.

Partial relief in the matter of rent was secured by many lessees through the retention merely of their watered blocks and the forfeiture of the remainder of the country, a strategic course which enabled them to regard almost with indifference the efforts of the State landlord to find new tenants for the country they had abandoned, or to be more correct, had ceased to pay rent for, as in most cases it happened that the State's efforts in the direction indicated were unavailing and the lessees continued to occupy the forfeited country whenever the seasons admitted of their so doing, but without paying any rent therefor.

To remedy in some degree this state of affairs "*The Pastoral Leases Act of 1900*" was passed. It was assented to on the 6th December, 1900, and provides that the pastoral tenant of any run situated in the part of the State referred to, or any person holding lands so situated under occupation license, may at any time within twelve months after the passing of the Act surrender his present title and elect to take advantage of the new provisions. He then becomes entitled to a new lease for a term of twenty-one years of all the lands included in his surrendered titles, and also of all lands now unoccupied but which have been held as part of his station during any part of the period between the first day of July, 1888, and the date of the receipt of his notice of election.

During the first eleven years of the new lease the rent of the lands included in the surrendered titles is to be at rates varying from 5s. to 12s. 6d. per square mile, according to the situation of the land in one or other of the areas described in the first seven schedules to the Act, and the rent during such period of the "other lands" to be included in the new lease, *i.e.*, forfeited runs held at any time during the past thirteen years as part of the station, is to be at either 1s. 6d. or 2s. 6d. per square mile, according to situation. Power is also given to the Land Court to authorise the inclusion in the lease of any land within the areas described in the first seven schedules to the Act, and which could not be included in any other consolidated holding, or of any land outside those areas which has been held as part of the station since 1st July, 1888. The rent for the final period of ten years is to be determined by the Land Court. Lands required for roads or reserves may be resumed by the Governor in Council at any time, merely by notification in the *Gazette*. Lands required for any other purpose, but not exceeding in the aggregate one-third of the gross area of the holding, and not including the head station or principal woolshed, washpool or reservoir, may be resumed after six months' notice without compensation to the lessee except for improvements. In the event of lands being resumed from a holding outside these provisions, the lessee will have the same rights as are enjoyed by lessees under "*The Land Act, 1897*," in the like circumstances.

This is the last measure dealing with pastoral leases which calls for special mention. No reference has been made to leases of pastoral holdings in the Settled or Coastal Districts, of which there remain only six, embracing altogether an area of  $177\frac{3}{4}$  square miles. The leases of these holdings under "*The Crown Lands Act of 1884*" were extended for five years under a special provision of "*The Land Act, 1897*," and the extended terms will expire not later than 30th June, 1905. All lands now held under pastoral lease in the State are held under one or other of the four principal Acts or series of Acts just described. In the following table will be found particulars of the area and rent of the land held under pastoral lease under the several Acts or included in the resumed parts of runs over which the lessees are exercising a grazing right at date 30th June, 1901:—

"*The Pastoral Leases Act of 1869*," "*The Crown Lands Act of 1884*," "*The Land Act, 1897*," and "*The Pastoral Leases Act of 1900*."

Acts.	Runs.	Area. Sq. miles.	Rent.		Average.	
			£	s. d.	£	s. d.
Leaseholds, Act of 1869 ... ..	1,129	66,618 $\frac{1}{2}$	33,288	7 10	0 9 11 $\frac{1}{2}$	
" Act of 1884 ... ..	814	178,640 $\frac{1}{4}$	191,338	5 3	1 1 5 $\frac{1}{2}$	
" Act of 1897 ... ..	10	8,701 $\frac{1}{2}$	7,337	19 9	0 13 11 $\frac{1}{2}$	
" *Act of 1900 ... ..	17	18,026 $\frac{1}{2}$	4,727	13 8	0 5 3	
Resumed Parts { Act of 1884 ... ..	...	65,883 $\frac{1}{2}$	37,006	4 8	0 11 6 $\frac{1}{2}$	
under Right of { Act of 1897 ... ..	...	6,428	3,991	13 11	0 12 5	
Depasturing						
Totals ... ..	1,970	344,298 $\frac{5}{8}$	277,690	5 1	0 16 1 $\frac{1}{2}$	

\* The time within which notice of election to take advantage of "*The Pastoral Leases Act of 1900*" may be given will not expire till 5th December, 1901.

## ADMINISTRATION.

Before proceeding to describe the means adopted to promote closer settlement in Queensland it may be of advantage to glance briefly at the system of administration now in force under "*The Land Act, 1897.*" The administration throughout the State is controlled by the Department of Public Lands, Brisbane, which is presided over by a responsible Minister, and served by a numerous staff, under the direction of an Under Secretary. The department undertakes all preliminary work in connection with the division of runs and the determination of pastoral rents, including the work of inspection, which is performed by officers called Dividing or Assessing Commissioners.

The Department is responsible for all arrangements in connection with the opening of Crown lands for selection, *i.e.*, making them available for settlement, and for the disposal of the lands of the State by any of the methods to be presently referred to.

It also regulates the cutting and removing of timber and other material—except minerals—from Crown lands, administers certain provisions of the Acts designed to cope with the Rabbit and Marsupial pests, takes all necessary action in connection with the opening and closing of roads, the establishment of reserves, the registration of transfers, mortgages, and other dealings with regard to the various classes of holdings held under the several Land Acts, and acts generally in regard to the hundred and one matters of land administration calling for decision by the Minister or the Executive Council. Separate branches of the Department deal respectively with matters falling under the heads of Pastoral Occupation, Selections, Roads, Forestry, and General Inquiry.

At the Inquiry Office particulars may be obtained of all lands available for settlement throughout the State, and every effort is made to assist intending selectors by supplying them with full information and arranging, if required, for railway concessions in regard to the transport of themselves, their furniture, and effects.

The Survey Department, under the direction of the Surveyor-General, effects all Government surveys throughout the State through the medium of surveyors licensed by the Minister for Lands. Applicants for a license to effect surveys must hold the certificate of a Board of Examiners, which is granted only to persons who on examination prove to be duly qualified.

For purposes of administration the State is divided into forty-nine land agents' districts, in all the principal towns of which are Government land agents who supply information regarding lands open for selection, receive certain Crown rents, and to whom all applications to select Crown lands in the locality must be made.

A land agent is not charged with judicial functions, the decision in regard to applications to select land and all other matters calling for judicial action resting with the Land Commissioner.

Land commissioners in many cases have jurisdiction over two or more land agents' districts. They hold courts at regular intervals—generally once a month in each district, at which they deal with applications to select land, applications by selectors for certificates of performance of the conditions imposed by the Land Acts, and other matters.

In all the more important districts are Crown lands rangers, whose duties consist principally of such inspections as may be necessary to see that the law is complied with by selectors and that the regulations regarding the cutting of timber on Crown lands are respected.

The decision of the Land Commissioner in some cases is final and conclusive, but in other cases the decision is subject to an appeal to the Land Court.

#### LAND COURT.

This tribunal consists of three members appointed by the Governor in Council by Commission under his hand and the Great Seal of the State. It takes the place of the Land Board provided for by "*The Crown Lands Act of 1884*," and the members receive each a clear annual salary of £1,000. They may not be members of the Executive Council or of either House of Parliament, or take part in any capacity in the management of any bank, joint stock company, trade, or business, or acquire any interest in land held under lease or license under "*The Land Act, 1897*." They hold office during good behaviour, and are not removable unless an address praying for their removal from office is presented to the Governor by the Legislative Council and Legislative Assembly respectively in the same session of Parliament.

Included in the important duties laid upon the Land Court are the consideration and confirmation with or without amendment of the divisions of runs made by dividing commissioners acting under the direction of the Minister; the fixing of the rents to be paid by pastoral lessees and other Crown tenants; the determination of claims for compensation made by Crown tenants and others in certain circumstances; the consideration of all proposals for the resumption of land from holdings under "*The Crown Lands Acts, 1884 to 1895*," and the consideration and final approval or rejection of all applications to select land.

The functions with which the court is invested are not wholly judicial. It acts in certain circumstances in an administrative capacity, and in such cases deals with matters brought before it by means of correspondence in much the same way as the head of a department is accustomed to do under similar circumstances. The administrative functions of the court are exercised daily at the court's office in Brisbane, but its judicial acts are performed in public at sittings called Land Courts, which are held at different centres throughout the State, not at regular intervals, but as often as occasion requires. Not more than one member of the court may sit in any matter in which the court is called upon to act judicially, and it is the practice at present for each of the members to undertake the work in one of the three divisions of the State—Northern, Central, or Southern—for twelve months at a time.

In most matters there is an appeal from the decision of the Land Court to the Land Appeal Court.

#### LAND APPEAL COURT.

The Land Appeal Court is constituted by a District Court Judge and two members of the Land Court—the member whose decision is appealed from standing out.

In the case of a holding held under the provisions of "*The Land Act, 1897*," the decision of the Land Appeal Court is final as regards matters of fact, but there is an appeal to the Full Court on a point of law.

In the case, however, of a holding under "*The Crown Lands Acts 1884 to 1895*," the lessee may appeal on any ground from the decision of the Land Appeal Court to the Supreme Court, and may appeal further from the Supreme Court to the Full Court upon a question of law.

### CLOSE SETTLEMENT.

Crown lands (except town lands) may be made available for settlement with or without previous survey as agricultural farms, agricultural homesteads, grazing selections, *i.e.*, grazing farms or grazing homesteads, scrub selections, or unconditional selections. The proclamation opening the land for selection is made by the Governor in Council at least four weeks in advance of the date which is appointed as the date of opening. The proclamation specifies—

1. The place and time at which the land will be open for selection ;
2. The different modes in which the land may be selected, and the maximum area which may be selected in each mode ;
3. The numbers and areas of the portions (if the land has been surveyed or marked out) and the annual rent per acre ;
4. The purchasing price in the case of agricultural farms and unconditional selections ;
5. The term of lease, and whether rabbit-proof fencing will be necessary, in the case of grazing selections.

In some cases the value of the improvements is stated also.

No person who is not a British subject by birth or naturalisation, or who is under the age of sixteen years, or who seeks to acquire the land as the agent, or trustee, or servant of another, may select land otherwise than as a scrub selection or an unconditional selection. A married woman is disqualified from selecting an agricultural homestead or a grazing homestead ; but the disqualification may be removed by the Land Court in the case of a married woman who has obtained an order for judicial separation, or an order protecting her separate property, or who is living apart from her husband, provided her husband never acquired a homestead of the character she desires to select.

A pastoral lessee is specially debarred from selecting a grazing selection on the resumed part of his run or within 15 miles of his run or holding, and the disqualification extends to anyone in his employ or who is a trustee for him otherwise than under a will, or who is beneficially or pecuniarily interested in his run or holding.

Included in the provisions limiting the right to select is one aimed at speculative trafficking in grazing farms, which is to the effect that any person who is or has been the licensee or lessee of a grazing farm shall not be competent within three years after the acquisition thereof to apply for or acquire a grazing farm except one situated in the same district as the first farm, and the area of which, together with the area of the first farm, does not exceed the maximum area allowed to be selected as a grazing farm in the district in which the land is situated.

The list of disqualifications concludes with one debarring the lessee of a selection which becomes forfeited from again selecting the land for a period of five years from the time of forfeiture.

Applications for selections must be made in the prescribed form in triplicate, and be lodged with the land agent for the district in which the land is situated. They must be signed by the applicant, but may be lodged in the Land Office by his duly constituted attorney, and must be accompanied by a deposit of a year's rent and one-fifth of the survey fee. The balance of the survey fee, in case the application is approved by the Land Court, is payable in equal annual instalments, on the 31st March, in the four years following such approval. Applications lodged prior to the time appointed by proclamation for the opening of the land to selection are regarded as simultaneous with applications lodged at that time.

If land is open for selection in different modes alternatively, the order of precedence as between simultaneous applications to select the same land by different modes is as follows:—

An application to select as an agricultural homestead has priority over an application to select as an agricultural farm.

An application to select as an agricultural farm has priority over an application to select as an unconditional selection; and if the land is open to grazing selection, an application to select as a grazing homestead has priority over an application to select as a grazing farm.

Priority among simultaneous applications for the same land by the same mode of selection is determined by lot, unless in the case of simultaneous applications for the same land as a grazing selection or an unconditional selection a higher rental is tendered than that proclaimed. In that event the highest tender secures priority; but if two or more applicants tender the same amount, and no higher amount is tendered, precedence as between such applicants is determined at the ballot-box.

A special right of priority may be granted by the Minister to an applicant to select a particular area of unsurveyed land as an agricultural homestead, if the opening of the land for selection is the result of a request by such applicant, and if the request was accompanied by a sum equal to 3d. per acre.

Applications to select land must be made in good faith, and are held to be so made, when the sole object of the applicant in making the application is to obtain the land in order that he may hold and use it for his own exclusive benefit according to law. The fact that two or more applications are made by different applicants for the benefit of one person is conclusive evidence that none of such applications are made in good faith. If the Land Commissioner or the Land Court is satisfied that an application has been made otherwise than in good faith, the moneys lodged with the application may be forfeited to the Crown.

All applications to select land are dealt with by the Land Commissioner at the Commissioner's Court. If the Commissioner refuses an application there is an appeal from his decision to the Land Court. The Commissioner's acceptance of an application is not final until his decision has been reviewed and the application approved by the Land

Court, which tribunal must notify an applicant, and hear him if he so desires, before reversing a decision given by a Commissioner in his favour.

The selector must pay for any improvements on the land. If not stated in the proclamation, the value is determined by the Land Commissioner, from whose decision there is an appeal to the Land Court.

When an application has been accepted by the Land Commissioner and approved by the Land Court, and the applicant has paid for any improvements that may be on the land, he becomes entitled to receive a license to occupy the land in the case of an agricultural selection or grazing selection, or a lease in the case of a scrub selection or an unconditional selection. Within six months after the issue of a license the selector must commence to occupy the land, and must thereafter continue to occupy it in the manner prescribed.

#### AGRICULTURAL SELECTION.

##### AGRICULTURAL FARMS.

The more accessible lands near railway lines, centres of population, or navigable waters, are set apart for agricultural selections, *i.e.*, agricultural farms or agricultural homesteads.

The area of an agricultural farm may not exceed 1,280 acres, and if the same person holds two or more agricultural farms, or both an agricultural farm and an agricultural homestead, the total area of such selections must not exceed that limit.

The purchasing price may not be less than 10s. per acre. There is no statutory maximum, but in most cases the price does not exceed £1 per acre, and is often less.

The annual rent is one-fortieth of the purchasing price, and the rent payments are credited as part of the price. The land must be continuously occupied by the selector in person or by his manager or agent, who must be a person qualified to select a similar selection; but if the selector is the holder of two or more agricultural selections each of which is at a distance not exceeding fifteen miles from the others, the residence of the selector or his agent on one of the selections is sufficient.

The condition of occupation is also satisfied by the residence of the selector in person within fifteen miles of the farm on any country lands or on lands which, if not alienated from the Crown, would be country lands.

Within five years of the issue of the license to occupy, or within such extended time, not exceeding two years, as the Court may allow, the selector must enclose the land with a good and substantial fence or make substantial and permanent improvements on it of a value equal to the cost of such a fence. On the completion of the improvements the selector becomes entitled to a lease of the land for a term of twenty years reckoned from the 1st of January or 1st of July nearest to the date of the issue of the license to occupy. After the issue of the lease the selector may mortgage the farm, or, with the permission of the Minister, may subdivide or transfer it, or with the approval of the Land Court may underlet it.

After the expiration of five years of the term any selector who has been the selector continuously for a period of five years, and who obtains

the certificate of the Land Commissioner that the conditions of occupation and improvement have been duly fulfilled, may pay the part of the purchasing price then remaining unpaid and obtain a deed of grant of the land in fee-simple. When ten years of the term of the lease have expired, the requirement that the applicant to purchase the land shall have held it continuously for five years disappears, and the purchase may be completed by the then lessee, irrespective of the time he has held the land on his obtaining the Land Commissioner's certificate of performance of conditions.

These conditions are varied in the case of land opened for Agricultural Farm Selection, after being bought back by the State, under the provisions of the Agricultural Lands Purchase Acts, which will be referred to further on.

#### AGRICULTURAL HOMESTEADS.

The provisions of the land laws affecting close settlement which display the greatest liberality, and which are most popular with settlers of small means, are those relating to agricultural homesteads. These provisions, by enabling freeholds to be obtained on easy terms, and by exacting a condition of personal occupation, seek to foster the growth of a class of peasant proprietors, and in the past have been largely availed of.

Though land opened for selection as agricultural homesteads must also be opened for selection as agricultural farms, there is no converse provision, and land opened for selection as agricultural farms is not available for selection as agricultural homesteads unless so proclaimed.

The maximum area which can be selected as an agricultural homestead varies with the price at which, in terms of the proclamation, the land could be made freehold if selected as an agricultural farm. If the proclaimed purchasing price of the land as an agricultural farm is not less than £1 per acre, the greatest area which may be selected as an agricultural homestead is 160 acres. If the price per acre is less than £1, but not less than 15s., the limit is 320 acres, which increases to 640 acres in the event of the purchasing price of the land as an agricultural farm being fixed at less than 15s. per acre. In particular cases, however, the area allowed to be selected is sometimes further restricted by the opening proclamation.

The annual rent and the price to be paid for an agricultural homestead are fixed amounts of 3d. per acre and 2s. 6d. per acre respectively. The essential condition of agricultural homestead selection is the continuous personal residence of the original selector on the land until he becomes entitled to a grant of it in fee-simple, but residence on another agricultural selection within fifteen miles is equivalent to residence on the homestead. Within five years from the issue of the license to occupy, or during such extended time, not exceeding two years, as the Land Court may allow, the selector must enclose the land with a good and substantial fence, or make substantial and permanent improvements on it of a value equal to the cost of such a fence. On the completion of the improvements the selector becomes entitled to a lease of the land for a term of ten years, reckoned from the first of January or first of July nearest to the date of the license to occupy.

It is indicative of the character of the settlement which the State aims at securing through the medium of agricultural homestead selection that the issue of the lease does not entitle the selector of an agricultural homestead to mortgage, transfer, or assign it, and it is expressly provided that on any such mortgage, transfer, or assignment taking place, or on the insolvency of the selector, the homestead shall be forfeited.

If, after the expiry of five years from the commencement of the term of the lease, the selector obtains from the Land Commissioner a certificate that the conditions have been duly performed, and that the sum expended in improvements on the land has been not less than 10s., 5s., or 2s. 6d. per acre respectively, according to the value of the land as indicated by the proclaimed purchasing price, he may obtain a grant of the homestead in fee-simple on payment of a sum which, together with the rent already paid, will total 2s. 6d. per acre.

No person may apply for more than one agricultural homestead of the full area, but contiguous areas up to the limit allowed may be applied for by the same person as agricultural homesteads.

The acquisition on homestead conditions of the freehold of a selection under either repealed or existing Lands Acts curtails and in some cases exhausts the right of the grantee to select land on the easy terms associated with agricultural homestead selection; but if the grantee in such a case is no longer the owner of the land, and proves to the satisfaction of the Minister that he parted with it through circumstances of disaster or misfortune, the limitation on his right to acquire an Agricultural Homestead may be removed.

The selectors of a group of two or more agricultural homesteads may associate together for mutual assistance, and on making proof of *bona fides* to the Commissioner, may receive from him a special license enabling not less than one-half the total number of associated selectors to perform the conditions of occupation and improvement in respect of all the homesteads embraced by the special license. The residence may be performed on any one of the homesteads of the group, and if more than 10s. per acre is expended in improvements on any homestead while the special license is in force with respect to it, the surplus may be attributed to the others.

## GRAZING SELECTION.

### GRAZING FARMS.

Grazing farms are a prominent feature of the land policy of Queensland. Provision for this class of settlement was first made in "*The Crown Lands Act of 1884*," prior to the passing of which measure the pastoral industry of the State was almost entirely in the hands of the big run-holders, to whom the control of large leased areas and easy conditions of tenure gave advantages which the owners of comparatively small freeholds could scarcely hope to enjoy.

There were standing good on 30th June, 1901, 2,674 grazing farms, embracing 19,902,049 acres, and there is but little doubt that in the more favoured pastoral districts of the State at least, selections of this character will, as land becomes available, gradually take the place of the large squattages.

The lease term of a grazing farm may be fourteen, twenty-one, or twenty-eight years, as the proclamation may declare. The area may not exceed 20,000 acres, which is the maximum area that may be held at the same time by any one person as grazing selections, whether grazing farms or grazing homesteads.

The proclaimed rate of rent, which may not be less than  $\frac{1}{4}$ d. per acre, is the rate payable annually for the first period of seven years, unless there is competition for the land and the applicant tenders a higher rate of rent than that stated in the proclamation, in which event such higher rate will be the rate payable during the first seven years.

The rent for each subsequent period of seven years is determined by the Land Court, but it cannot be decreased at any re-assessment, nor can it be increased by more than one-half of the rent for the period immediately preceding.

A grazing farm must be continuously occupied by the selector in person, or by his manager or agent, who must be a person qualified to select a similar selection, and whose appointment must be registered in the office of the commissioner within one month from date of signature. Within three years from the issue of the license to occupy, or during such extended time not exceeding two years as the Land Court may allow, the selector must enclose the land with a good and substantial fence, and must maintain such enclosing fence during the whole of the term.

Contiguous selections held by the same selector are for the purposes of fencing and occupation treated as one, and contiguous grazing selections held by different selectors, but the aggregate area of which does not exceed 20,000 acres, may by special license from the Land Court be also enclosed together. If the proclamation declaring the land open to selection so prescribes, the enclosing fence must be of such a character as to prevent the passage of rabbits.

In the case of a group of contiguous grazing selections not exceeding eight in number or 200 square miles in total area and situated wholly or partly within any district constituted under the provisions of "*The Rabbit Boards Act, 1896*," the Court may by special license permit the selectors to enclose the whole area with a fence of such character as to prevent the passage of rabbits and relieve them of the obligation to separately enclose each of the selections embraced in the group.

If, in the case of a group of two or more grazing selections of not more than 2,560 acres each, it is proved to the satisfaction of the Land Commissioner that the selectors are *bonâ fide* associated together for mutual assistance, that officer may issue a special license enabling one-half the total number of selectors by their personal residence on any of the selections to perform the condition of occupation in respect of all the selections in the group.

When a grazing farm is enclosed in the required manner and the Land Commissioner has so certified, the selector becomes entitled to a lease, and may thereafter mortgage the farm, or with the permission of the Minister may subdivide or transfer it, or with the approval of the Land Court underlet it. The term of lease is reckoned from the 1st of January or first of July nearest to the date of the license to occupy.

## GRAZING HOMESTEADS.

The provisions of "*The Land Act, 1897*," in regard to grazing homesteads are the result of a desire to make some distinction in the law in favour of selectors of grazing lands who are willing to undertake obligations of personal occupation.

As already indicated, an application to select land as a grazing homestead is counted prior to an application simultaneously received for it as a grazing farm, even though a higher rent should be tendered with the latter. In return for this advantage it is required that the selector shall personally and continuously reside on the land during the first five years of the term of the lease, and that until the expiration of that period, or until the death of the original lessee, whichever first happens, the homestead shall not be mortgaged, transferred, or assigned. The insolvency of the selector during the license period entails the forfeiture of the license. With these exceptions, the law in regard to grazing homesteads is the same as in the case of grazing farms, and after the expiry of the first five years of the lease term all legal distinction disappears.

## SCRUB SELECTION.

Provision for this class of selection was first made in "*The Land Act, 1897*," under which lands entirely or extensively overgrown by scrub may, if opened in the prescribed manner, be leased in areas not exceeding 10,000 acres for a term of thirty years on conditions varying according to the extent to which the land is overgrown or according to proclamation. Scrub is defined as brigalow (*Acacia harpophylla*), gidya (*Acacia homalophylla*), mallee (*Eucalyptus gracilis*), sandalwood (*Eremophila Mitchellii*), bendee (*Acacia*, various), oak (*Casuarina*, various), zamia (Cycadaceous plants), wattle (*Acacia*, various), desert poison bush (*Gastrolobium grandiflorum*), currant bush (*Myoporum deserti*), wild rosemary (*Cassinia laevis*), prickly pear (*Opuntia*, various), or such other trees or plants as the Governor in Council may by proclamation declare to be scrub for the purposes of "*The Land Act, 1897*."

In the case of scrub selections of the first of the four classes into which such selections are divided, *i.e.* selections not more than one-fourth of which is overgrown by scrub, a peppercorn rent is payable during the first five years of the lease,  $\frac{1}{4}$ d. per acre during the next succeeding ten years, and 1d. per acre per annum during the remaining fifteen years. The length of the period during which a peppercorn rent is payable, and the rent payable for the balance of the lease, vary according to the classification of the land, until in the fourth class, embracing selections of which more than three-fourths is overgrown, the period of freedom from rent reaches twenty years, and the rent payable for the balance of the lease is 1d. per acre. In each year of the period during which no rent is payable the selector must clear a proportionate part of the scrub, and must, during that period, keep clear land previously cleared, so that the whole of the scrub shall be cleared before the arrival of the time when rent commences.

During the period of peppercorn rent the selector must also enclose the land with a good and substantial fence. As already indicated, the personal disqualifications imposed on the selectors of agricultural and grazing selections do not apply in the cases of scrub selections and unconditional selections.

On 30th June, 1901, there were standing good sixty-one scrub selections embracing 253,241 acres.

#### UNCONDITIONAL SELECTION.

This mode of selection or deferred purchase, under which land may be acquired free of any conditions beyond the payment of the purchase money, requires but little in the way of explanation, the name indicating almost sufficiently well its distinguishing features.

The area of an unconditional selection may not exceed 1,280 acres, and if two or more selections of this character are held by the same selector in any one district, the aggregate area must not exceed that limit, but beyond this there is no statutory limitation to the total area of unconditional selections, which may be held by any one person in the State.

A lease for a term of twenty years is issued to the selector on the approval of his application by the Land Court, and the purchasing price, which may not be less than 13s. 4d. per acre, is payable in twenty annual instalments. The purchase may, however, be completed at any time on payment of the total amount then remaining unpaid.

The following table shows the number and total area of the various kinds of selections standing good on 30th June, 1901:—

“The Crown Lands Act of 1884,” “The Land Act, 1897,” “The Agricultural Lands Purchase Act of 1894.”

Nature of Selection.	Act of 1894.		Act of 1897.		A. L. P. Act.		Total.	
	No.	Acres.	No.	Acres.	No.	Acres.	No.	Acres.
Agricultural Farms ...	3,302	1,067,246	2,544	705,479	833	105,299	6,679	1,878,024
Agricultural Homesteads ...	...	...	2,532	574,972	...	...	2,532	574,972
Unconditional Selections ...	1,144	177,280	707	168,854	126	14,084	1,977	360,218
Grazing Farms ...	1,698	12,560,609	976	7,341,440	...	...	2,674	19,902,049
Grazing Homesteads ...	199	460,533	138	1,002,239	...	...	337	1,462,772
Scrub Selections ...	...	...	61	253,241	...	...	61	253,241
	6,343	14,265,668	6,958	10,046,225	959	119,383	14,260	24,431,276

#### OCCUPATION LICENSES.

Licenses to occupy vacant Crown lands from year to year are granted by the Minister on application in the prescribed manner.

The land must be declared open for occupation by notification in the *Gazette* at least four weeks in advance of the opening date. Besides appointing a time and place for the opening the *Gazette* notification must specify the area to be occupied and the rent per square mile.

Applications must be made to the Commissioner, and the first applicant is entitled to the license. Should two or more applications for the same land be lodged at the same time, the land is offered at auction to the several applicants and granted to the highest bidder, in which case the annual rent shall be the amount bid instead of the sum specified in the *Gazette* notification. If, however, the land is declared open for occupation as the result of a special request by any person, the Minister may notify the Commissioner to that effect, in which event the person making such special request is entitled to priority of application provided he lodges an application in the prescribed manner at or before the time appointed by the notification.

The payment of the rent is practically the only legal requirement to be satisfied by the holder of an occupation license, but if he makes

injurious use of the land by overstocking the Land Court may require the licensee to reduce the number of the stock thereon, and failure to comply with the court's requisition within three months after receipt involves the forfeiture of the license. Every occupation license expires on the 31st December, but may be renewed by the payment on or before the 30th September of the next year's rent. By notice to the licensee before 1st September the Minister may increase the next year's rent by not more than 25 per cent., and the license may be determined at the end of any year by six months' notice previously given by the Minister to the licensee. The land may be proclaimed open for selection at any time.

With the approval of the Land Court a licensee may make improvements, for which, in the event of the land being selected, he is entitled to receive compensation to the extent of the value of the improvements to the selector.

The total area held under occupation license at the commencement of the present year was 54,530½ square miles at a rent of £32,292, or an average of 11s. 10d. per square mile.

#### SALES BY AUCTION.

Land may be offered for unconditional sale by public auction as town lands, suburban lands, or country lands.

Town lands are marked off in areas of from 1 rood to 1 acre; suburban lands within 1 mile from town lands in lots of from 1 acre to 5 acres; suburban lands over 1 mile from town lands in lots of from 1 to 10 acres; and country lands in lots not exceeding 320 acres.

The upset price must not be less than—

Eight pounds per acre for town lands.

Two pounds per acre for suburban lands.

One pound per acre for country land which, in the opinion of the Land Court, is agricultural, and 10s. per acre for other country lands.

Lands are offered for sale by the Land Agent, or by any auctioneer or person authorised by the Minister, at a time and place notified by proclamation published in the *Gazette* not less than four weeks or more than three months prior to the day of sale, and which proclamation must specify the numbers of the lots to be offered, and the area and upset price of each.

#### SPECIAL GRANTS.

In any case in which there is no convenient way of access to any portion of Crown lands, or in which any portion is insufficient in area for sale by auction, or in which a portion of Crown lands lies between lands already granted and a street or road which forms, or should form, the way of approach to such granted land, or in which buildings erected on lands already granted extend over Crown lands, or in any other case of a like kind, or in any case in which the Land Court certifies that special reasons exist, the Governor in Council may sell and grant such Crown lands to the holder or holders of the adjoining lands, without competition, at a price to be determined by the Court.

When a grantee of land from the Crown, or a licensee or lessee of land under the present Land Act or under "*The Crown Lands Acts, 1884 to 1895*," proves to the satisfaction of the Minister that, owing to danger from floods or for

any other reason, it would be or is unsafe to human life, or impracticable to reside thereon, the Governor in Council may, out of the nearest convenient and available Crown lands, sell and grant to such grantee, licensee, or lessee, without competition, at a price to be determined by the Land Court, an area not exceeding 10 acres; and in the case of a selection, the condition of occupation required by law to be fulfilled in respect of the selection shall be deemed to have been fulfilled by residence on the area so sold and granted to him.

#### SPECIAL LEASES.

The Governor in Council may issue leases of any portion of land, not exceeding 25 acres, to any person for the erection of wharves, store-houses, slips for building or repairing vessels, baths, works for supplying water, gas, or electricity to any town or market gardens, or for any manufacturing, industrial, residential, or business purposes, or in any case in which the Land Court certifies that special reasons exist, for such term, not exceeding thirty years, and upon such conditions as to rent and otherwise as the Governor in Council may think fit.

In the case of land on an island situated off the coast of Queensland—

1. The area comprised in the lease may be 50 acres, but shall in no case include the foreshore of the island;
2. The annual rent shall not be less than 2s. 6d. per acre, and the total annual rent shall not be less than £5.

#### ACQUISITION OF LANDS FOR PUBLIC PURPOSES.

The Governor in Council, on behalf of His Majesty, may acquire any land of any tenure which may be required for any public purpose, either by way of purchase or by granting any Crown lands of equal value in fee-simple or for any less estate in exchange for such land. In any such case the value of the land so acquired or granted, and of any improvements on such respective lands, is to be determined by the Land Court.

#### THE AGRICULTURAL LANDS PURCHASE ACTS.

Under the operation of these Acts a total area of 137,763 acres has been bought back by the State for the sum of £335,057, or an average of £2 8s. 7d. per acre.

Of this area, 131,340 acres have been opened for selection, and 123,727 acres selected in 994 selections at an average price of £2 13s. 10d. per acre, the total purchasing price payable amounting to £333,355.

The law requires that the land shall, in the first instance, be opened for selection as agricultural farms, but if at the end of three months it remains unselected it may then be opened for unconditional selection.

The conditions, however, in the case of the land opened for agricultural farm selection differ from those applicable to ordinary agricultural farms, in that the annual payments must be according to a fixed scale, so arranged that the whole of the purchase money, with interest thereon at the rate of 5 per cent. per annum, shall be paid off in nineteen annual instalments. The first payment must be at the rate of £10 for every £100 of the purchasing price. No payment is required for the second year, and the instalments from the third to the twentieth

year must be at the rate of £7 19s. for each £100 of the price. As soon as the conditions of occupation have been performed for the prescribed period by the selector, or by his duly appointed manager or agent, the former may complete the purchase, in which event a rebate of interest is allowed.

#### RABBIT LEGISLATION.

"*The Rabbit Boards Act, 1896*," which supersedes earlier Acts passed in 1891, 1894, and 1895, is administered chiefly through the medium of—

1. A Central Rabbit Board in Brisbane, consisting of the Minister for Lands, who is *ex officio* chairman, and six other members appointed by the Governor in Council, and
2. Boards elected annually in the several districts created for the purposes of the Act in the south, centre, and west of the State wherever localities are already infested or in danger of being infested with rabbits.

The Central Rabbit Board receives an annual grant from the consolidated revenue of a sum not exceeding £10,000, which is applied in defraying the necessary expenses of administration; in repaying district rabbit boards, each year, any part of the expense incurred during the year in repairing or maintaining the rabbit fence originally erected at the public expense on the boundary of the State; and, generally in such manner as the Governor in Council may direct, in defraying or contributing towards the cost of any measures taken to prevent the incursion or migration of rabbits, or for their destruction, or in repaying any district rabbit board any costs or expenses incurred in carrying out the provisions of the Act.

The boards of rabbit districts derive their funds from assessments levied on the stock ordinarily depastured in the several districts. Such assessments may not exceed 5s. or be less than 1s. on every 20 head of cattle or every 100 sheep. In the case of land held under lease or license from the Crown, the assessment must in no case be upon a less number of stock than in the proportion of 10 head of cattle or 50 sheep for every available square mile of such land. In the case of other lands no assessment is payable by an owner of less than 100 head of cattle or 500 sheep.

The powers with which the boards are invested include the power—

1. To order the erection of fences for the purpose of having wire-netting affixed thereto, and to apportion the cost of such fences among the owner or owners of the runs enclosed thereby and other runs benefited;
2. To affix to fences netting supplied by the State from a fund for the purpose;
3. To order the destruction of rabbits by owners of enclosed runs;
4. And directly to undertake the erection and maintenance of rabbit-proof fences and the destruction of rabbits.

Power is given to the Governor in Council to authorise that rabbit boards be supplied with wire-netting or other appliances for affixing to fences under the powers conferred on the boards, and that the cost of such netting or appliances delivered at the nearest railway station be defrayed out of any moneys appropriated by Parliament for

that purpose. The amount so defrayed in any year must not exceed the amount actually raised by assessment within the district concerned during that year.

The total length of netting supplied to rabbit boards under this provision up to 30th June, 1901, was 4,976 miles, at a cost of £146,497.

For the purpose of encouraging the erection of rabbit fences by individual owners, wire-netting is supplied by the State on the application of such owners made through the rabbit board, and for the purposes of the Act the person entitled for the time being to the possession of any occupied country is treated as the owner.

The terms on which such netting is applied are that the owner shall execute a charge on his interest in the land securing payment to the State of interest at the rate of 5 per cent. per annum on the cost of the netting delivered at the railway station nearest to the land to be enclosed. Or the Minister may authorise an owner to obtain on his own account wire netting of such nature and quality as may be stipulated, and may repay the cost on the owner executing a charge to secure payment of 5 per cent. interest on the cost, which must not exceed the amount fixed by the Minister.

The amount secured by any charge under the Act may be repaid at any time, and the cancellation of the charge thereby obtained.

No assessment is payable under the Act by the owner of any land in respect of which such a charge has been executed, or by the lessee of any pastoral holding or grazing farm whose lease has been extended as a result of the enclosing of the land with a rabbit proof fence, or by the lessee of any grazing farm which is so enclosed in compliance with a requirement of the Pastoral Leases Extension Acts. But the Rabbit Board is entitled to receive from the Minister the annual interest payments made by the owners of any such lands over which a charge under the Act has been executed.

The total length of netting supplied by the State to individual owners, up to 30th June, 1901, was 2,832 miles, at a cost of £93,230, bringing the total cost of the netting supplied to boards and individual owners up to £239,727.

#### THE MARSUPIAL PROOF FENCING ACT OF 1898.

The object of this measure is to assist selectors and the owners of freehold lands in combating the marsupial pest by supplying them with wire netting.

The benefits of the Act are available only in such parts of the State as are made to appear to the Governor in Council to be "grievously infested" with marsupials, and which are by Order in Council constituted "infested areas" for the purposes of the Act.

The owner of any freehold land, or the lessee or licensee of any selection which may become freehold, who may desire to be supplied with wire netting under the provisions of the Act must make application therefor through the Land Commissioner. He must also, on being informed of the cost delivered at the nearest railway station, execute a mortgage or charge securing the repayment to the Minister of such cost, with interest thereon at the rate of 5 per cent. in twenty equal annual instalments.

The total length of netting supplied under this Act up to 30th June, 1901, was 30 miles at a cost of £949.

## CONCLUSION.

The foregoing are the principal provisions of the Crown Lands Acts and related Acts at present in force, but proposals for amendment in more than one direction have been announced, and it is probable that before the next publication of the Year Book some alteration in the law will have taken place.

The following statistics, taken from the last annual report of the Under Secretary for Public Lands, are added for general information :—

	Acre.
1. Area under Mining Lease ... ..	89,276
2. Area in process of Alienation ... ..	2,890,968
3. Area alienated by Deeds of Grant ... ..	13,323,524
4. Area under Grazing and Scrub Selection ... ..	21,049,451
5. Area under Occupation License and Depasturing Right ...	83,091,200
6. Area reserved for streets, roads, and other purposes, or unoccupied ... ..	130,392,061
7. Area under Pastoral Lease ... ..	177,001,600
Total, being the area of the State ... ..	427,838,080

## STATEMENT OF LAND RECEIPTS for the YEAR 1900.

	£	s.	d.	£	s.	d.
<i>Sales—</i>						
Auction (including selection after auction) ...	...			45,957	15	2
<i>Rents—</i>						
Agricultural Farms ... ..	28,764	4	10			
Agricultural Homesteads ... ..	3,409	3	2			
Grazing Farms ... ..	84,677	6	2			
Grazing Homesteads ... ..	4,211	10	8			
Unconditional Selections ... ..	16,759	13	6			
				137,821	18	4
<i>Pastoral Occupation—</i>						
Rent of Occupation Licenses ... ..	44,707	7	4			
Rent of Runs ... ..	327,223	17	8			
				371,931	5	0
<i>Miscellaneous Receipts—</i>						
Licenses to cut Timber, &c. ... ..	7,607	16	1			
Transfer Fees ... ..	711	9	6			
Fees on preparation and enrolment of Title Deeds ... ..	1,463	1	9			
Survey Fees ... ..	5,004	6	10			
Special Leases ... ..	1,785	7	1			
All Other Receipts ... ..	1,471	9	0			
				18,043	10	3
Total ... ..				573,754	8	9

## DISTRICT REPORTS.

## MORETON, WIDE BAY, AND BURNETT DISTRICTS.

[Contributed by W. M. WATTS, Land Commissioner.]

## MORETON DISTRICT.

Generally speaking, the Moreton district may be described as settled, having considerable advantages in the way of trafficable communication by road and rail. The district is an extensive one, being bounded by the Wide Bay, Burnett, and Darling Downs districts, and by the State of New South Wales on the south side, and by the Pacific Ocean on the east. It is, perhaps, one of the best watered districts in the State, and offers great attractions to both pastoral and agricultural settlement.

The climatic conditions of the Moreton are, perhaps, as favourable to the possession and enjoyment of physical health as any part of the world, whilst its proximity to the ocean secures an agreeable alternation of land and sea breezes which modify and temper the summer heat, and so enable Europeans to undergo the severest labour without injury or inconvenience.

Gold has been found at Enoggera, near Brisbane; and on D'Aguilar's Range; coal seams are to be met with about Mooloolah and Caloundra, but the large collieries of the district are in and around the old town of Ipswich, about 25 miles from the capital.

Dairying has become a great industry all over the district, and any land opened for selection is eagerly sought after for extending present holdings. Creameries, butter factories, and cheese factories are springing up all over the district, and are paying handsome returns on their outlay.

Fruitgrowing is also annually becoming a very important industry. It is found that all tropical and semi-tropical fruits thrive well all over this district.

The establishment of meatworks and bacon factories has made the fattening of stock and the raising of pigs an industry of vast importance, the whole being generally connected with either farming or dairying.

Timber occupies a very conspicuous position in the industries of this district, there being no less than sixteen railway stations where timber is loaded for transmission to the several towns of the State. An idea of the importance of the trade may be judged from the fact that 200 teams are engaged in carrying to the different stations.

#### WIDE BAY DISTRICT.

The Gympie district extends from Mount Denmark on the south to the Township of Tiaro on the north, and from the Pacific Ocean and Tin-can Bay on the east to the dividing range between the Mary and Burnett waters on the west. It includes the Noosa River, which is tidal for about 17 miles, and is navigable by small steamers of light draught; and the source of the Mary River, which is fresh. Gympie, the important goldfield of that name, occupies a central position in the district. Valuable deposits of cinnabar have been found at Kilkivan. Coal measures are known to exist at Miva and Noosa. Copper abounds at Gigoongan. All these places are connected with Gympie by rail, and that place is situated on the main northern railway line. From Kilkivan the railway is being extended south towards Nanango, and will open up large areas of agricultural land in that district. Many square miles of good land have been selected in this district since the lands were first opened for selection, and in addition to large areas proclaimed as reserves for the conservation of timber, &c., &c., there still remains a large quantity of good land available for selection as homesteads or farms. The district is very mountainous and fairly well grassed, although timbered to the summits of the highest ranges, and interspersed with numerous scrubs. The forest country to the west of the Mary River is moderately open and is very good pastoral land. Where the scrubs appear, the soil is deep and rich in decayed vegetable matter. It has been found to pay well for cultivation purposes, especially when situated near a market town or village. The lands best adapted for cultivation are the alluvial flats and sloping banks or ridges near the

rivers and creeks, and it is such lands that have been chosen for that purpose. The soil varies in kind, quality, and depth, according to situation. In the open forest flats it is generally of a black or brown colour, rich and varying from a few inches to several feet in depth. This description also applies to the scrub lands which generally are deeper and more loamy. The crops mostly grown in the district are maize, oaten hay, potatoes, lucerne, sweet potatoes, and sugar-cane. The soil and climate are well adapted for growing tobacco, arrowroot, rice, and barley. The yields of the several crops are as nearly as can be ascertained as follow:—Maize, two crops in the season; English potatoes, two crops in the season; oaten hay, 2 or 3 tons per acre. Lucerne sown once in six or seven years is cut five or six times each season, and yields about  $1\frac{1}{2}$  tons an acre each cutting. Sweet potatoes yield 10 to 20 tons per acre, and sugar-cane from 10 to 20 tons per acre.

The grazing capabilities are estimated at 8 acres to one beast, but vary according to situation. In respect to water the district is especially favoured by rivers, creeks, and springs.

The average rainfall for the last thirty years is 49·59 inches, and that for 1900 was 27 inches, with seventy-six wet days.

The district generally is heavily timbered with red, blue, gray, and spotted gum, blackbutt, messmate, teak, ironbark, and bloodwood, whilst the scrubs produce cypress, hoop, and bunya pine, cedar, beech, tulipwood, and yellow-wood. The timber trade has risen to a great magnitude and value, and supplies many saw-mills within the district as well as some in Maryborough and Brisbane. A large number of heavy timbers for bridge and wharf purposes are obtained from this district.

#### BURNETT DISTRICT.

The Burnett district is situated on the north-west of the Moreton district, and its chief town, Nanango, is about 68 miles from the sea-coast, in a direct line. The district has been largely settled during the last two years. The general formation of the country is granite, and limestone is also to be found. The soil varies considerably, ranging from a rich red loam and strong black soil, to sandy and otherwise inferior soils in some parts of the ridges and back country.

It is chiefly a forest country, heavily timbered, with here and there open flats along the watercourses. Open forest, with a rich black or chocolate soil, may be met with of a very superior description, changing to broken or stony ridges carrying good grass.

There is a large extent of land well suited for agriculture, having a great depth of rich black soil, and other of red and chocolate, with clay subsoil.

The watercourses are generally divided by low ridges, which are thickly timbered and scrubby, with good, valuable timber, especially on the ranges dividing the Burnett, Brisbane, and Mary River waters.

The timber consists of ironbark, gum, apple, and pine, with yellow-wood, crow's-ash, and other valuable timbers.

Gold has been found both in quartz and alluvial in many places in the district. The railway line from Kilkivan to Nanango is in course of construction at the present time. This line passes through some of the best land in the district, and when completed will give an outlet to Maryborough and Northern ports for selectors' produce. There will be a large area of good land opened for selection in the near future, owing to several pastoral leases expiring.

The temperature varies from 23 degrees lowest reading to 70 or 75 degrees in winter, while in summer it rarely exceeds 95 degrees. The annual rainfall varies much. In the twelve months ending 30th December, 1900, it was 24 inches, while in 1896 it was about 45 inches.

#### TOWNSVILLE, RAVENSWOOD, CHARTERS TOWERS, AND BOWEN LAND AGENTS' DISTRICTS.

[Contributed by G. W. YOUNG, Land Commissioner.]

##### TOWNSVILLE DISTRICT.

The Townsville Land Agent's district possesses a dry, healthy, tropical climate, the mean maximum shade temperature being 89 degrees, and the minimum 32 degrees freezing point.

The average rainfall over the coastal belt is 58·06 inches per annum, distributed through the year as follows:—January, 18·12; February, 15·72; March, 7·49; April, 5·34; May, 1·46; June, 1·51; July, 0·26; August, 1·01; September, 0·87; October, 1·52; November, 1·74; December, 3·02 inches, and over the remainder of the district 52·35 inches per annum with a distribution *pro rata*. With the exception of the Mount Elliott Range and other small isolated mountains with their spurs, about three-fourths of the district, lying between the shores of Upstart, Bowling Green, Cleveland, and Halifax Bays, and the Main Coast Range is level; the remaining one-fourth is elevated broken tableland, situated over the coast range on the watershed of the Upper Burdekin, which embraces the heads of the Fanning and Star Rivers, also Keelbottom Creek, all of which flow into the Burdekin River.

The timbers on the whole throughout the district are stunted and not of great value, consisting chiefly of ironbark, blue gum, poplar gum, bloodwood, tea-tree, sandalwood, wattle, oak, &c.; on the ranges there are patches of good hoop pine and hardwood, but up to the present time owing to the extreme roughness of the mountains little has been obtained. On the lowlying fertile portions of the district, on the banks of the rivers and creeks, subject almost annually to inundation, small scattered patches of good timber exist, such as red and blue gum, Moreton Bay ash, acacia, plum, fig, and apple-tree; also vine scrub denoting rich deep soil.

The greater portion of the land in the district is suitable for grazing purposes only, the soil being clay, gravelly and stony, resting upon an almost impervious salty yellow and white clay subsoil, with many tracts of boggy swampy country densely timbered with tea-tree.

Although the bulk of the good agricultural land is alienated, yet a quantity of good land suitable for agriculture and fruitgrowing is still available for selection in various parts of the district—viz., in patches along the banks of the Lower Burdekin, from Expedition Pass Creek down to the Delta on the Lower Houghton River—most of which is liable to inundation; along Majors Creek (left bank) and in patches along the foot of the Coast Range, for which there is at present little demand owing to its distance from either railway or water carriage.

A very considerable area of good land will be very shortly available to the farmer along the Townsville-Ayr tramline; the country throughout this district in ordinary seasons is well watered.

The total area of land at present open to selection in this district is 306,021 acres 3 roods 36 $\frac{2}{10}$  perches, as per form below, mostly at the minimum rentals allowed under the Land Act:—

Parishes.	Agricultural Homesteads, Agricultural Farms, and Unconditional Selections.			Grazing Selections.			Totals.		
	Mapped Out.	Surveyed.	Unsur- veyed.	Mapped Out.	Sur- veyed.	Unsur- veyed.			
	Acres.	A. R. P.	Acres.	Acres.	Acres.	Acres.	A.	R.	P.
Abbotsford ... ..	...	...	...	...	412	...	412	0	0
Beor ... ..	...	1,172 2 35	1,980	...	...	...	3,152	2	35
Bohle ... ..	...	320 0 0	6,820	...	...	...	7,140	0	0
Clement ... ..	...	...	7,840	...	565	...	8,405	0	0
Cardington ... ..	...	38 3 5 $\frac{3}{10}$	...	...	...	...	38 3 5 $\frac{3}{10}$		
Etrick ... ..	...	140 0 0	...	...	...	...	140	0	0
Halifax ... ..	...	962 3 38	500	3,900	6,300	...	11,662	3	38
Hervey ... ..	...	230 3 0	...	...	...	...	230	3	0
Hinchinbrook ... ..	...	...	...	...	4,940	...	4,940	0	0
Jarvisfield ... ..	...	934 3 21	300	12,020	1,846	...	15,250	3	21
Kirknie ... ..	...	...	...	16,200	...	...	16,200	0	0
Lansdowne ... ..	17,279	604 0 0	5,787	...	...	...	23,070	0	0
Magenta ... ..	4,847	1,787 0 25	19,200	...	...	...	25,834	0	25
Millaroo ... ..	...	...	8,043	40,900	...	...	48,943	0	0
Morrill ... ..	...	1,430 0 0	...	...	...	...	1,430	0	0
Mulgrave ... ..	...	...	4,020	18,100	780	...	22,900	0	0
Northcote ... ..	...	760 0 0	...	17,700	...	...	18,460	0	0
Rattlesnake Island ... ..	...	50 0 0	...	...	...	...	50	0	0
Rokeby ... ..	1,505	2,049 2 32	32,640	...	...	...	36,194	2	32
Ross ... ..	4,584	416 0 0	...	...	1,100	...	6,100	0	0
Strathbogie ... ..	...	...	...	7,400	...	...	7,400	0	0
Stuart ... ..	...	2,614 2 0	15,840	...	...	...	18,454	2	0
Wyoming ... ..	190	912 2 0	24,320	4,190	...	...	29,612	2	0
							306,021	3	36 $\frac{2}{10}$

The total area of land available for opening for selection, when required for settlement in the future, is about 396,640 acres, in the parishes as hereunder, viz.:—

	Acres.
Beor ... ..	7,040
Clement ... ..	9,920
Glenrock ... ..	19,200
Halifax ... ..	43,360
Inkerman (expired lease) ... ..	35,200
Kilbogie ... ..	32,640
Leichhardt Downs (Inkerman expired lease) ... ..	53,760
Morrill (the Island) ... ..	14,080
Magenta (Woodstock expired lease) ... ..	16,640
Ross (Gleeson Run) ... ..	6,400
Selkirk (Callandoon, No. 2 Woodstock expired lease) ... ..	22,720
Selkirk and Barratta (Woodstock expired lease) ... ..	86,400
Scott (Woodstock expired lease) ... ..	20,480
Woodstock (Woodstock expired lease) ... ..	28,800
	396,640

#### RAVENSWOOD DISTRICT.

The Ravenswood Land Agent's district has a dry, healthy climate, within the tropic of Capricorn, the mean maximum shade temperature being about 90 degrees and the minimum about 27 degrees.

The average rainfall over this district is 37.36 inches per annum, distributed as follows, viz.:—January, 14.42 inches; February, 8.30 inches; March, 2.43 inches; April, 2.27 inches; May, 0.46 inches; June, 2.16 inches; July, 0.45 inches; August, 0.81 inches; September,

0·68 inches ; October, 1·31 inches ; November, 1·16 inches ; and December, 2·91 inches.

The whole of this district is within the Ravenswood Gold Field, and is only available for selection under the provisions of "*The Mining Act of 1898*" as mineral leases and goldfield homesteads. Portions are held under pastoral lease and occupation license at the present time.

There are large areas of rich soil along the banks of the Burdekin River and the various tributaries thereto, but owing to the general avocation of the population being mining and timber-getting, who have no permanent place of abode but are prepared to shift from place to place at almost a moment's notice on new finds of gold being discovered, there does not appear to be the slightest demand for any description of farm. There are a few dairymen and others, holders of goldfield homesteads, who keep the residents of the town and the various mining centres supplied with milk, butter, poultry, and eggs, a miner's right being sufficient warrant for a large herd of cattle being depastured on the goldfield ; also, a number of Chinese residents who supply the ordinary class of vegetables, but the bulk of the produce, &c., for food, with exception of meat, is all imported from southern markets. A large area of the south-western, southern, and eastern portions of this district is suitable for grazing farms, being well watered by the river Burdekin and the numerous watercourses flowing into it.

With the exception of rich flats upon the banks of the River Burdekin and its feeders, the whole of the district is broken hilly country, very rich in gold and minerals, and it is timbered with iron-bark (narrow and broad leaf), box, bloodwood, and sandalwood, and upon the alluvial flats on the river and banks of the many creeks, Moreton Bay ash, gums of many kinds, acacia, tea-tree, river oak, apple, and Burdekin plum.

#### CHARTERS TOWERS.

The Charters Towers Land Agent's district has a healthy dry tropical climate, the mean maximum shade temperature being about 95 degrees, and the minimum about 27 degrees.

The average rainfall over the eastern part of the district is 30·59 inches per annum, distributed as follows:—January, 8·67 ; February, 6·59 ; March, 2·08 ; April, 2·49 ; May, 1·02 ; June, 1·77 ; July, 0·76 ; August, 0·91 ; September, 0·48 ; October, 0·83 ; November, 2·81 ; December, 2·18 inches. Over the northern and western portion 33·52 inches per annum, distributed through the year:—January, 8·77 ; February, 9·82 ; March, 4·29 ; April, 2·59 ; May, 0·15 ; June, 0·81 ; July, 0·65 ; August, 0·75 ; September, 0·12 ; October, 1·29 ; November, 1·90 ; and December, 2·38 inches ; and over the southern and western part 32·80 inches, as follows:—January, 9·74 ; February, 7·54 ; March, 2·41 ; April, 3·08 ; May, 0·80 ; June, 1·31 ; July, 1·44 ; August, 1·84 ; September, 0·56 ; October, 0·62 ; November, 1·57 ; and December, 1·89 inches.

There are a good many small gardens round about the town of Charters Towers, where water can be obtained, which partly supply the people with vegetables, but the greater part of the population depend upon the coastal growers and southern markets weekly for their necessaries—fruit, potatoes, onions, cabbages, butter, &c.; and upon Townsville for their fish. Upon the Cape Gold Field the residents of Pentland, on the Queensland Northern Railway, grow a limited quantity of vegetables, also very fine oranges upon a very

rich deep red volcanic soil, and no doubt with a good influx of persons who understood the cultivation of fruit into the district, much more of this rich land could be put to a better use than growing grass for a few milking-cows, goats, and working horses.

On the whole the country throughout the district is undulating and broken, and hilly with large areas of basalt formation—jump-ups and tablelands, especially on the northern half.

It is well adapted for the depasturing large herds of horses and cattle, but of no value for sheep by reason of the spear-grass (which greatly depreciates the value of the wool) which grows most luxuriantly upon the sandy flats of the creeks.

Most of the working population of the town of Charters Towers are miners, and the remainder those who minister to their wants; a very large and increasing business exists in procuring firewood and mining timber, and is a source of living for many.

The timbers found in this district consist principally of ironbark, lancewood, box, broad-leaf ironbark (of no value), Burdekin plum, gums of various kinds; and Moreton Bay ash, on the alluvial flats of the rivers and main creeks, sandalwood, tea-tree, quinine, messmate, blackbutt, myall, with patches of gidya, also yellow-jack and poison-bush along the great dividing range forming the western boundary of the district.

The northern portion of the district is fairly watered by the Clarke and Basalt Rivers and tributaries, also Allingham's, Fletcher's, Lolworth, and Dillon's Creeks. The country drained by the Campaspe and Cape Rivers from the centre to the southern portions is fairly watered, and generally there is abundance of permanent water in the Burdekin and Suttor Rivers, on the eastern boundaries of the district.

The total area of land at present open for selection in the district is 218,320 acres in the parishes or resumed parts of runs, as per list hereunder:—

Parishes.	Agricultural Farms and Homesteads, and Unconditionals.		Grazing Farms.		Totals.
	Surveyed or Mapped Out.	Unsurveyed.	Surveyed or Mapped Out.	Unsurveyed.	
	Acres.	Acres.	Acres.	Acres.	Acres.
Natal Downs ... ..	...	...	47,000	...	47,000
Mount Elsie ... ..	...	...	25,000	...	25,000
Powlathanga ... ..	320	...	...	...	320
Allandale ... ..	...	...	37,700	...	37,700
Glengalder ... ..	...	...	10,500	...	10,500
Lolworth ... ..	...	...	42,800	...	42,800
Gainsford ... ..	...	...	9,700	...	9,700
Lolworth ... ..	...	...	36,200	...	36,200
Wambiana ... ..	...	...	9,100	...	9,100
					218,320

All resumed parts of runs within the district will be made available for selection when required for settlement, also the expired leased part of runs, unless otherwise dealt with.

The large areas within the Charters Towers and Cape River, &c., proclaimed Gold Fields are available for selection as mineral leases and goldfield homesteads, under the Act to consolidate and amend the

laws relating to goldfields, mineral lands, mines, and mining, known as "*The Mining Act of 1898.*"

#### BOWEN DISTRICT.

The Bowen Land Agent's district has, with the exception of the Lower Proserpine, Conway Peninsula, and Witsunday Islands—the extreme north-east portion of the district—a healthy, dry, tropical climate, the mean maximum shade temperature being about 89 degrees and the minimum about 30 degrees, or 2 degrees below freezing point.

The average rainfall over the northern part of the district is about 54·13 inches per annum, distributed as follows:—January, 16·42; February, 18·69; March, 5·29; April, 2·58; May, 1·96; June, 2·27; July, 0·77; August, 1·07; September, 0·79; October, 1·09; November, 1·09; December, 2·11 inches. Over the eastern part of the district, 64·63 inches, distributed through the year as follows:—January, 16·90; February, 15·08; March, 9·35; April, 4·94; May, 2·79; June, 3·17; July, 0·38; August, 1·27; September, 1·97; October, 1·75; November, 1·71; December, 5·32 inches. Over the western and southern part 35·08, distributed as follows:—January, 12·08; February, 7·92; March, 2·42; April, 2·67; May, 0·63; June, 1·74; July, 0·94; August, 1·33; September, 0·62; October 0·96; November, 1·37, and December, 2·40 inches; but over the extreme south-eastern portion, consequent upon the high mountains upon the coast and upon the islands, the fall is about doubled, *i.e.*, Lower Proserpine River sugar district, Conway Peninsula, and the Witsunday Islands averaging 90·08 inches, distributed through the year as follows:—January, 24·83; February, 23·42; March, 8·92; April, 6·21; May, 3·41; June, 5·58; July, 1·47; August, 4·14; September, 1·14; October, 1·98; November, 3·12, and December, 5·86 inches.

The district is intersected by two high ranges—*viz.*, the Clarke's Range, which forms the watershed between the coastal waters and those falling into the Bowen River, also the Leichhardt Range, which forms the watershed between the Bowen and Suttor Rivers. Throughout the district there are numerous high mountain peaks and tracts of rough broken country, especially upon the south-west side of the Leichhardt Range between it and the Suttor River; the greater part of the district, say five-sixths, is only suitable for grazing purposes; a great proportion is very inferior, but generally well watered. There are large areas of good agricultural land. Chief in excellence may be mentioned the Lower Proserpine, the Conway Peninsula, through and on each side of the famous Cannon Valley, lying between Port Molle and the Gregory River; also the Dryander Runs, all within the wet belt. Good patches are to be found on the Bowen River, which flows into the Burdekin River, also upon the banks of numerous watercourses in the district; but the only land likely to be sought after in the near future is that which from a copious rainfall could be utilised for every kind of tropical produce, and whose value would be enhanced by its proximity to easy shipment. The large area of land which has been selected upon the Lower Proserpine and planted with sugar-cane (which is crushed at the central sugar mill), plainly shows the richness and value of the soil in that locality. If railway communication was established from Bowen to the Bowen River it would open up a very large field for the enterprising farmer, as the rich lands in that locality are admirably adapted for the cultivation

of grapes, all kinds of fruit, grain, and vegetables, &c., there being inexhaustible supplies of permanent water in the Bowen and Broken Rivers for irrigation purposes.

There are rich deposits of coal on Pelican Creek, a tributary of the Bowen River. The character of this coal is excellent for steam purposes.

There are a great variety of timbers in the district consisting of red, blue, and spotted gum, Moreton Bay ash, bloodwood, river-oak, cabbage and Dawson gum, ironbark, poplar gum,\* gum-topped box, pine, swamp and forest tea-tree; and of the smaller timbers may be mentioned acacia, sandalwood, she-oak, brigalow, myall, gidya, rosewood, dead-finish, beefwood, wattle, lancewood, quinine, black fig; and in and about in the dense vine scrubs on the coast, white cedar, red fig, a species of Moreton Bay fig, damson, giant laurel or whitewood, quondong, umbrella, Leichhardt, plum, apple, &c.; and through the Conway Peninsula great quantities of pine, red cedar, and beech, also enormous quantities of pine upon the Witsunday Islands.

The total area of land at present open for selection in the Bowen Land Agent's district is 467,900 acres 0 roods 16 perches, in the parishes as per list hereunder, viz. :—

Parishes.	Agricultural Farms, Agricultural Homesteads, and Unconditional Selections.			Grazing Selections.		Total.
	Surveyed or Mapped Out.		Un- surveyed.	Surveyed or Mapped out.	Unsurveyed.	
	A.	R.	P.	acres.	acres.	acres.
Aberdeen	795	0	0	28,920	...	29,715
Abbott	500	0	0	...	...	500
Crystal Brook	1,214	0	0	...	14,870	16,084
Conway	1,784	0	1	36,240	...	38,024
Curlewis	480	0	0	...	...	480
Dargin	1,746	2	7	8,000	...	13,506
Dryander	160	0	0	...	...	160
Dangar	...	...	...	...	12,800	12,800
Euri	1,106	1	26	3,840	...	4,946
Eton Vale	...	...	...	...	11,830	11,830
Eagle Vale	...	...	...	5,240	...	13,500
Glenavon	...	...	...	...	22,010	22,010
Heidelberg	...	...	...	...	20,700	20,700
Havilah	...	...	...	...	76,000	76,000
Rookwood	...	...	...	...	2,250	2,250
Roundback	147	3	20	...	...	147
Strathdon	...	...	...	...	16,272	16,272
Strathmore	...	...	...	...	50,000	50,000
Salisbury	2,710	0	0	...	...	2,710
Sonoma Resumption	...	...	...	...	36,800	36,800
Tawvale	2,764	1	2	1,080	...	3,844
Bonaventura and Andromache	...	...	...	77,830	...	77,830
Curlewis, Wootton Vale, Roundback, and Salisbury	...	...	...	12,550	...	12,550
						467,900 0 16

And the areas of land available for selection when required for settlement in future are, namely, the resumed and expired leased parts of runs not otherwise dealt with.

# ROCKHAMPTON, ST. LAWRENCE, BANANA, SPRINGSURE, AND CLERMONT LAND AGENTS' DISTRICTS.

[Contributed by A. STARCKE, Land Commissioner.]

## ROCKHAMPTON DISTRICT.

Not so many years ago it was the generally accepted opinion that the whole of Queensland was only fit for the depasturing of a limited number of sheep and cattle on the tablelands to the west of the main coast range and of cattle solely on the coast lands. Agriculture, it was believed, was out of the question owing to climatic conditions and the inferior quality of the soil. This idea has been most effectually dispelled by the gigantic strides agriculture has taken in the Southern districts, but the same prejudice exists yet with regard to the Central districts, and especially the Rockhampton district.

It is natural that a difference in latitude should affect the suitability of the land with regard to certain kinds of produce. Wheat, oats, and barley should certainly not be cultivated except to be cut for hay, but there are other plants which would give even better returns in the Central districts than in the better known Southern districts. I will only mention maize, sorghum, lucerne, sweet potatoes, cow pea, and sugar-cane. Fruit trees of the citrus family thrive amazingly, but do not receive the attention necessary to all orchards in order to make a commercial success. The grape vine is a decided success, especially the muscatel variety. Coffee grows well, and its cultivation will in course of time become a valuable industry. Mangoes grow in profusion all over the district, bananas along the coast.

**CLIMATE.**—Although the greater part of the Rockhampton district is within the tropics, its climate is certainly sub-tropical. People arriving here from the southern colonies and from Europe during the heat of summer have given the place a reputation as being unfit for white man to live in, which is entirely undeserved. April, May, June, July, and August have a most enjoyable temperature, the three last-named months being positively cold, and night frosts are of common occurrence. The fierce heat of summer is, in normal seasons, tempered by a copious rainfall.

There is a great difference in the climate of a narrow strip along the coast and the interior, although in the same latitude and at the same elevation above sea-level. The average temperature is about the same, but along the coast night frosts are almost unknown; therefore, the banana and sugar-cane thrive in those districts, whilst they are not a success farther inland.

**RAINFALL.**—The rainfall during 1900 has been 16·94 inches, the lowest on record with the exception of 1885, when it was 16·52. The highest during the last sixteen years was in 1890, when it was 81·90 inches. The average for the last sixteen years was 46·17 inches. Although the bulk of this rainfall happens, as a rule, during December, January, and February, there is hardly ever a month entirely without rain.

**SOIL.**—It stands to reason that in a so extensive district there must be a great variety of soils, and a large proportion of the available land is only fit for grazing purposes, but at the same time there are very few places where agriculture could not be combined with grazing. Scrub land, which now does not find any applicants, will in the near

future undoubtedly be to a great extent cleared and converted into rich agricultural holdings.

**WATER.**—Like all coast districts, the Rockhampton district is well watered by numerous rivers and many running creeks. Of course, during the heat of summer, evaporation is very great, and many of the minor watercourses and waterholes dry up; but, as a whole, the many tributaries of the magnificent Fitzroy River intersect the country in all directions, forming a network of never-failing water-channels. Besides this river, many smaller rivers and creeks, both to the north and the south of the Fitzroy, run direct into the sea.

Although the district is one that has been settled a long time, and where settlement has been going on under the different Acts of 1868, 1876, 1884, and 1897, there are at present 270,894 acres open for grazing selection, and 260,649 acres open for agricultural selection. This immense area could at any time be increased by 1,921,920 acres, held under occupation license; 158,080 acres opened under Part V. and not taken up, and 174,720 acres forfeited and not reopened under Part V. of the Act of 1897. Besides, there are the resumed portions of many runs held at present under grazing rights by the original lessees, but not yet open to selection. The area of these resumptions, not yet dealt with, amounts to 917 $\frac{3}{4}$  square miles, of which 176 $\frac{1}{2}$  square miles are classed as unavailable for grazing purposes. I may mention, in explanation of these stupendous figures, that the Government hesitates to disturb the present holders unless an application is made by intending settlers for the opening of certain areas, when the request is invariably complied with, if the *bona fides* of the applicants is not questioned.

**PROSPECTS OF INTENDING SETTLERS.**—It is an established fact that grazing farmers holding fairly large farms are, on the whole, in comfortable circumstances; but it is frequently mentioned that, although the first comers had the pick of the agricultural land, farming, as a means of making a living, is decidedly languishing. This want of success is ascribed to different causes. Some people say the soil is not suitable; most people blame the climate. Very few ascribe this partial failure to the real cause, viz.:—That the majority of the so-called farmers are either only farmers in name, or that they, in the majority of cases, come from countries where they have been working under entirely different conditions. Instead of adapting their methods to the altered conditions, they expect the conditions to accommodate themselves to their convenience. Nature persistently refuses to do this, and ill success is the consequence. In the countries surrounding the Mediterranean nobody ever dreams of planting an orange orchard without applying some kind of irrigation, sometimes of a very primitive nature; but here in the Central districts of Queensland, where the evaporation is rather greater, farmers look only to the natural rainfall to bring their crops to maturity, when a very moderate amount of irrigation at certain critical periods would mean the difference between failure and good returns.

It stands to reason that where there are natural conditions stimulating plant life to an extraordinary degree insect life thrives also wonderfully, and the farmer has to apply scientific methods to counteract the ravages of all kinds of minute organisms. Where there is much light there naturally the shadows are also deeper; where there are great advantages drawbacks are generally also proportionately

greater; but I think the natural advantages, if intelligently made use of, outnumber the disadvantages.

Dairying has undoubtedly a great future before it in the Central districts. With a few exceptions, farmers rely yet solely upon the natural grasses for the feeding of their dairy cattle; in many instances turning their dry cows into the roads and reserves to pick up a precarious livelihood as best they may. In the near vicinity of the town of Rockhampton, where such dairymen can send their milk daily to town, they manage to make a living in spite of such violations of the laws of Nature; but it stands to reason that where such holdings are too far from town to send their milk in, butter and cheese making as a profitable venture is out of the question.

MARKETS.—One is frequently met with the words: "What is the good of growing produce when after growing it you can't get it to market." This sounds plausible, but it is most fallacious. If it is too far to send the produce to market, the produce can easily be converted into fat stock, especially swine and dairy produce. The truth of this has been ascertained long ago in the United States of America. That there is a never-failing market for all kinds of farm produce is proven by the fact that the value of imported produce from the southern colonies was last year over £40,000, and presumably the value of the produce imported from the southern part of Queensland about £60,000, all of which could have been grown or made in the district.

An article on the resources of the Rockhampton district would be incomplete without mentioning the meatworks established on the Fitzroy River. There are two meatworks in full working order in the near neighbourhood of Rockhampton. On the south bank of the Fitzroy River an establishment known as Allcut's, which was recently provided with the most modern machinery, and the celebrated Fitzroy Meat Preserving Works at Lake's Creek on the north bank. The last-named establishment is one of the largest if not the largest of its kind in the Commonwealth of Australia. These meatworks are the means of procuring a ready outlet for the surplus fat stock of the grazier and the pigs of the small selector at remunerative prices. Unfortunately the severe drought which the colony has lately suffered from has somewhat interfered with the profitable working of these establishments.

With regard to markets, I wish to point out the growing importance of many mineral fields in the Rockhampton district. Mount Morgan is too well known all over the world to require anything beyond mere mention as a never-failing market for all kinds of supply; but there are others which, now that more scientific methods for the recovery of gold from refractory ores are introduced, promise to become flourishing centres of population. I only mention the progressive townships of Bouldercombe or Mount Usher, Cawarral, New Zealand Gully, but there are others which, at present, are of minor importance. Copper has been found at Moonmera and New Zealand Gully, coal at Bayfield, and all these places will without doubt in the near future become markets for all kinds of produce.

#### ST. LAWRENCE DISTRICT.

The boundaries of this district have been amended, and now extend west to the Isaacs River, south to the Styx River, and north to Cape

Palmerston. The coast portion consists principally of marine plains, very suitable for the fattening of cattle, but most unsuitable for close settlement. The only suitable land for agriculture appears to be along a few creeks like Carmilla Creek, West Hill Creek, and St. Lawrence Creek. The tableland is well watered by the Connors and Mackenzie Rivers, and numerous creeks. The Isaacs River only carries water after heavy rains, and has a sandy bed. The best country is situated along the banks of these rivers and is subject to floods.

The town of St. Lawrence was formerly, in the early days, the outlet for the Peak Downs traffic when the copper mines were in full swing; but now its glory has to a great extent departed since Clermont has connection with the main trunk line of railway. The surrounding stations, however, have a great reputation as fattening runs.

I may here mention that originally St. Lawrence Creek formed the port for the town and district, but that at present this creek is entirely silted up, and the much more important Waverley Creek forms the port. The meatworks are situated near the wharf in the township of Newport. There was at one time a coal mine worked close to the present port, but work was discontinued on account of the influx of water. Rumour has it that the mine is again to be worked, and if this is a fact St. Lawrence will certainly derive great benefit.

The description of the St. Lawrence district would be incomplete if I did not mention that the coast range is known to contain various minerals, principally copper. Prospecting is constantly going on, so far without payable results, but with sufficiently encouraging indications to induce shareholders to go on testing the country.

There are at present 75,090 acres open for grazing selection in the district, and 6,882 acres 1 rood 3 perches for agricultural selection; 1,087½ square miles are held under occupation license, and 333½ square miles under grazing right.

RAINFALL.—The average rainfall for twenty-nine years in St. Lawrence was 45.40 inches on sixty-seven days, the minimum 12.41 inches in 1885, the maximum 77.26 inches in 1890.

#### BANANA DISTRICT.

The Banana district being rather remote from means of rapid communication is naturally only gradually being settled. The bulk of the district is only cattle country on account of the prevailing spear grass and the large proportion of brigalow scrub. There are, however, large areas of country suitable both for sheep and for agriculture. The latter industry can not naturally be expected to make much progress on account of the absence of markets within a reasonable distance. In so large a State as Queensland, one should not take into consideration the proportionate area of good country but the absolute extent of country fit for settlement, which is enormous in spite of the large proportion of inferior country. There is at present open in the Banana district an area of 257,842 acres for grazing selection, and 10,772 acres 2 roods 8 perches for agricultural selection. Besides this, 585½ square miles are held under occupation license, and 1,175½ square miles under grazing rights ready to be opened for selection when demand arises.

The recently discovered seams of coal along the Dawson River might in the near future give a new impetus to selection.

**RAINFALL.**—The average rainfall recorded at Banana for twenty-nine years was 29·21, distributed over sixty-three days. The minimum 15·58 inches in 1885, the maximum 43·18 inches in 1894. At Camboon the average for twenty-nine years was 30·23 inches in sixty-three days, the minimum 16·30 inches in 1883, the maximum 57·88 inches in 1893.

#### SPRINGSURE DISTRICT.

The Springsure district being farther inland and having on an average a higher elevation than the coast districts, shows certain climatic differences. The winters are colder and the rainfall is not as copious.

There are three fairly important centres of population in this district, namely, the townships of Springsure, Emerald, and Alpha.

Springsure is the oldest settlement, and has very few rivals in the colonies as regards picturesque surroundings. It is connected by rail with the main trunk line, the junction being close to Emerald. The surrounding country, although mountainous in places, has many fertile spots. Between the town and the main line are the open downs of Fernlees and Cullin-la-ringo, and to the east of the township the famous sheep runs of Arcturus, Orion, and Meteor Downs. It stands to reason that the best part of these open downs has already got into private hands, but there are yet many thousand acres in the hands of the Government and available for opening for selection.

The town of Emerald, on account of its favourable geographical position, has to a certain extent out-distanced the town of Springsure. For the convenience of intending selectors the Government has opened a second lands office at this place. About 12 miles to the south of Emerald and close to the Springsure Railway is the Government Experimental Farm of Gindie. Although to a certain extent hampered by the excessive drought of the last two years, this farm has already proved that agriculture, and notably the cultivation of wheat in this district, is possible as a paying and successful venture.

The land about Alpha is not quite as rich as the country farther to the east, but there is no lack of good grazing country for cattle, and fruitgrowing likewise seems to give good returns.

The best land for fruitgrowing appears to be about Bogantungan, a small township between Emerald and Alpha on the main trunk line and situated on the eastern slopes of the Drummond Range.

There are at present 689,848 acres open for grazing and 110,349 acres 2 roods 8 perches for agricultural selection. This statement will likely be a surprise to many intending selectors who are unable to find a piece of land to suit them; but they must not forget that as a rule they make all kinds of conditions which it is not easy to meet. The bulk of the grazing country is only cattle country, and choice areas of grazing country suitable for sheep are eagerly applied for, especially if there is natural surface water on them.

Country opened for agricultural settlement is not always the best agricultural land. Other considerations might make it desirable to open certain lands in small areas, as, for instance, vicinity to centres of population, to schools, &c.

Besides the abovementioned areas open for selection there are 3,155 $\frac{3}{4}$  square miles held under occupation license which could on application be opened for selection, as well as 2,215 $\frac{5}{8}$  square miles held under grazing rights in the Leichhardt pastoral district, and 624 $\frac{1}{2}$

square miles under the same tenure in the South Kennedy district. All these immense areas are at the disposal of the Government for opening for selection, and *bonâ fide* requests for such opening are invariably complied with.

**RAINFALL.**—The mean rainfall as recorded in Springsure for twenty-three years was 27·23 inches, which fell on sixty-three days. The minimum was reached in 1885 when 12·48 inches were recorded, the maximum in 1890 with a record of 42·52 inches.

The records for other stations in the district were as follow :—  
Emerald, mean for seventeen years, 26·39 inches on sixty-seven days; minimum, 10·68 inches in 1885; maximum, 48·12 inches in 1890.  
Alpha, mean for thirteen years, 23·86 inches on fifty-two days; minimum, 11·55 inches in 1892; maximum, 45·54 inches in 1890.  
Warrinilla, mean for twelve years, 30·53 inches on seventy-three days; minimum, 14·23 inches in 1888; maximum, 49·76 inches in 1890.  
Rolleston, mean for ten years, 28·83 inches on sixty-six days; minimum, 20·61 inches in 1897; maximum, 44·74 inches in 1894.

#### CLERMONT DISTRICT.

The Clermont district is a most important district, and its resources are capable of considerable development. The celebrated Peak Downs country occupies the centre of the district. Although the late drought has at present had a most disastrous effect upon the open downs country it is sure to recover as soon as better seasons set in. These we have a right to expect in accordance with the law of compensation. Clermont itself is an important town of some 4,000 inhabitants connected with the main trunk line at Emerald by a line of railway 62 miles in length. Capella, the headquarters of the Peak Downs Divisional Board, is the only other township of any importance. It is a purely rural settlement, and dependent upon the neighbouring stations and surrounding farms. Recently a butter factory has been erected, but, owing to the prevailing drought, work has not commenced. The principal value of the Peak Downs country consists in the fact that water may be obtained at reasonable depths all over the country, and the Fairbairn Company has shown a praiseworthy example in sinking wells, in numerous places. A large portion of the country along the railway line is suitable for agriculture, and is only awaiting the arrival of a proper farming population not afraid of work and endowed with brains.

There is now open for grazing selection at the Clermont Lands Office an area of 507,100 acres of land, and for agricultural selection 81,129 acres 3 roods 29 perches.

The area held under occupation license is  $3,391\frac{3}{4}$  square miles, under grazing rights ready to be opened for selection as soon as the demand warrants it,  $1,316\frac{1}{8}$  square miles in the Leichhardt district, and  $2,622\frac{3}{8}$  square miles in the South Kennedy district.

**RAINFALL.**—The average rainfall for twenty-nine years was 29·43 inches on fifty-three days, the minimum being 5·45 inches in 1885, the maximum 51·00 inches in 1882.

#### INGHAM, GERALDTON, CAIRNS, AND PORT DOUGLAS DISTRICTS.

[Contributed by W. T. WHITE, Land Commissioner.]

These districts, which lie between the 16th and 19th parallel of South Latitude on the north-east coast of Queensland, are within the "rainy belt," and contain the largest and richest area of agricultural

land in tropical Australia. A high mountain range, with numerous spurs, runs almost parallel with the coast line at a distance of 20 to 40 miles therefrom. The land between these ranges and the coast includes large alluvial flats capable of producing enough sugar to supply the whole of Australasia. The climate is generally warm and moist. The rainfall ranging from about 100 inches in the Ingham, Cairns, and Port Douglas neighbourhoods to 200 inches per annum about Geraldton, and under the high mountains to the north of the Daintree River. The soil about Ingham is an alluvial deposit from the granitic and volcanic ranges, drained by the Herbert River and its tributaries. In the Geraldton district it is chiefly of a slate and volcanic origin, nearly all covered with dense tropical scrub. In the Cairns and Port Douglas coast districts the formation is principally slate overlying granite, with evidence of volcanic action in places; there is a great deal of dense tropical scrub or jungle in these districts, also. The low delta land produces excellent crops of sugar-cane, bananas, rice, and other tropical products, besides maize, sweet potatoes, and endless varieties of tropical and semi-tropical fruit.

Heavy crops of coffee are grown on the higher lands in the neighbourhood of Cairns, and in some parts of the Port Douglas district.

Most of the land available for selection in these coastal districts has been alienated. The good land, now remaining in possession of the Crown, is considered too remote from settlement or water carriage.

Where the rainfall is so heavy the roads are naturally bad, and settlement has only been profitable to the agriculturist in those places which are opened up by tramways, or where water carriage is available.

The Hinterland, or country to the west of the coast ranges, is a tableland varying from 1,500 to 3,000 feet above sea-level, and, except in the immediate neighbourhood of the ranges, there is very little land suitable for agriculture. Most of the country beyond the mining districts is held under pastoral lease, and used for breeding cattle and horses, for which it is fairly good. It is generally well watered, but the rainfall is far less than on the coast, seldom exceeding 40 inches per annum, and getting less as you proceed westward.

The climate is rather dry and hot in the summer; cold and frosty for a month or two; but generally good and healthy.

To the east and south-east of Herberton there is a large area of very rich volcanic land about 3,000 feet above sea-level. It is chiefly dense scrub, containing large quantities of valuable timber. Most of this land is available for settlement, and when opened up by a railway it will support a very large population, after making ample provision for timber reserves.

Proceeding west from the ranges the country is suitable only for grazing cattle and horses.

It consists of ridges of granite, basalt, &c., with occasional tracts of very sandy soil, all covered with forests of ironbark, box, bloodwood, and cypress pine, the timber becoming more stunted and pipey away from the ranges. Large areas of limestone and ironstone, with rich deposits of tin and copper, occur in the mountains to the south-west of Ingham. The country is somewhat similar to the famous Chillagoe districts west of Cairns.

So far there has been very little demand for grazing farms on this tableland, but with the development of the mines there is always a demand for land for selection, and, if required, one-fourth of several of the pastoral holdings may be resumed and opened for selection within the next twelve months.

#### INGLEWOOD, GOONDIWINDI, AND ST. GEORGE LAND AGENTS' DISTRICTS.

[Contributed by F. W. BARLOW, Land Commissioner.]

##### INGLEWOOD DISTRICT.

The Inglewood Land Agent's district is situated nearly at the eastern end of the unsettled district of Darling Downs. It is bounded on the north and north-east by the Toowoomba and Warwick Land Agents' districts; on the east by the Stanthorpe Land Agent's district; on the south by the Severn River, forming the boundary between Queensland and New South Wales; and on the west by the Goondiwindi Land Agent's district.

Its extreme length from north to south is about seventy-eight miles, and from east to west about fifty-six miles.

It comprises the runs known as Stonehenge, Canning Creek, Bodumba, Glenelg, Terrica, Warroo, Coolmunda, Brush Creek, Texas, Gunyan (with Bonshaw), part of Whetstone, a small part of Bengalla, Beebo, and Wyemo.

**SOIL AND NATURAL FEATURES.**—The quality of the soil varies very considerably. The alluvial flats along the main watercourses, varying in width, are rich loamy soil, very suitable for cultivation when cleared of the timber, and good crops are obtained.

The principal crops grown are wheat, tobacco, corn (maize), lucerne, barley and oats (for fodder only), and pumpkins. The soil of the district seems particularly adapted for wheat, good crops being obtained both in quantity and quality.

In the Texas division the tobacco-growing industry is the most important and successful.

Fruits such as grapes, peaches, apricots, figs, oranges, and melons, grow well with very little attention, but no attempt has as yet been made to grow fruit on a commercial scale.

Some of the scrub land in the district contains very rich black and brown soil, capable of growing excellent crops, but the expense of clearing the belah and brigalow scrub is somewhat heavier than on the forest lands.

There is a very large area of flat and in some places slightly ridgy country, with a poorer soil, which at present is only used for grazing. Much of this is sandy; in places there is a stiff greyish clay of poor quality, but patches of good brown soil are found amongst it. The north-eastern, eastern, and extreme southern and south-eastern parts of the district are more or less ridgy and stony; in some parts mountainous; while the western half of the district is almost uniformly flat or very slightly rising, with a few low ridges in places.

The whole district is suitable for grazing, but is more adapted for cattle and horses than sheep.

The grazing capability of the land, more especially on the ridges and mountains, has been much improved by ringbarking the forest; and the killing of the timber in the higher ridges has increased the water supply from the small springs at the heads of the creeks.

**WATER.**—The district is well watered. The Severn River along the southern boundary is a permanent stream, with many fine reaches of deep water. Oakey Creek and Brush Creek flow into this from the north, the latter carrying the better water supply of the two.

The McIntyre Brook, which heads on the north-east boundary of the district and flows south-westerly through the centre of it, is a good permanent stream for three-fourths of its course. It has only stopped running in exceptionally dry seasons, and even then contains good deep waterholes. The creeks running into it are the Chain of Ponds from north, and Canning (or Mosquito) Creek, a large creek flowing from the extreme north of the district, receiving the waters of Bodumba, Mingimarny, and Bringabilly Creeks, and joining the McIntyre Brook at the town of Inglewood. The McIntyre Brook joins the Severn River about the south-west corner of the district.

**TIMBER.**—The whole district is timbered more or less heavily throughout. Thick and heavy forests predominate. There is also a large area of scrub in various places, and a fairly large area of open forest, principally along the watercourses.

There is, of course, a large amount of useless timber; but, there is also a very good supply of good serviceable timber, including one patch of very fine spotted gum on Glenelg Run, and a large amount of good iron-bark timber throughout the district. Cypress pine is also abundant—more in scattered conditions through the district than in any very thick area. Large timber reserves have been proclaimed for the protection of the best of the timber.

There is abundant fencing and rough building material to be found throughout the district.

**MINERALS.**—Gold has been found in small quantities in the vicinity of Glenelg and Texas, but no payable field has been discovered as yet.

Silver and copper exist near Gunyan and Bonshaw. The "Silver Spur" mine on Gunyan Run, 6 miles from Texas, has been in existence for some years, and still employs from 40 to 100 men.

Several copper lodes have been worked and others are known to exist.

Coal has been found near the head of Bringabilly Creek, but has not been tested or worked—the distance from railway being too great at present.

**CLIMATE.**—The climate of the district is good and healthy. It is hot in the summer, but not excessively so. Frosts are common in winter, especially in the eastern part of the district. This portion being much higher than the western half (Glenelg station is about 2,000 feet above sea-level) experiences a rather better climate in summer.

**RAINFALL.**—The rainfall is good, but somewhat irregular. The mean annual rainfall at the town of Inglewood for seventeen years is 28·90 inches. The minimum rainfall recorded was 16·54 inches in 1898, and the maximum was 44·55 inches in 1886. The average of 28·90 inches may be taken as a fair average for the whole district, except the south-western quarter where it is about 27 inches.

**TOWNS.**—There are two small towns, Inglewood in the centre of the district, and Texas on the southern border. There is telegraphic communication with each of these, and mail coaches run twice a week

from Warwick to Inglewood, and once a week from Stanthorpe to Inglewood, Pittsworth to Inglewood, and Stanthorpe to Texas.

RAILWAY COMMUNICATION.—There is no railway in the district, but the nearest railway stations are: Warwick, distant 80 miles from Inglewood, and Stanthorpe, distant 70 miles from Inglewood and 75 miles from Texas.

#### GOONDIWINDI DISTRICT.

The Land Agent's district of Goondiwindi occupies the south-western portion of the unsettled district of the Darling Downs. The extreme length across the northern end from east to west is about 108 miles, and across the southern end about 90 miles. The average width is about 80 miles from north to south.

SOIL AND SUITABILITY FOR CULTIVATION.—Agriculture, so far, has been confined to small areas in the vicinity of the town of Goondiwindi, and eastward along the McIntyre and Severn Rivers and a few scattered areas along the Weir River some twenty miles west of Goondiwindi.

There is a large area of soil in the district suitable for cultivation, more especially in the south-eastern portion, and along the Weir River, west of Goondiwindi; but the rainfall is rather irregular and unreliable, which fact, coupled with the long distance from railway, has hitherto prevented settlers from going in for agriculture as extensively as the quality of the soil warrants. Wheat grows well, even in fairly dry seasons, but is only grown for hay, it being found more profitable to sell the crop as chaff or hay than to reap the grain and carry it the long distance to market. Maize has been grown to some extent, and in good seasons with success, but the heat of summer and the uncertainty of the rainfall render it a rather risky crop. Lucerne has scarcely been tried at all, but there is no reason why it should not be grown successfully on the deep soil flats along the main rivers. Fruits, such as grapes, oranges, peaches, apricots, and melons, grow well.

The district generally is more adapted for grazing than for agriculture, not from any inferiority of soil, but solely on account of rainfall and climate.

There is great variety of soil, from the heavy black soil of the richer grazing lands along the Barwon River to the rich but more easily worked and better drained brown soil of the forest country; the black and brown scrub soils; the lighter red and loamy brown soils—very suitable for wheat-growing—of some of the forest country north and west of the Weir River, and the poorer sand ridges which intersect the country in places. There are also one or two low watersheds—locally known as ranges—which are in places very stony.

CLIMATE.—The climate is good and healthy—the winter months rather cold from the middle of May to the end of July or middle of August, light frosts being common, but there is no severe cold. In summer the climate is hot and dry—temperatures of 110 and 112 in the shade (maximum) being reached occasionally in November, December, and January. The months of March, April, May, August, September, and part of October are as a rule very pleasant. The mean annual rainfalls recorded are for the last twenty years—Goondiwindi, 26·53 inches; Welltown (40 miles west of Goondiwindi), 22·08

inches. Maximum rainfalls: Goondiwindi, 40·70, in 1879; Welltown, 37·53, in 1890. Minimum: Goondiwindi, 12·98, in 1888; Welltown 10·28, in 1888. East and north of Goondiwindi the average rainfall is better, increasing as the distance north and east is increased. Westward of Goondiwindi it lessens rapidly; the average at the western boundary of the district probably not exceeding 23 inches per annum.

Thunderstorms are likely to occur at any time during the months from October to March, and as a rule a regular rainfall from the direction of the tropic is looked for in January, February, and March, but this has sometimes failed, and little rain is generally experienced in May and June, but it is unreliable.

**NATURAL FEATURES.**—The district is practically flat or very slightly falling from north-east to south and south-west, with the exception of low watersheds running generally parallel with the main rivers in a westerly or south-westerly direction. In the north-western part of the district these ridges attain a fair height in places, perhaps 150 to 250 feet above the surrounding country; and the Moonie Range, north-west of Goondiwindi, between the Weir and Moonie Rivers, runs to about 100 to 150 feet above the surrounding country in places, but the ascent is very gradual as a rule.

The whole district is covered with timber, varying from open forests—generally along rivers and creeks—to thick and heavy forest further back from the watercourses, with dense heavy scrubs of brigalow, belah, and wilga, generally along the main watersheds, and with large tongues and patches intruding into the forest country, sometimes right down to the watercourses. Gaps occur in these scrubs in places also, and the scrub is replaced by forests.

The district is much more a grazing than an agricultural district, and is suitable both for sheep and cattle. The eastern and north-eastern portion is more adapted for cattle and horses than for sheep, while the south-western portion and parts of the central and north-western portions will carry all kinds of stock. The south-western part is exceptionally good sheep country, the weight of clip and quality of wool from sheep in this part being almost invariably good.

**TIMBERS.**—Serviceable timbers for fencing and rough building purposes are fairly plentiful, except on the flooded country between the Barwon and Weir Rivers, and even there some small supply is found.

Cypress pine is plentiful, not in any large areas, but scattered throughout the district. It is the principal saw-mill timber, and is also largely used for fencing and rough buildings.

Bloodwood and carbeen (or Moreton Bay ash) are found in patches on sandy country, but are not too plentiful. Ironbark is fairly abundant in the east and north-east of the district, but is not so large or of such good quality as in Inglewood district.

**RIVERS AND WATER SUPPLY.**—The district as a whole is fairly well watered. The Severn and McIntyre (or Barwon) Rivers form the southern boundary and contain a large supply of permanent water. The Weir and Moonie Rivers also intersect the district, running in a general south-westerly direction from the north-east boundary. They receive large creeks as tributaries, besides many smaller ones. The principal creeks are:—The Callandoon branch—an anabranch of the Barwon, running out of it a little below the town of Goondiwindi, and

into it again about 50 miles west of that town; Commoron and Yarrill (with Wyaga) Creeks, Booroondoo, and Western Creeks—with smaller branches, all of which run into the river on the left bank—Parrie-Moolan, Wongle-Wongle, Kinkabilla, and Farewell Creeks running into the Moonie River on the right bank. There are also several good lagoons in the southern portion of the district.

**ARTESIAN WATER.**—The Artesian formation exists under almost three-fourths of the district, but no bores have yet been put down, and it is not known what depth the Artesian supply would be found.

**TOWNS.**—There is only one town—Goondiwindi—situated on the McIntyre River, sixty miles south-west of Inglewood. This is an important border station and main crossing-place for stock between Queensland and New South Wales. It has telegraphic communication with Brisbane *via* Inglewood and Warwick, and with Moree (New South Wales). Coaches run twice a week to Warwick (Queensland) and Moree (New South Wales), and once a week to Mungindi, a border station 110 miles to the south-west, on the Barwon River. There is also a horse mail once a week to Mungindi. A telephone line exists to Tallwood, 57 miles west of Goondiwindi. A town has been surveyed at Southwood, on the Moonie River, but there is only a police station there at present. Horse mails run from Goondiwindi to Southwood, Dalby, and other places, once a week.

**RAILWAY.**—There is no railway within the district. Goondiwindi is distant 143 miles from Warwick Railway Station, Queensland, and 15 miles from Moree (New South Wales). Pittsworth Railway Station, about 140 miles from Goondiwindi, is the nearest to the north-eastern portion of the district.

#### ST. GEORGE DISTRICT.

The St. George Land Agent's district occupies the south-eastern portion of the Maranoa district. It is bounded on the east by the Goondiwindi Land Agent's district; on the north and north-east by the Surat and part of the Roma Land Agent's districts and part of the Charleville district; on the west by part of the Charleville and the Cunnamulla Land Agents' districts; on the south by the 29th parallel of latitude, forming the southern boundary of Queensland; and on the south-east by the Barwon River—also a boundary of the State.

**NATURAL FEATURES.**—The district is almost uniformly flat, or slightly undulating, with low, gradually-rising watersheds, running parallel with the main rivers, in places. What few ridges there are, are low and stony, except, of course, the low sand ridges, which frequently occur, but are of comparatively small extent.

The greater part of the district is timbered more or less thickly, but there are large patches of rather low and open forest—interspersed with small open plains—especially in the south and south-western parts.

The district is watered by the following rivers:—On the south-eastern border the Barwon River, a permanent stream, with many deep holes. Nearly parallel with this for about 30 miles and only from 4 to 7 miles distant, is the Weir River, discharging into the Barwon about 14 miles above the town of Mungindi. The Moonie River, entering the district about midway on the eastern boundary, runs about west-south-west for 30 miles, then generally south and south-south-west to the southern boundary of the State, running then into New South Wales.

The Balonne River—by far the finest and best water supply in south-western Queensland—runs from the northern boundary of the district in a general southerly direction, trending slightly westwards, to a point 35 miles below the town of St. George, where it branches into two streams, the more westerly—known as the Culgoa—running south-west, and the more easterly—known still as the Balonne—running a little west of south, and branching again into the Narran, Bokhara, and Ballandool—all of which continue a course southerly and south-westerly, and, like the Culgoa and Moonie, finally run into New South Wales.

Twenty miles above St. George the Balonne is joined by the Maranoa, a large river with wide sandy bed, but rather poor water supply, flowing from the north-west. West of the Balonne the Wallam, Mungallala, and Nebine Creeks, with small branches, run from north to south, parallel with each other, and run out into low flooded flats, near the south boundary of the district.

**ARTESIAN WATER.**—The Artesian formation underlies the whole district, and west of the Balonne there are many large bores, yielding an abundant supply of water. East of the Balonne only two bores have been put down, but the results have been very successful.

**GRAZING CAPABILITY.**—The district, as a rule, is fairly—in many places, very well-grassed. There is a great variety of grasses, saltbush, herbage, and edible trees and scrubs.

It is pre-eminently a grazing district, and is found suitable for all kinds of stock. It is one of the best sheep districts in the State, both for quantity and quality of wool, and for breeding and fattening sheep. There is also good fattening country as well as good breeding country for cattle.

**CLIMATE.**—The climate is hot in summer, and rather cold—but not severely so—for two or three months in winter. Frosts are not uncommon in May, June, and July.

It is a healthy climate, and very like that of the Goondiwindi district.

**RAINFALL.**—The rainfall is similar to that of Goondiwindi, averaging slightly less, and rather uncertain as to periods and distribution.

The following are the records of various places in the district:—

Place.	No. of Years.	Average Annual Rainfall.	Maximum.	Minimum.
		Inches.	Inches.	Inches.
St. George ... ..	19	22·27	39·52 (1886)	10·33 (1885)
Dirranbandi ... ..	9	23·93	35·72 (1890)	15·62 (1899)
Bollon ... ..	15	20·21	34·64 (1890)	8·83 (1897)
Fernlee ... ..	15	18·81	34·51 (1890)	7·89 (1888)

**SOIL AND SUITABILITY FOR AGRICULTURE.**—The soil varies very much. There are large areas of heavy black soil, with more or less open coolibah forest and some small plains, mostly in the vicinity of the rivers and south of St. George. West of the Balonne River there are also patches of this sort of country, but a much larger area of red soil with sandy patches and sand ridges. Most of this red country is thickly timbered with box, sandalwood, mulga, gidya, and patches of belah, brigalow, and cypress pine. There are also in many parts of the

district large belts of *belah* and *brigalow* scrub, pine and *wattle* scrub, *box*, *ironbark*, *mulga*, *bendee*, and *forest-oak* forest, with soils varying from black (in the *belah* scrubs) to red and light sandy loam. Some of the watersheds are hard and stony, with rock very near the surface, and covered with dense *bendee* scrub—a variety of *mulga*.

A large area, especially of the red and brown soils, is capable of cultivation, more particularly for wheat, if the climate and rainfall were sufficiently regular and reliable.

Wheat and maize have both been grown successfully in good seasons on red, brown, and sandy soils near the town of St. George. The black soil is too tough and heavy for agriculture, though it is the best grazing land.

Excellent fruit has been grown about St. George and at stations in the district. Grapes, figs, peaches, apricots, pears, oranges, and melons, do well, especially under irrigation.

**IRRIGATION.**—A definite attempt to irrigate has been made of late years by raising water from the *Balonne* River. The results have been fairly successful, but although five or six small irrigation plants are working, their operations are, so far, on a very small scale.

All kinds of vegetables grow well in fair seasons.

**TIMBER.**—There is abundance of good *cypress* pine for sawmill purposes and for fencing. *Bloodwood*, *carbeen*, and *river-gum*, are fairly plentiful in places, not generally throughout the district.

For fencing purposes *mulga*, *gidya*, *box*, and sometimes *coolibah*, are used as well as *cypress* pine and *ironbark* where it exists.

**TOWNS.**—The principal town is St. George, situated a little to the east of the centre of the district, on the left bank of the *Balonne* River.

*Mungindi*, a smaller town on the *Barwon* River, 90 miles south-east of St. George, is an important border station and crossing-place for stock between New South Wales and Queensland.

*Bollon*, another small town, is situated on the *Wallam* Creek, 80 miles west of St. George, on the main road to *Cunnamulla*. Towns have also been surveyed at *Dirranbandi* and *Hebel*, 55 miles and 100 miles respectively south-west of St. George.

There is a telegraph line from *Brisbane*, *viâ* *Surat*, to St. George, and on to *Mungindi*, with branch lines to *Dirranbandi* and *Bollon*.

Mail coaches run twice a week from St. George to *Surat* and *Yeulbah*, St. George to *Mungindi*, and St. George to *Bollon*, and once a week to *Dalby*, *Mitchell*, and *Dirranbandi*.

**TELEPHONES.**—There are private telephone lines from St. George to *Cashmere* Station, 20 miles; and from *Dirranbandi* to *Noondoo* Station, 15 miles.

#### ROMA LAND AGENT'S DISTRICT.

[Contributed by L. JACKSON, Land Commissioner.]

The soil overlying this district is of great variety and richness—viz., black chocolate, red and sandy loam, &c., varying in depth from a few inches to several feet. For agricultural purposes the loam is most suitable, as it retains the moisture for a longer period.

The black and chocolate soils, when favoured by sufficient rain, are very productive. The loamy soil is found in considerable areas about *Mitchell*, *Roma*, *Blythdale*, *Wallumbilla*, and *Yeulbah*, all of

which adjoin the railway line, and extending on either side for many miles, over which areas extensive agricultural settlement has taken place, the farms varying in size from 40 to 1,280 acres. The grape vine flourishes in the loamy soil, and there are numerous vineyards, the largest about 70 acres. The Roma grapes have a great and deserved reputation, and are forwarded, packed in cases, all over the State. The wine industry is an established fact, and the vigneron find a ready and remunerative market for it.

**CEREALS**—Wheat does best, and is comparatively free from rust; the field, however, varies considerably, owing to the uncertainty of the rainfall at the proper time; notwithstanding the farmers are persevering, and are extending the area each year, having full confidence in soil and climate being suitable. Many of the farmers chaff the hay and sell it at satisfactory prices. There are two flour mills in Roma close to railway station.

**FRUIT**.—Oranges grow well here, as also many other fruits.

**CLIMATE**.—The climate is particularly dry and healthy, and becoming a great resort for people suffering from chest diseases.

**GRAZING FARMS**.—A large proportion of the land is held under this tenure in extent from 1,000 to 20,000 acres each; used some for sheep, and some for cattle, according to the character of the country and grasses. Some few farmers, including agricultural farmholders, combine pastoral with agricultural, together with dairying.

The rents for land at this distance from Brisbane are much lower than those obtaining on the seaboard: agricultural lands, 3d. to 6d. per acre; but generally the former. Grazing farms from  $\frac{1}{2}$ d. to  $1\frac{1}{2}$ d. per acre; also, the maximum area that one man may select is greater, thereby giving a margin of advantage to those who select in the western district.

At the present time there is a very large area of land open for agricultural and grazing farm selection within convenient distance of the railway line, and numerous pastoral holdings and resumptions will from time to time be made available for selection when demand arises. The natural feature of the country is undulating, and is intersected by numerous watercourses. There is a plentiful supply of timber for fencing and building purposes, and quite a number of sawmills throughout the district.

The railway traverses the district from east to west, affording facility to the settlers for market purposes and otherwise.

The average rainfall is over 22 inches per annum.

The staple products are wheat, wine, wool, and cattle.

#### HUGHENDEN AND BURKE LAND AGENTS' DISTRICTS.

[Contributed by W. P. BOND, Land Commissioner.]

The Burke district is situated in the north-west quarter of the State. In area it is about 67,000,000 acres, and it includes within its boundaries the whole of the country drained by the Flinders, Saxby, Cloncurry, Gregory, Leichhardt, and other smaller rivers.

The country may be divided into three classes:—First, sheep country; 2nd, cattle country; 3rd, broken ranges, mineral lands, &c. Of the three classes the most desirable, from a pastoralist's or selector's standpoint, is the first-mentioned; it includes all the country east of and including Beaudesert, Fort Constantine, and Clonagh pastoral

holdings, to the range dividing the Mitchell and Burke districts, or practically all the country drained by the Flinders River east of Cloncurry, an area of about 18,000,000 acres, and is the northern extremity of the celebrated rolling downs overlaying the chief Artesian beds of Western Queensland. The soil is all good and of a reddish-brown, brown, or black colour, and for a distance of fully 200 miles is of fairly even quality, the whole being rolling downs of deep rich soil, grassed with Mitchell, Flinders, and other grasses. The Mitchell grass is a drought-resisting perennial grass, sought with avidity by sheep even after it has been apparently dead for months, and very fattening. Flinders is also a splendid grass; it is an annual, and as hay is preferred by stock to any other, cultivated or not. Sheep will eat it with relish even after it has been stacked for ten years. I cannot speak too highly of these grasses. Draught stock, including teams on the roads, are fed on nothing else and are always in the pink of condition.

Timber is very scarce on most of the country, but there are large areas nicely timbered and affording good shade for stock. Some of this is park-like in appearance; other parts have small patches of gidya scrub, containing edible bushes, but most of the country is, in the summer months, simply a sea of grass, in winter flowering herbage in profuse variety.

There are over a hundred Artesian bores spread over this country from one end to the other, placing the fact of the presence of Artesian water at any place divined beyond a doubt. These bores are owned by the pastoral lessees, whose leases are regularly falling in, and are then available for selection, or by selectors of country already resumed, from the pastoral lessees. These bores throw a volume of water through 6-inch casing of from half-a-million to five-million gallons per day. They are usually put down on the highest part of the area intended to be watered, and then reticulated over the area by means of cut drains about 3 feet wide and 1 foot to 18 inches deep; then, by taking proper levels, an inexhaustible supply of running water can be provided to any number of paddocks into which the selection may be subdivided. The cost of putting down a bore complete is about 17s. 6d. per foot. Of this sheep country 2,650,000 acres is held as grazing farms at an average rental of 2d. an acre; the balance, over 15,000,000 acres, being still held under pastoral lease, but subject to periodical resumptions, allowing for a regular transfer of about 1,000,000 acres a year from the pastoral tenant to the grazing farmer. At the present time upwards of 1,000,000 acres are being taken over by the Department, and surveyors are at work cutting it up into blocks of about 20,000 acres for selection by grazing farmers. The following table shows the official record of rainfalls for several years at the different stations throughout the district:—

Name of Station.	No. of Years Recorded.	Maximum.	Minimum.	Mean.
		Inches.	Inches.	Inches.
Hughenden... ..	13	42·71	7·00	21·97
Richmond Downs... ..	8	45·68	8·38	20·47
Conobie ... ..	10	43·47	14·91	27·46
Cambridge Downs ... ..	8	38·69	12·31	23·21
Cloncurry ... ..	14	41·23	10·50	20·72
Mackinlay ... ..	11	49·72	7·76	20·79

The first cost of acquiring a grazing farm of 20,000 acres from the Crown would be (at 2d. an acre rent) £166 13s. 4d. first rent, and £60 survey fee; the latter being payable in five equal annual instalments. The cost of necessary improvements to put the farm in working order would be about £2,000, made up as follows:—

	£	s.	d.
First year's rent, £166 13s. 4d., $\frac{1}{5}$ survey £12 ...	178	13	4
Fencing, 23 miles less 7 miles contributed by adjoining selectors = 16 miles at £30 ...	480	0	0
Hut and sheep yard £75: woolshed, 5 shearers, £70 ... ..	145	0	0
Woolpress, £30; dray, £15; horses, £30 ... ..	75	0	0
Harness, tools, and sundries ... ..	40	0	0
One man's wages and rations ... ..	100	0	0
	<hr/>		
	1,018	13	4
Artesian bore—the cost of this item of course largely depends on the locality in which it is to be put down, the average depth in the country under consideration is about 1,050 feet, 17s. 6d. per foot complete is the ruling price; 1,050 feet at 17s. 6d. ... ..	918	15	0
But if the selection is convenient to a bore on an adjoining property, arrangements can be made for watering at so much per annum, the usual charge being £50 a year			
Sundry ... ..	62	11	8
	<hr/>		
	£2,000	0	0

With these improvements the farm could work 6,000 sheep safely; this number with ordinary management should return £600 a year net after paying all expenses, and the carrying capacity of the country may be considerably increased by subdividing even to the extent of 1,000 extra sheep for each subdivision up to a certain limit; that is to say, if the farm is divided into two paddocks it will carry 7,000, if into three paddocks 8,000, if four 9,000 sheep, and every 1,000 sheep will produce £100 a year profit. There are well-divided selections in this district that have carried 13,000 sheep all the year round for years.

Cultivation, except in vegetable and fruit gardens, has not been entered on, but the vegetables and fruit grown in these gardens are of excellent quality. Any English vegetable grows to perfection. The chief fruit grown is the orange and grape, of which the crops are heavy and very good indeed.

The cattle country of the Burke district comprises an area of approximately 40,000,000 acres, and is held as pastoral leases by cattlemen, and it is probable that for many years it will be confined to the depasturing of cattle, as owing to the existence of grass-seed over very large areas it is of no value as sheep country. A very large portion of it consists of sandy open forest country generally, level but ridgy in parts, with areas of plain country of considerable size. A very large extent of country is subject to floods, the rivers overflowing their banks and spreading out on both sides for many miles. Large areas of first-class country are known to exist throughout this vast area, but it will be many years before it will be required for selection, because of the abundance of first-class country nearer railway communication and the

eastern markets, with roads of access unaffected by the grass-seed, &c. The broken ranges and mineral country are not of direct interest to the selector until they are more developed, but to the geologist and prospector they are full of promise. With Croydon, the coming goldfield of the State in the north, and Cloncurry with its immense wealth of copper in the south, and the known presence of gold for hundreds of miles along the Gregory ranges south of Croydon, the future prospects of the district as a mineral-producing one alone are exceptionally bright.

#### WARREGO AND GREGORY SOUTH PASTORAL DISTRICTS.

[Contributed by J. B. O. EVANS, Land Commissioner.]

##### WARREGO DISTRICT.

The Warrego district is an irregular-shaped tract of country distant from the sea-coast at its nearest point about 250 miles, and at its furthest point about 700 miles.

This large tract of country is watered by two main watercourses, namely, the Warrego and Bulloo Rivers, which flow through the district in a south-south-westerly direction at a distance from each other of about 120 miles, and thence into New South Wales, which forms the southern boundary of the district. Besides the two rivers abovementioned and their tributaries, there is another river named the Paroo which also flows in a south-south-westerly direction, and which is between the Warrego and the Bulloo Rivers. The townships of Wooroorooka, Hungerford, and Wompah are situated on the southern boundary of the district where the Warrego, Paroo, and Bulloo Rivers respectively enter New South Wales.

The climate varies considerably, the northern part of the district being in latitude 25 south, while the southern part is in latitude 29 south; but the northern part, although nearer to the equator, is far cooler than the southern part of the district on account of its altitude above sea-level.

The country in the neighbourhood of the heads of the Warrego River is from 1,600 to 1,800 feet above sea-level, gradually decreasing further down the river towards New South Wales; thus Augathella is about 1,200 feet, Charleville 979 feet, Cunnamulla 620 feet, and Wooroorooka about 420 feet, above sea-level.

In a similar degree the country in the neighbourhood of the heads of the Bulloo River is from 1,400 to 1,600 feet above sea-level, gradually decreasing further down the river towards New South Wales: thus Adavale is 760 feet above sea-level, while Thargomindah is 425 feet, and Wompah only about 300 feet above sea-level. The range from which the Warrego River takes its source is part of the Main Dividing Range, the same peculiarity being noticeable as in other parts of the same range throughout Queensland, namely, that the side of the range towards the Pacific Ocean is precipitous, while the side towards the interior of the continent slopes away gradually.

**CHARACTER OF COUNTRY.**—The natural features and character of the soil vary considerably in different parts of the district. The country drained by the upper part of the Warrego River is principally of a sandy nature, and the main tributaries are the Hoganthulla Creek from the ranges on the east and the Nive River, which takes its rise from the Main Dividing Range and junctions with the Warrego River

below Augathella. Numerous small creeks intersect this part of the district, with high, rocky, scrubby ridges on the watersheds between the creeks, and apple-tree flats along the watercourses.

The Ward and Langlo Rivers, which unite and junction from the west with the Warrego River, below Charleville, head from the southern watershed of the Barcoo River, called by courtesy a range, but which in reality consists of high rolling downs of first-class quality, extending to the Nive River. The rolling downs to the east of the Warrego River, near Augathella, are limited in extent, but of similar quality, and appear at intervals on branches of the Angellala Creek, which junctions with the Warrego River below Charleville.

The soil of these downs is a rich alluvial loam capable of growing crops of any description if other conditions were suitable. The country on the Warrego River, below Charleville to the New South Wales border, is fairly level, no ridges of any height being met with, and in times of continuous heavy rains the flood waters of the Warrego River extend for many miles and unite with the flood waters of the Paroo River.

The soil on the flooded country varies from a yellowish sandy loam to black alluvial, and is formed by the deposit left by the muddy flood waters through successive ages. The flooded country is principally without timber, and there are extensive plains of alluvial chocolate soil, which are not now flooded.

With a suitable rainfall heavy crops of wheat or maize could be grown on this land with profit. The country not flooded consists principally of dense mulga forest, with light sandy loam.

The country drained by the Paroo River consists principally of mulga ridges and flats; and as the Paroo River is only about half the length of the Warrego, with but few tributaries, and the country through which it flows is undulating, the flooded country along its banks is more limited. A great many clay-pans and cane-grass swamps occur in places, and, except in isolated patches, the general character of the soil on the Paroo River and within its watershed would be unsuitable for cultivation, even if the rainfall were favourable.

The country drained by the upper part of the Bulloo River varies considerably, that on the Bulloo being principally mulga ridges; while the country on Blackwater Creek, which junctions from the east with the Bulloo River below Adavale, is somewhat similar to the downs country on the Langlo and Ward Rivers. There are no important tributaries to the Bulloo River from the west, as the Grey Range, which is the western boundary of the district, is only distant from 20 to 40 miles from the river for the greater part of its course through Queensland. The country about Toompine, and thence to the New South Wales border, consists of alluvial plains and stony, mulga ridges, and there is a good deal of flooded land along the river, especially on the Lower Bulloo where the flood waters extend for miles. A large portion of the flooded country on the Lower Bulloo consists of clay-pans and cane-grass swamps interspersed with sand ridges; and, while affording excellent pasturage after floods, would be quite unsuitable for cultivation, even with a favourable rainfall; but on some of the alluvial plains, about Toompine and between Toompine and Adavale, where the soil is a chocolate alluvial, any description of crops could be grown if the rainfall was suitable, and there was a market for produce grown.

**TIMBER.**—There is not a large quantity of timber of commercial value in the district, and it is confined principally to the north-eastern part. The cypress-pine forests on the Angellala Creek, being near to the railway, have been drawn upon almost exclusively for building purposes, and the timber, after being sawn, is taken by rail from there to other parts of the district and then to the Bulloo River by bullock team. Hardwood of several descriptions are to be found on the waters of the Upper Warrego, but on account of the distance from the railway they are only used for local purposes. For fencing purposes, gidya, mulga, and yapunya are used, and in the eastern part of the district, cypress pine. For building purposes in the western parts of the district, galvanised iron is largely used, being cheaper than sawn timber; and houses and huts are frequently built of adobe or pisé and also of stone, plastered with clay.

**RAINFALL.**—The rainfall in the district varies considerably even in times of drought, as in the heavily timbered, elevated country near the range at the head of the Warrego fair seasons predominated, while in the southern and in the western parts of the district, where there are no hills of any magnitude, and where timber is scarce and stunted, dry seasons are the general rule. The maximum shade temperature in summer is 116 degrees, though, occasionally, the thermometer rises higher, and in winter the thermometer frequently falls at night to 25 degrees, or 7 degrees below freezing point, but the days are generally warm. No records are available of the average annual rainfall of the more elevated country in the northern and north-eastern parts of the district, but it may be taken for granted that the rainfall near the ranges is heavier than on the lower and more level parts of the district. The difference in the average annual rainfall can be easily seen by reference to the following table :—

Name of River.	Locality.	Average Annual Rainfall.	Number of Years for Average.
On Warrego River and Tributaries	Augathella ...	24·91	10
	Morven ...	23·87	13
	Charleville ...	20·48	27
	Cunnamulla ...	16·39	21
	Wooroorooka ...	No records	
On Paroo River ...	Eulo ...	14·52	14
	Hungerford ...	13·60	10
On Bulloo River and Tributaries	Adavale ...	18·25	10
	Thargomindah ...	13·54	18
	Wompah ...	No records	

**PASTURAGE.**—The whole of the Warrego district is used for sheep and cattle grazing, the former largely predominating. The country on the Upper Warrego and Nive Rivers, and Angellala Creek, is mainly devoted to cattle on account of its rough nature, coarse grass, and on account of the difficulty in keeping sheep, through the depredations of wild dogs. The lower part of the Bulloo River is also used for cattle breeding and fattening, partly on account of the flooded nature of the country where the cattle in wet seasons are, in places, frequently feeding in two or three feet of water, retiring at night to the sand

ridges, and also because Broken Hill and Wilcannia afford a good market for fat stock. With these exceptions, and also a few cattle stations in the neighbourhood of Charleville, the remainder of the district is used for sheep farming. The pasturage over the greater part of the district is very fattening, comprising Mitchell, blue, and barley grasses on the downs and plains, with bluebush, varieties of saltbush, cottonbush, wild carrots, crow'sfoot, &c.; mulga grass in the mulga country, and kangaroo, wild oats, and other grasses towards the range. The recuperative powers of the district after a drought are very great, and in fair seasons a frequent cause for complaint is that the meat is too fat. The salty nature of the pasturage and the moderate rainfall combine to make the district exceptionally healthy for stock, and diseases are practically unknown.

**ARTESIAN WATER.**—Besides the three main water arteries of the district—namely the Warrego, Paroo, and Bulloo Rivers, with their tributaries—Artesian water has been obtained in numerous wells, principally south of Charleville, within 50 or 60 miles of each side of the Warrego River, and within about the same distance of the railway line from Charleville to Cunnamulla, and also south of the latter town. Although the greater number of the Artesian wells sunk in the district are in the locality above described, Artesian water has been obtained at Adavale and at Thargomindah, and also west of the Paroo River. The number of Artesian wells sunk in the district up to the present is about 100, giving a flow of water per twenty-four hours approximating 130,000,000 gallons, and providing running water in drains and channels of a total length of about 1,700 miles. The total number of feet bored is about 160,000 feet, costing nearly £200,000. In a hot and dry climate such as the Warrego district, abundance of water for stock is of most vital importance, and of late years, since pastoralists have acquired more experience in sinking Artesian wells, it is no uncommon occurrence to find that the water from one Artesian well flows through 80 or 100 miles of drains, thus permitting every square mile of country to be utilised to the best advantage. The general fall of the country being as already shown from north to south, the usual practice now is for an artesian well to be sunk near the northern boundary of the run or grazing farm, and thus provide water by means of drains to as much country as possible. Frequently six or seven grazing farms, each containing 20,000 acres, are watered by one bore. The average depth of bores is from 1,600 to 1,800 feet, and the average cost at the present time between £1,600 and £1,700, not counting the cost of drains, which varies from £5 to £8 per mile, and in exceptional cases more.

In the neighbourhood of the Paroo River and for many miles to the west thereof, numerous mud springs occur. These are in their natural state of no use in providing water for stock, and frequently have been fenced in to prevent cattle and horses from being bogged therein. In many cases these mud springs have been tapped by putting down bores to a shallow depth, seldom exceeding 200 feet, and a flow of water of from 10,000 to 20,000 gallons per twenty-four hours has been the result, thus providing permanent water for cattle and sheep grazing over many square miles of country in their neighbourhood at a low cost.

**RABBITS.**—The greater part of the district is entirely free from rabbits, owing to the numerous rabbit-proof fences erected by the Mitchell and Warrego Rabbit Boards and by lessees of stations and grazing farms. The exception is the south-west part of the district, on the lower portions of the Paroo and Bulloo Rivers, but rabbits in these localities are not nearly so numerous as they were a few years ago. With the network of rabbit-proof fences now erected through all parts of the district, there is little prospect of their increasing in such numbers as to interfere to any appreciable extent with the grazing capabilities of the land.

**OPAL.**—Opal-mines are worked at a profit in numerous parts of the district near the branches of the Paroo River, notably on Yowah Creek and on Beechal Station. Opal has also been found on the Grey Range. Opal-mining is very precarious, and, though some men have done fairly well and been fortunate, the majority only make a living. Every opal-miner hopes to make his fortune, and some have done so. The extent of opal country is very great, and, with extensive prospecting, new and valuable fields would certainly be discovered.

**LAND AVAILABLE FOR SELECTION.**—At present over 1,000,000 acres of land are open for grazing selection in the Warrego district in areas varying from 5,000 acres to 20,000 acres, the greater part of which land is open at rentals varying from  $\frac{3}{4}$ d. to 1d. per acre, with a lease of twenty-eight years' currency. More land is constantly being opened for selection as the demand arises, and within the next few years between 2,000,000 and 3,000,000 acres will be available for opening for selection. The greater portion of this land, both what is now open for selection and what will shortly be available for opening, is well adapted for sheep farming, a large portion of it being now used for that purpose, and being also within the artesian water area.

#### GREGORY SOUTH DISTRICT.

The Gregory South district comprises about 53,000 square miles of country in the south-west corner of Queensland.

This large tract of country is on its northern boundary from 450 to 500 miles distant from the nearest sea-coast, part of it being nearer to the Pacific Ocean, and part nearer to the Gulf of Carpentaria.

The district is watered by Cooper's Creek with its tributaries Kyabra Creek and Wilson River, which junction with it from the east, and by the Diamantina and Mulligan Rivers, which flow through the district into South Australia. The whole of the waters from this district assist in feeding the gigantic lake system in the centre of the continent.

The climate is very hot and dry and the rainfall precarious, the distance from railway communication preventing lessees from stocking their country with sheep, as the cost of carriage by team is too great. The country has, in consequence, been used for cattle breeding and fattening (for which it is well adapted), excepting the north-eastern part of the district, where sheep farming is carried on.

The character of the country varies considerably, that to the east of Cooper's Creek being principally open plains and high tableland covered with stunted scrub. In the south-west the country is principally sandhills and spinifex, with mulga ridges and saltbush flats.

There is a large extent of flooded land on Cooper's Creek and on the lower part of the Wilson River. The grazing capabilities of the district are very good in fair seasons, all the best varieties of grasses and herbage predominating in the district.

There is a considerable amount of land open for grazing selection, and a large number of grazing farms have been selected in the north-eastern part of the district near the township of Windorah. More land will be opened for selection as the demand arises, but at present selectors prefer to take up country within easy reach of railway communication.

#### TOOWOOMBA, DALBY, WARWICK, AND STANTHORPE LAND AGENTS' DISTRICTS.

[Contributed by J. R. WARNER, Land Commissioner.]

The Darling Downs district includes the Land Agents' districts of Toowoomba, Dalby, Warwick, and Stanthorpe, at each of which towns there is a land office with an officer in charge who will afford any available information to intending selectors.

#### TOOWOOMBA DISTRICT.

The Toowoomba district embraces the western slopes of the Great Dividing Range and the fine open plains and downs country to Jondaryan on the west, Yandilla on the south-west, and Clifton on the south, and embraces within its boundaries some of the finest agricultural and pastoral country to be found anywhere.

The soil about Toowoomba and northwards towards Crow's Nest is of a strong red with reddish clay subsoil; elsewhere the soil is either brown, chocolate, black, or sandy loam, with a clay or gravelly subsoil. The soil generally is capable of producing all kinds of cereals, as wheat, barley, oats, rye, maize, &c., as well as potatoes, and the black-soil flats and plains are admirably adapted for lucerne growing.

The country generally comprises well-grassed well-timbered ridges, undulating open forest, and open plains.

The geological formation is basalt and carbonaceous sandstone. The climate is delightful, the temperature ranging from 50 to 95 degrees in summer, and from 25 to 70 degrees in winter. The average rainfall during eleven years—from 1887 to 1897 inclusive—was 43½ inches at Toowoomba; further west away from the Range the average fall would be about 34 inches.

The district is well-watered by Oakey, Westbrook, Hodgson, and King's Creeks, and by the Condamine River, besides numerous smaller creeks. Water can also be obtained in most localities by sinking from 30 to 120 feet.

In addition to farming, dairying is largely carried on in this district as a separate source of business, and also in conjunction with farming; the farmer realising that owing to the uncertainty of seasons it does not do to depend entirely on production of grain crops.

The principal townships in the district besides Toowoomba are Crow's Nest in the north, Oakey in the west, Pittsworth to the south-west, and Clifton to the south, all of which are connected with Toowoomba by rail, and are thriving centres of business.

With the exception of a few thousand acres of inferior description of land of a rough and scrubby nature on the confines of the district

and far removed from railway communication, and situated in the Emu and Cooyar Creek locality in the north, and Tummaville and Western Creek in the south-west, with small isolated portions here and there throughout the district, the whole of the land is alienated. The demand for good land, both agricultural and pastoral, the last few years has been very great, and notwithstanding the large repurchases of estates by the Government to promote close settlement, only some 600 acres remain unselected, and the demand still continues; and the repurchase by the Government of other estates is eagerly awaited.

The timber trade is in a very flourishing condition, five sawmills being kept constantly at work to supply the demand, giving employment to some 200 hands.

Nearly the whole of the timber used in this portion of the Downs is drawn from the Crow's Nest, Emu Creek, and Perseverance districts, mostly from private property.

#### DALBY DISTRICT.

The Land Agent's District of Dalby is situated west of the Toowoomba district, and contains some fine agricultural lands, equal to any on the Darling Downs, lying between the railway line and the Bunya Mountains. Owing, however, to the distance from the coast, the rainfall is not so much to be depended on, consequently the area of land under cultivation is not so great, considering the quality of the soil, as would otherwise be the case.

The larger part of the district may be considered as more adapted for pastoral than agricultural purposes.

The district is watered by the Condamine River, Oakey, Myall, Jimbour, Cooranga, and Charley's Creeks on the north, and by Wilkie's, Braemar, Kogan, and Wombo Creeks on the south.

Water can also be obtained by sinking in most parts of the district.

The rainfall about Dalby for the 11 years from 1887 averaged  $31\frac{1}{2}$  inches, the average number of days on which rain fell being 69.

The climate is drier than that of Toowoomba; the temperature varies in summer from 55 to 100 degrees in the shade, and in winter from 25 to 70 degrees.

The geological formation of the district generally is a carbonaceous sandstone and slate shales. The soil varies considerably, and is of black-brown and sandy loam.

There is a considerable area of land open to agricultural and grazing selection in various parts of the district, but being mostly at a distance from permanent water, or of a scrubby nature, and in many cases infested with prickly pear, it is not eagerly sought after.

The principal crops grown are wheat, oats, maize, potatoes, and lucerne.

Wheat has been successfully grown at Irvingdale, Maida Hill, and Jandowae.

The chief centres of population besides Dalby are Jandowae in the north, Jondaryan in the east, and Chinchilla in the west, the two latter being connected by rail with Dalby.

The railway line from Brisbane to Roma and Cunnamulla passes through the district from east to west.

## WARWICK DISTRICT.

The Land Agent's district of Warwick is situated to the south of the Toowoomba district, and is bounded on the east and part of the south by the Great Dividing Range, and on the remainder of the south by Herries Range.

The railway line from Brisbane to the New South Wales border traverses the centre of the district. The district is well watered by the Condamine River and its numerous tributaries—namely, Dalrymple, Glengallan, Freestone, Swan, Emu, and Farm Creeks in the eastern half, and by Canal, Thanos, Ironpot, and Sandy Creeks in the western half; whilst water can be obtained in most localities by sinking.

The country comprises broken scrubby mountain ranges, forming the watersheds of the Condamine River and its branches, well-grassed and thickly-timbered ridges, and rich black-soil plains.

The geological formation is chiefly carbonaceous sandstone and Devonian slates and sandstone.

The district contains some magnificent agricultural and grazing land, especially in the eastern and northern portions; the scrub soil on the slopes of the ranges being especially rich and productive. The soil in this district is capable of producing all kinds of cereals, wheat, oats, barley, rye, maize, &c., while the black-soil flats and plains give splendid crops of lucerne.

As in the Toowoomba district, dairying is largely carried on, both separately and in conjunction with farming.

The climate is very enjoyable, the temperature ranging from 55 to 95 degrees in summer, and from 25 to 70 degrees in winter. The rainfall during eleven years from 1887 averaged nearly 32 inches, with an average number of wet days during the same period of 91.

The principal centres of population besides Warwick are Allora and Killarney, both of which are thriving townships in the midst of magnificent agricultural lands, and connected by rail with Warwick and other centres.

Some fine timber is obtained from this district—viz., cedar, beech, pine, ironbark, bloodwood, and various sorts of gums. The land still available for selection comprises the rough, broken, thickly-timbered, and scrubby ridges, being the watersheds of the numerous creeks forming the heads of the Condamine River; some of these lands are of a rich chocolate and black soil, but are limited in area, and the access is extremely difficult owing to the broken and precipitous nature of the country.

Some land in the Tummalville district is more suitable for grazing purposes than anything else, the soil being of a poor sandy nature of no great depth and subsoil of clay.

There is a steady demand for good land in this district. The whole of the land repurchased by the Government, about 26,000 acres, having been selected except 160 acres, there is no doubt that if the Government saw fit to make another repurchase of good land, it would not long remain unselected.

## STANTHORPE DISTRICT.

The Stanthorpe district lies south of the Warwick district, and embraces the country west of the Great Dividing Range and north of

the New South Wales border. It is well watered by the Severn River and Pike's, Quattpot, and Accommodation Creeks, besides numerous smaller creeks and gullies.

The Stanthorpe district is more of a mineral and pastoral than an agricultural district. The soil generally is of a light, sandy nature, with subsoil of granite formation.

The country is well adapted for sheep and cattle, and is very much improved by ringbarking. The climate and soil appear admirably adapted for the growth of fruit and vegetables, a number of orchards having been formed or are being started. Large quantities of fruit such as cherries, plums, peaches, apricots, nectarines, apples, grapes, &c., are sent away yearly to Brisbane and elsewhere, as well as immense quantities of cabbages and onions, which do remarkably well.

Agriculture is not attempted on a very large scale, though wheat, barley, and oats have been grown successfully near Ballandean in the neighbourhood of Accommodation Creek. The area of good land available for selection in this district is extremely limited, owing to some 80,000 acres having been selected during the past two years.

Early in next year resumptions of land from the following runs will be made available for agricultural and grazing selection in this district, and there is no doubt will be rapidly selected:—

Ballandean, about	...	14,720 acres.
Pikedale, about...	...	9,000 „
Glenlyon, about	...	12,300 „
Nundubbermere, about	...	5,000 „
Tenterfield North, about	...	1,080 „
Maidenhead, about	...	5,900 „

#### MITCHELL LAND AGENT'S DISTRICT.

[Contributed by M. W. BORTON, Land Commissioner.]

The Mitchell district is situated in the centre of the State, and is generally considered one of the leading pastoral districts of Queensland, being well known for its richness in natural grasses and its freedom from diseases incidental to stock. Diseases in stock, in fact, are practically unknown in these naturally dry regions. It has been settled, for from thirty to forty years, and was taken up originally in large areas comprising about eighty runs or stations.

**AREA, NATURAL FEATURES, AND GENERAL CHARACTERISTICS.**—The approximate area of the district is 58,000 square miles, and comprises within its limits two totally different qualities of country; that best known and most sought after being what is commonly called downs country. This country is undulatory in character. In no single instance probably do the summits of the rises exceed 150 feet in height above the intervening valley or watercourse, though there may be a distance between the rises of 3 or 4 miles. It is in parts absolutely treeless, in other places has an odd tree or clump of trees, often only along the watercourses. Other parts again are lightly timbered, affording fair shade for stock without being so thick as to appreciably affect the carrying capacity of the country. Then other portions of downs country, of comparatively small extent, are so

overgrown with timber as to be absolutely worthless for grazing stock, the land carrying nothing but timber or scrub, with perhaps an odd edible shrub or two.

The other class of country, of which there is a considerable area, occupying nearly all the eastern end of the district, is what is known as spinifex, or desert country. This is certainly very inferior for grazing purposes, but is nevertheless turned to account in that way, and has at times an advantage over downs country, in that it requires a much smaller quantity of rain to make the grass grow. The grasses, however, are of a totally different character to those found on the downs country, and have nothing like the fattening qualities of the other varieties. The whole of this desert country is timbered, varying in character from open forest to thick scrub. It is for the most part fairly level, with occasional slight undulations. The country rises abruptly here and there into broad tablelands, or breaks gradually into rough barren ranges.

The district has two large water systems, these being the Barcoo and Thomson Rivers, which are fed by innumerable creeks and other watercourses. Some of these subsidiary channels are dignified by the title of rivers, these being the Alice, Darr, and Landsborough, the former flowing into the Barcoo, the two latter into the Thomson. Several of the creeks, however, have as large channels or drain as much country as these three so-called rivers, some of the principal being Torrens, called lower down Cornish Creek, one of the principal heads of the Thomson River; Tower Hill, Aramac, Douglas Ponds, Ravensbourne, Thornleigh, Powell's, Vergemont, Catherine, &c. The Barcoo and Thomson Rivers meet near the south-west corner of the district, the stream beyond that point being known as Cooper's Creek, which flows south-westerly into South Australia, losing itself eventually in Lake Eyre. There are no natural permanent streams in the district, all creeks ceasing to run in less than a month after being in flood. In many of the larger channels, however, are to be found permanent waterholes, which last probably two years without replenishing.

**CLIMATE AND SEASONS.**—The climate is generally considered very healthy for Europeans, though the heat for some months during the year is very trying to those brought up in a more temperate climate. The maximum heat in summer varies very considerably in different years. In very dry years the heat will sometimes run from 110 to 120 degrees for three or four consecutive days, when a refreshing change usually occurs. The average maximum temperature for, say, three of the hottest months of the year would perhaps be about from 95 to 100 degrees. It must be remembered that this being a peculiarly dry moistureless climate at ordinary times, the heat is not so oppressive to most people as the same temperature would be in a moist one, 80 degrees in the latter being probably as trying as 95 in the former, and certainly not as healthy to the majority as the dry one. The temperature in winter varies in different parts of the district, the minimum about Tambo being occasionally below 24 degrees, and in the northern and western parts the minimum would probably be very seldom below freezing point. The autumn and winter months, say, from the beginning of April to the end of August, are very enjoyable. August and September are usually the driest months in the year, and it is indeed very seldom that rains commence

earlier than towards the end of October. Thunderstorms are generally looked for during October, November, and December, and though they may usually be relied on, some years have gone by without sufficient rain at that time of year to put a spring in the grass. The first three months of the year are what is called the rainy season. Should copious rains not fall at that time, however, droughty conditions are to be feared, sometimes involving losses in stock. As a rule, rains falling in May, June, and July will not be of any material advantage to grass, but herbage then takes its place. Some portions of the district appear to be within a dry zone, notably about the Lower Barcoo and Lower Thomson—in fact, the south-western parts of the district. About here the average is slightly lower than the rest of the district. One droughty year only, if following an exceptionally good one, does not necessarily mean losses in stock, for the principal grasses on the Downs have such vitality that one bad year will have very little effect on it. It is a series of two or more droughty years which tell eventually on stock, causing heavy losses. In all probability the immunity to disease amongst stock of all kinds is due in a great measure to the natural dryness of the climate.

**SOIL.**—The soil on the Downs country is an alluvial deposit, and consists of a very stiff brown loam of various shades from a yellowish and reddish brown to nearly black. It is of a friable nature when dry, and intensely tenacious when moist. When puddled it is almost impervious to water. There is usually no great depth of soil, seldom exceeding 3 feet, except on flats where it has naturally accumulated. The substratum is generally decomposed sandstone, which again overlies a very thick stratum of impervious shale (the accumulations of an ocean bed in bygone ages), varying in thickness from 200 or 300 to 3,000 or 4,000 feet, having narrow bands of sandstone interspersed through it. Lying below the shale is the artesian water-bearing stratum, which also varies in thickness up to perhaps 300 feet. As a rule there are two or even more water-bearing beds, the impervious shale lying between each.

The soil on the Downs country would be suitable for agricultural purposes were the seasons more favourable, or if irrigation on a large scale were possible.

The soil in the desert or spinifex country is of an entirely different character, being mostly a very sandy loam—too sandy, in fact, to be rich. This varies in depth from 1 to 6 feet. In parts it is almost a pure sand, whitish brown in colour; in other parts it is a bright red with less sand and more loam; other portions are more of a clayey nature. All these soils are suitable for agriculture, but were it not for artesian water the growing of crops would be a failure. The soil is very easily broken up, and if ploughed over three or four times before sowing, becomes very loose; consequently when water is turned into the drains it soaks through to an amazing distance on each side. It is found that if water is left long enough it will percolate at least 20 yards each side of the drain. This fact saves a considerable amount of labour, in that so few drains are required. Irrigating the land in this manner, however, requires a large supply of water, and it is found by experience that an Artesian bore giving a supply of say half-a-million gallons of water a day, will not irrigate satisfactorily more

than about 100 acres of crops. Taking into consideration the cost of putting down an Artesian bore, it is questionable whether agriculture would be a paying concern even if carried out on a large scale.

**GRASSES.**—There are several descriptions of grasses growing on the Downs country, but the principal ones, and those for which the district is famous, are the Mitchell (three or four varieties), Blue and Flinders, or, as they are sometimes called, Landsborough grasses.

There are several other kinds, such as barley, wire, feather, blacktop, &c., but the real mainstay of the country is the Mitchell. This is a most nutritious and hardy grass, having thin fibrous roots reaching to a great depth, having been traced 10 feet or more perpendicularly, and is evidently the grass best adapted to the soil, in a dry climate. It is, of course, a perennial, and has wonderful vitality, remaining alive underground for months, though there may be no part of the plant visible above ground, and on receiving sufficient moisture will shoot from all joints that show the slightest sign of life. It grows in tussocks, is a free seeder, particularly after a long run of dry weather, having long ears somewhat similar to wheat, but with very small seed. Blue grass, though not equal to Mitchell, is a very valuable one, but will not stand very dry seasons; is an annual, or at most a biennial, and also a free seeder.

Flinders grass is considered the most fattening, is an annual, generally starting after the summer rains if sufficiently heavy, and lasting only to the beginning of winter, being very sensitive to frosts. It is of a yellowish green when young, but turns a deep red when cool or cold weather appears. It is very shallow rooted, the roots being not more than 3 or 4 inches long.

If sufficient rain falls from the end of April to the beginning of August, and the grass is not very thick, great quantities of herbage appear, carrots and crowfoot being the principal herbs, though there are many others suitable for stock. These will generally last well into September, when the hot weather scorches them.

The carrying capacity of the Downs country is variously estimated, the general consensus of opinion, however, being that in average seasons the best quality will carry about one sheep to 2 acres. The different qualities of this country will range from the capacity above stated down to about one sheep to 3½ acres. This, of course, is without taking scrub land into consideration, which, as before stated, is worthless for grazing purposes.

The grasses on the desert country are very inferior to those on the Downs, and, with the exception of spinifex or triodia, will not stand much dry weather. This latter grass is very coarse and of a resinous nature. While young, stock will live and thrive on it. At the best, however, the desert is little better than a standby when grasses are eaten out on the Downs. The carrying capacity is very small, 1 acre of Downs country being considered equal to about 5 acres on the desert. It has been found that by overstocking this country for any length of time the grasses are eaten out, and it takes some two or three years of good seasons to recover, its recovery being entirely dependent on seed which may be lying in the ground.

**TIMBER.**—The timbers growing on the Downs country are mostly of the acacia family, the best known of these being gidya, boree, dead-

finish, myall, and brigalow. The two former are very valuable for fencing and firewood, never grow to any great size, rarely exceeding 18 inches in diameter. Fence posts 5 inches in diameter would probably last a lifetime. As firewood they cannot be excelled, having great heating power, burning to a white ash. Four of these timbers—gidya, boree, myall, and dead-finish—if within reach of a good market, would sell well as timbers suitable for cabinet making, all of them being close-grained and taking a high polish. The three former are very dark in colour, dead-finish being a bright red. Gidya and boree are the commonest timbers, extending over the greater part of the Downs. The leaves of dead-finish, myall, and boree are also valuable to the grazier (in the order named) for feeding stock when the country is destitute of grass, sheep being able to survive on these alone for months at a time. The leaves of other timbers are also useful for this purpose, such as whitewood, leopardwood, vine-tree, bauhinia, and others of lesser note. Of the eucalyptus family, what is known as coolibah has the widest range, being generally found in low-lying country, in swamps, or along watercourses. This timber, however, is of little use for any purpose.

In the desert country, besides gidya, there are many other species, none, however, being of great value, with the exception of cypress pine, which is largely used for building purposes, having an advantage over most other timbers in that white ants will not touch it. Some of the other timbers are bloodwood, desert gum, broad-leaved ironbark, desert oak, beefwood, lancewood, kurrajong, &c.

**WATER NATURAL AND ARTIFICIAL.**—The Mitchell district is not naturally well supplied with water, the larger streams as a rule only holding water for any length of time, the smaller watercourses usually holding water not longer than one or two months after rain. To overcome the difficulty large dams or tanks have to be constructed to hold the water in the smaller channels. Some of the tanks and dams in the district are of very large size, and when once filled will often last two years or more without receiving any further supply, which unfortunately is occasionally the case, the rains being insufficient to run many of the creeks for that period.

Over a large area of the district, graziers have abandoned the making of tanks and dams, taking advantage of the Artesian basin to sink bores for tapping a supply of water, which when once obtained is usually a permanent stream, and causes no anxiety as to chance of failing. As a rule, the expense is greater than the cost of constructing dams, &c., but on an average, one bore will water as much country as three or four dams. About half-a-dozen bores within a limited area have ceased to flow and become sub-artesian. With these it is necessary to use pumping machinery to keep up a supply for the use of stock. As previously stated, Artesian water has been successfully employed for irrigation, but many of the supplies tapped in the district are unsuitable for vegetation, being heavily charged with minerals inimical to plant life, such as soda, magnesia, &c. In some instances gardens have been utterly destroyed by using bore water in large quantities.

**CLOSE SETTLEMENT.**—The first attempt at close settlement in the district was in 1880, when small areas about the principal centres

population were opened up under "*The Crown Lands Alienation Act of 1876.*" Under this Act a considerable number of selections were taken up in areas running from about 100 to 2,500 acres about Tambo and Blackall, a few small holdings also being selected near Aramac and Isisford. From twelve to eighteen months after the passing of "*The Crown Lands Act of 1884,*" considerable areas were made available for selection on runs in the Blackall and Tambo districts. At that time, however, the principles of the Act being new to Queensland there was very small demand for farms under that Act, and it was not till some two or three years later that any considerable stir was made by intending selectors from the coastal country and the southern colonies to secure some of these fine Western lands for grazing purposes. In late years the demand for the Downs country was exceptionally keen, many hundreds of applications being lodged in a single day for perhaps ten or twelve farms.

**AVAILABLE FOR SELECTION.**—The area of land of all descriptions now open to selection in the district is approximately 500,000 acres, and the area available for opening, but not yet dealt with, about 250,000 acres, exclusive of the area mentioned below as that which the Crown has power to resume, and area of leases expiring. Under the Crown Lands Acts 1884 to 1886 the Crown has power to resume one-fourth the area of those runs brought under those Acts at the expiration of the first fifteen years of the tenancy. This period expired on 31st December, 1900, with respect to several runs, and for the next few years other resumptions will be available if required.

The areas which may be so resumed in each year, together with areas falling in by virtue of expiration of leases, for the next six years, are detailed below:—

				Square Miles.
During the year 1901	...	...	...	2,858 $\frac{3}{4}$
Ditto 1902	...	...	...	680 $\frac{1}{2}$
Ditto 1903	...	...	...	2,340 $\frac{3}{4}$
Ditto 1904	...	...	...	138 $\frac{1}{4}$
Ditto 1905	...	...	...	Nil.
Ditto 1906	...	...	...	239 $\frac{3}{4}$

#### MACKAY LAND AGENT'S DISTRICT.

[Contributed by J. S. WILSON.]

The district of Mackay comprises an area of 3,480,960 acres.

The town is situated on the Pioneer River, about 2 $\frac{1}{2}$  miles from its mouth, and is about 600 miles north of the capital of the State. It was first settled upon about the year 1859, when it was taken up in the form of cattle runs. The first attempt to grow sugar was made in 1865 by Mr. John Spiller, on an estate which was afterwards called the Pioneer Plantation. He did not, however, make a financial success of his venture till some years later; but to him much credit is due for the introduction of the first cane plants to the district, which he brought with him from Java.

The first actual crushing took place in August, 1868, at the Alexandra Plantation, under the joint management of Messrs. J. E. Davidson and T. H. Fitzgerald, and proved most successful. The following year Messrs. Hewitt and Romilly had their first crushing at

Pleystowe, where in addition to the manufacture of sugar they established a large rum distillery, which product afterwards became so famous and was well known as the "Anchor Brand." From the great success of these estates other sugar-mills were established with such rapidity that in the year 1881 there were no less than twenty-two mills in full swing, and many of them crushing day and night. At this time the Colonial Sugar Refining Company, finding it such a profitable investment, erected the Homebush Mill with all the latest labour-saving apparatus, and laid down many miles of permanent and portable tramways, which have done so much towards opening up that part of the district. In the first instance the planters were able to crush cane grown by neighbouring farmers, but as their own area under cultivation increased they found it necessary to abandon this practice; hence the system of central mills, where independent farmers could get their cane crushed, was seized with much avidity. This scheme proved such a boon that at the present time there are five large mills run on this principle, with many miles of permanent tramways attached, which act as feeders.

The advantages accruing to the district principally through the production of sugar-cane can be gathered when we find that the population at the present time is 11,182 persons. The total area under cultivation in 1900 was 27,317 acres, 26,094 acres planted with cane of which 18,343 acres were crushed, and the output of sugar was 20,194 tons.

The following is a table of the areas selected under the various land Acts:—

	Acres.
Area selected under 1868 Act ... ..	97,372
Area selected under 1876 Act ... ..	315,091
Area selected under 1884 to 1895 Act ...	169,633
Area selected under 1897 Act to 31-12-00	13,570
<b>Total ... ..</b>	<b>595,666</b>

Area remaining open for selection on 31-12-00—

	Acres.
Agricultural farm, agricultural homestead, and unconditional selection ... ..	113,085
Agricultural farm and unconditional selection	20,729
Grazing farms open for selection ... ..	179,890
<b>Total ... ..</b>	<b>313,704</b>

It will be seen from the above tables that there is still a large area of unselected land in this prosperous district, many thousand acres of it being suitable for agriculture.

The Pioneer River runs easterly through a valley of magnificent country extending for several miles on either side. The soil consists of a rich alluvial deposit varying in depth from two (2) to four (4) feet. The principal crops grown are sugar, Indian maize, rice, coffee, pineapples, bananas, cocoanuts, mangoes, and sweet potatoes.

The climate is most genial, the thermometer seldom exceeding 94 degrees during the hottest day in summer, and in winter the temperature is unsurpassed.

The average rainfall for the last twenty-nine years was 72 inches ; most of this falls during the first three months of the year, and constitutes the wet season. The timber consists principally of hardwood, such as bloodwood, gum, ironbark, Moreton Bay ash, and is of little commercial value for other purpose than fencing, railway sleepers, and firewood.

There is railway communication to Mirani, a small town situated on the Pioneer River and distant 23 miles from Mackay, with a branch line to Eton, another small town.

Very little has been accomplished as yet towards developing the mineral resources ; gold, silver, copper, and coal have been found in small quantities, and there is every reason to believe that at some future date valuable discoveries will be made more especially on the western side of the coast range.

The river and creeks abound in fish ; and game, such as wild duck, geese, pigeons, scrub turkeys, and jungle fowl are plentiful.

## FORESTRY.

[Contributed by L. G. BOARD, Inspector of Forests.]

### AREA UNDER FOREST.

The State of Queensland has a total area of 668,497 square miles or 427,838,080 acres, and out of this it is estimated that about 40,000,000 acres bear timber of commercial value ; but at least one-third of the State may be said to be covered with trees which have a local use for building and other purposes.

### HOW TIMBER WORKED.

As there is no Forestry Act in Queensland, all timber is worked under the Timber Regulations issued under the Land Act of 1897, and such regulations provide for working timber on Crown lands or timber reserves as follows:—

### LICENSES.

Authorising cutting on any specified area of Crown lands—

Hardwood, fee per year	£5
Pine, beech, or any timber commissioner may define as rare	£7
Cedar	£10
To cut and split slabs, fencing stuff, and shingles	£3
To cut firewood, strip bark, and burn charcoal	£2
To dig and remove stone, gravel, shell, and limestone	£5
By persons engaged in making bricks—each mould	£4
To dig and remove guano (also a royalty of £5 per ton on guano exported)	£10

NOTE.—For one half-yearly license, one half of above prescribed fee.  
Firewood and splitters' licenses can be taken out quarterly at one-fourth of yearly fee.

Licenses come into force from day of issue and expire on the same day of the month three, six, or twelve months afterwards, as the case may be.



TIMBER INDUSTRY.—TOP OF MOUNTAIN TRAMWAY.



TIMBER INDUSTRY.—TRAMWAY FOR LOG-HAULING.

## SALES OF TIMBER

Either on Crown lands or on timber reserves.

Timber may be sold at auction on any specified area, or by marking trees for sale, either at a royalty payable on measurement after the timber has been felled or at a price per tree, as may be specified in conditions of sale. Provision is also made for sale without competition of standing timber in cases where the interests of others are not prejudiced.

The minimum price for all timber sold is 4d. for hardwood and 6d. for hoop pine per 100 superficial feet.

## MODE OF WORKING.

On application being made to the local land commissioner by a timber-getter to purchase timber, a Crown Lands Ranger is instructed to meet the timber-getter and mark the required timber for sale, either a certain number of trees or a defined area. The right to cut this is then offered for sale at auction, either at a lump sum or at a royalty per 100 superficial feet, and with a small deposit from £2 to £10, and with a time allowance for removal. The usual prices realised at sales of standing timber are as follows:—

Cedar	... 2s. to 2s. 6d.	per 100 superficial feet.
Hoop pine	... 6d. to 1s.	do. do.
Hardwood	... 4d. to 1s.	do. do.

## SLEEPERS.

The right to cut railway sleepers on timber reserves and on a defined area is usually sold at auction at an upset price of from 1½d. to 2½d. per split sleeper.

## IMPORTS AND EXPORTS.

Imports of timber for the year 1900 were of the value of £26,332, being largely pine from New Zealand and New South Wales.

Exports only amounted to £18,153, more than half of this being the value of the cedar forwarded to other colonies.

## TIMBER REVENUE.

The revenue for year 1900 derived from timber was as follows:—

	£	s.	d.
Timber licenses	4,459	5	0
Sale standing timber	3,048	12	3
Sale confiscated timber	99	18	10
	7,607	16	1
Of this amount the Brisbane district contributed	2,041	15	7
„ Gympie	1,299	7	10
„ Maryborough	825	8	2
„ Bundaberg	353	0	0

## FORESTRY.

The only attempt at forestry was made at Fraser Island, where a Kauri pine plantation was formed some twenty years ago, the spot chosen being a worked-out kauri scrub, the system adopted being planting young kauris in clearings and lanes at a distance of 6 feet apart, and some 45 miles of lanes were planted with about 75,000

plants, as well as 26,154 natural plants cleared round. But, in consequence of the soil being very poor and simply a sand bed, the trees did not show a very satisfactory growth, as after twelve to fifteen years very few exceeded 5 feet in height, and most of the trees being only from 2 to 4 feet high. The plantation was therefore abandoned, and has not been subsidised or worked for several years. Up to July last there was no expenditure under the heading of "Forestry," as all timber work was carried out by the local Crown lands rangers who were employed in the various land agents' districts in connection with land selection, and under the supervision of the district land commissioners.

In July last an Inspector of Forests was appointed for the purpose of taking steps to conserve the native timbers, and it was then considered advisable as a first step in forestry to ascertain what amount of timber the Department still retained in its possession, and to make further reservations of well-timbered lands where necessary, and in order to do this two forest rangers were appointed, both of whom were experienced men, for the purpose of inspecting and making reserves where necessary.

#### AREA RESERVED.

The total area reserved for timber on the 1st January, 1901, was 1,622,855 acres, but since that date recommendations have been made (up to 11th April) for reservation of 181,110 acres more, mostly for lands in the districts of Nanango and Bundaberg.

Of the lands already reserved the largest reservations are in the districts of Gympie, Roma, Maryborough, Brisbane, Ingham, and Herberton. It is probable that the area will be greatly increased during the next two years as the forest rangers carry out the work of inspection in the various parts of the State.

#### SAWMILLS.

In the year 1900 there were 160 sawmills at work in Queensland, with an output as follows:—

	Feet.		£
Soft woods ...	58,024,523	Value ...	256,735
Cedar ...	2,166,735	" ...	27,403
Hardwoods ...	39,652,638	" ...	227,219

Total ...	99,843,896	...	£511,357
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Average price soft woods = 8s. 10d. per 100 feet.

" cedar	£1 5s. 4d.	"
" hardwoods	11s. 6d.	"

#### SUPPLY OF TIMBER.

The chief supply of sawmill timber—namely, ironbark and other eucalypts, as well as Moreton Bay pine (*Araucaria Cunninghamii*) is mostly found in the southern coastal portions of the State between the New South Wales border on the south and Gladstone on the north, and from these districts the Southern Queensland sawmills are at present drawing their chief supplies and have done so for the last forty years; but having now worked out the marketable timbers within easy distance, the supply is principally confined to rough country requiring a considerable outlay in road-making before the timber can be removed to the mill.



TIMBER INDUSTRY.—STARTING LOGS ON SLIDE.



TIMBER INDUSTRY.—MOUNTAIN TRAMWAY.



TIMBER INDUSTRY—HAULING LOGS TO MILL.

In that portion of the State from Rockhampton to Ingham there is little timber suitable for saw-milling purposes, and to show the quantities supplied by the South to this portion of Queensland, I quote the following figures of timber forwarded coastwise from port of Maryborough for the eight years 1892-99 :—

Quantity of timber	...	...	...	63,218,270 feet
Value	...	...	...	£454,586

—equal to £56,823 per annum.

North from Ingham the red cedar (*Cedrela toona*), kauri pine (*Agathis palmerstoni*), and bean tree (*Castanospermum Australe*) are the chief timbers at present sought after, there being large quantities of these valuable timbers growing in the Barron Valley reserves, and in other localities between Ingham and Port Douglas. Besides the timbers mentioned there are other useful timbers that only require to be better known to become of marketable value and to be eagerly sought after. To show the value of the northern timbers, Forest Ranger Lade, at present engaged in examining the Barron Valley Reserve, reports that on a small portion of this reserve he has counted 403 cedar trees, estimated to contain some 1,926,500 feet of cedar of a standing value of £3,853, and within 10 miles of the railway line to be constructed from Mareeba to Atherton; and when this line is completed the value of a large area of timbered land will be greatly enhanced.

In the south-western portion of Queensland cypress pine (*Callitris robusta*) is found in large quantities, and is used for building and almost all other purposes by settlers in that district, and is a most valuable timber from its durability.

#### GIGANTIC KAURI.

The timber in the North, especially the kauri, grows to very large dimensions, and on Evelyn Run, near Geraldton and Herberton road, there is a kauri pine 42 feet in circumference, or a diameter of 14 feet, and one of 22 feet circumference by 60 feet in length, and containing 21,680 feet of pine.

The illustrations herewith give some idea of the difficulties and expense entailed in removal of timber from ranges too rough for teams to work upon, and which have to be opened up by shoots, tramlines, etc., at a very heavy outlay.

One of them illustrates the loading ground for a tramway for removing hoop pine; the tramway is worked by an endless wire rope, and the weight of the loaded truck going down hauling the empty truck back to the top.

Another shows the foot of the range where the tramway unloads, and from whence it is removed to the railway line by teams.

The next shows a loading ground for a shoot, the range being impracticable to work with teams, and another shows the bottom of the shoot where the timber is discharged, and is carried by teams to the railway.

The last illustrates a sight often met with by travellers in our Queensland bush, and shows bullock teams loading up timber at a loading ground.

## THE SURVEY DEPARTMENT OF QUEENSLAND.

[Contributed by F. J. CHARLTON, Staff Surveyor.]

**FUNCTIONS AND CONSTITUTION.**—The Survey Department of Queensland is responsible for the primary survey of the public estate, for the location of public roads and reserves, and for all surveys relating to the alienation or leasing of Crown lands under the land laws of the State.

The Department is constituted under the direction of the Surveyor-General — Archibald McDowall, Esq. — and comprises four district and six staff surveyors, who are executive and supervising officers, paid by salary and granted allowances to provide instruments and field equipment.

The major part of the field-work is carried out—under instruction and supervision by the Department—by about sixty authorised (licensed) surveyors by contract at schedule rates for linear measurement of lines surveyed and marked, which vary from £2 to £10 per mile according to the class of country operated over, and the economic and climatic conditions under which the work is carried out; thus £2 per linear mile is paid for surveyed and marked lines on very easy and favourably situated country, and £10 per linear mile for similar work in dense tropical jungle. Additional payment is made for the marking of corners, and for astronomical observations. Licensed surveyors provide their own instruments and equipment.

The exclusive use—in modern survey work effected for the Department—of long steel tapes, and the check afforded by frequent astronomical observations, has increased the accuracy of both linear and angular measurements, and a high standard in surveying is maintained by the staff and by licensed surveyors.

**NUMBER OF PORTIONS MAPPED OUT** and actually surveyed in the year 1900, and the average cost per acre of the same:—

*Mapped out*, 510 portions, total area 1,685,110 acres. Average cost per acre, one-fifth of penny (nearly).

*Actually surveyed*, 3,467 portions; total area, 3,101,237 acres. Average cost per acre, 2.13d.

*Survey fees* on road and miscellaneous surveys, £5,549 3s. 9d.

*Total fees* paid to licensed surveyors for the year ending the 31st December, 1900 (exclusive of run surveys), £34,354 15s. 11d.

**LICENSED SURVEYORS HOW QUALIFIED.**—Surveyors obtain their qualification by passing the examination for land surveyors, held annually by the Board of Examiners for surveyors; the papers for the examinations are prepared by the delegates of the boards of examiners of all the Australian States and New Zealand, and comprise the following subjects:—Mathematics, computations, principles and practice of surveying, levelling, earthworks and curves, construction, adjustment and use of instruments, geodesy, field astronomy, compilation and drawing of plans and maps, elementary physics and geology.

Examinations are held with the same papers simultaneously in the capital cities of these States; this ensures a common standard of qualification in land surveying, the attainment of which by a surveyor in one of the States qualifies him in all those so co-operating.

A liberal education and many years' training in the office and the field are necessary to attain proficiency in land surveying. No effort is spared to elevate and maintain the standard of efficiency, and as the conduct of all survey work for the Department—other than that effected by the permanent staff—is restricted to licensed surveyors, they are, in this way, accorded an official status.

**OFFICE STAFF.**—The Office Staff of 112 permanent officials and temporary assistants are engaged in the following duties :—

The *Computing Branch* in the issue of instructions to surveyors, the examination of field-notes, observations, plans, and vouchers received from surveyors, and in charting the survey work effected.

The *Compiling Branch* in the compilation and revision of maps and plans.

The *Clerical Branch* in the receiving, despatching, and recording of correspondence, and the preparation of leases and deeds of grant.

The *Photographic and Lithographic Branches* in the reproduction, lithographing, and publishing of maps and plans.

**MERIDIAN OF SURVEY.**—Queensland, with an area of nearly 428 millions of acres, became a self-governing Colony in 1859, and its rapid occupation by the pastoral lessees and an ever-increasing number of agricultural and mining settlers necessitated expeditious survey work to locate the areas occupied, to provide for railway construction, and other public works. Economical considerations and the great extent of territory to be dealt with rendered necessary the adoption of the magnetic meridian as the datum of angular measurement, and the whole territory has been more or less defined under these conditions.

**ARBITRARY MERIDIANS.**—The triangulation of the State being indefinitely suspended, and as the whole of the territory alienated or leased has been described with boundaries referred to the magnetic meridian, it has been inexpedient to revert to an entirely new system, such, for instance, as the adoption of the true north as the meridian of survey.

But as the perpetuation of so variable a datum of angular direction as is afforded by the magnetic needle was inadvisable—arbitrary meridians—being the whole degrees of the mean magnetic declination—have been adopted in each county, and the meridians of survey work effected in each county are required to be maintained parallel to the initial meridian of the county—that is to say, that the meridians of survey work in a county do not converge, but all north and south lines are surveyed parallel to, and all east and west lines are surveyed at right angles to, the arbitrary meridian passing through the adopted initial point.

Where survey operations deal with portions of land not connected by survey with the initial point, the work is preceded by the astronomical determination of the true meridian, and from this is laid off the adopted deviation of the arbitrary meridian of the county, increased or diminished by the computed correction for convergence, so that the parallelism to the arbitrary meridian passing through the initial point is maintained.

**TRIANGULATION.**—In 1883 a triangulation of the State was commenced, and the extent effected is shown by the accompanying map, from which it may be seen that it covers nearly 3 degrees of latitude and 2 degrees of longitude. Unfortunately the survey is now in abeyance, the work having been discontinued in 1891 in consequence of the then existing financial depression.

The base line from which lengths are derived is situated at Jondaryan, 20 miles west from Toowoomba, its whole length of 7 miles being divided into ten sections; eight of these sections are upon a level plain, the terminal sections end on Mounts Irving and Maria, which are respectively 216 and 162 feet above the general level of the plain.

It was originally proposed to confine the measurement to the plain, and to make the extension to Mounts Irving and Maria by triangulation; but experience gained in the measurement showed that the system adopted was capable of satisfactory application to the terminal sections, and the slopes of the hills were accordingly measured also. The length was determined by two steel tapes, each 100 feet long, which were each compared directly with a steel bar floating in mercury.

This bar was carefully standardised by measurement against the standard bars of New South Wales, and had in 1883 a length of 9·9998581 feet at a temperature of 62° Fahrenheit. A new 10-foot standard bar for Queensland has been for some years under construction by Messrs. Troughton and Simms, and its arrival in Brisbane is expected at an early date.

To protect them from the sun and wind, the tapes used in this measurement were enclosed in covered wooden troughs, which, resting on pegs, were placed so as to follow the contour of the ground; this was measured and allowed for in the computations. The tapes were kept at a constant tension of 20 lb. during use, and temperatures were obtained from readings of five thermometers distributed along the length of the tapes. (It is estimated that the temperatures adopted are probably not more than one-fifth of a degree in error.)

Marks were made in copper discs, inserted in wooden posts driven into the ground at each 100 feet, the distances between the tape-ends and these marks being measured by micrometer microscopes.

Three measurements—each one distinct and independent and with separate temperature readings—were made with each tape, so that the base was measured six times.

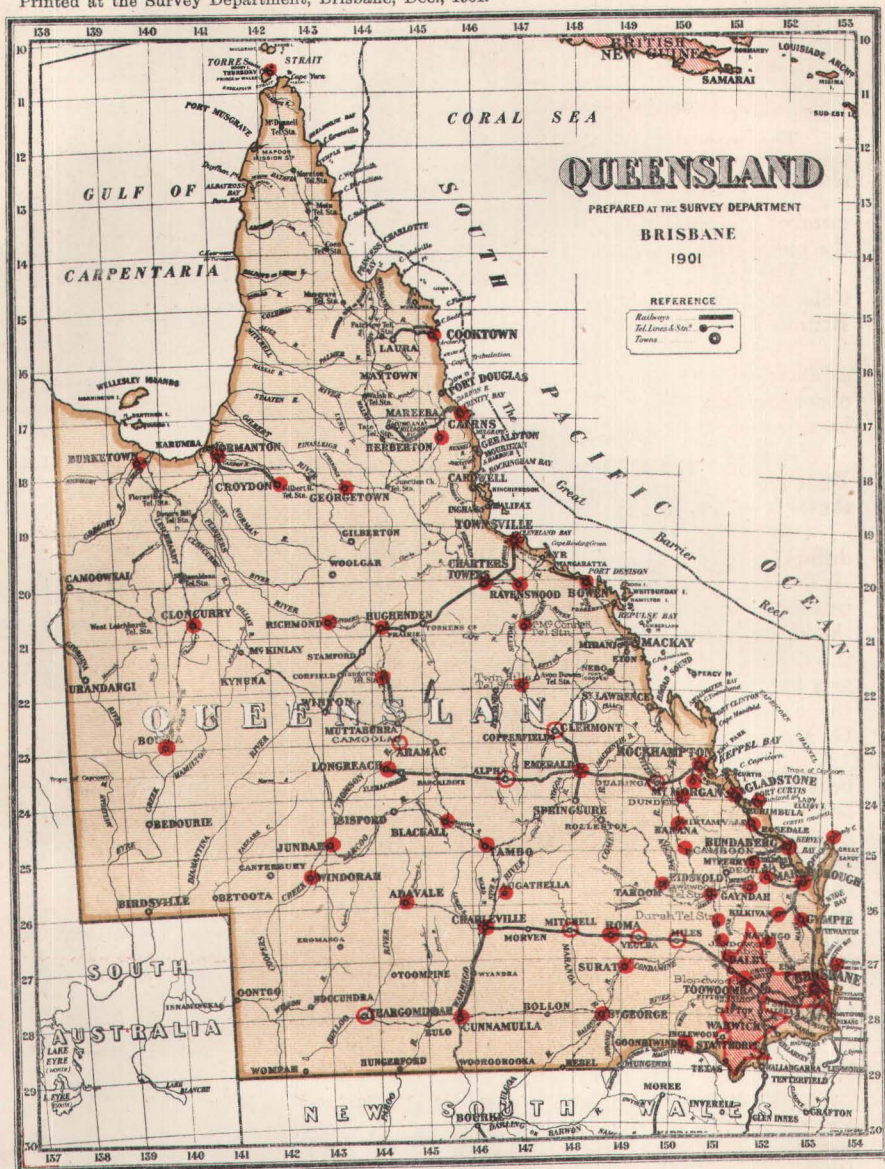
The difference between the means of the three measurements of the base with each tape amounted to 0·117 of an inch; the lengths of the various sections were compared by triangulation, and calculating one-half of the base from the measurement, a difference of 0·936 of an inch was shown.




The base line-work was effected by Mr. A. McDowall, the present Surveyor-General of Queensland, assisted by Mr. R. Hoggan.

Ten-inch theodolites, by Troughton and Simms, reading by two micrometer microscopes to a second of arc, were the instruments generally used in the triangulation, but a 12-inch instrument by the same makers was used at a few of the stations.

From two to eight readings were made on each of eleven different parts of the graduated arc, the mean of the means in each position

Printed at the Survey Department, Brisbane, Dec., 1901.



Astronomical Stations .....   
 Latitude Stations .....   
 Area covered by Major Triangulation 

being adopted. The following are the closing errors of the seventy-four measured triangles :—

Closing Error.		Number of Triangles.
0" to 1"	...	29
1" to 2"	...	29
2" to 3"	...	11
Upwards of 3"	...	5

The maximum error of close was 3".90, and the probable mean closing error,  $m$ , computed from  $m = \left( \frac{\sum \Delta^2}{n} \right)^{\frac{1}{2}}$  where  $n$  = the number of triangles dealt with, and  $\sum \Delta^2$ , the sum of the squares of the closing errors of the triangles, is found to be  $(\pm) 0.95''$ .

The triangulation has been calculated with elements given by Colonel James in the account of the Ordnance Survey of Great Britain in 1858.

The astronomical datum is the position of the station at Jimbour, as determined by Captain Morris, R.E., and Lieutenant Darwin, when observing the transit of Venus in 1882, the longitude being measured by telegraphic exchange of time signals with Sydney.

Astronomical observations have been made at stations Bloodwood, Brisbane, Haystack, and Mount Domville. The geodetic latitude of these stations, minus the astronomical positions, give the results  $-0.2''$ ,  $+1.17''$ ,  $+5.37''$ , and  $-1.17''$  respectively, and the similar differences for the longitudes of the first two of the stations named are  $+6.57''$  and  $-0.5''$ . The azimuth datum was observed by meridian transits of circumpolar stars at station Bloodwood, and the latitude of the same station was obtained by the Talcott method of Zenith pairs, the other latitude determinations being by circum-meridian altitudes, and by prime vertical transits. The whole of the triangulation was in the executive charge of Mr. R. Hoggan, who was assisted by Mr. R. G. McDowall.

In connection with the survey of Brisbane a minor triangulation has been made from a base 1,924 feet long in the Botanic Gardens. The base was measured twice with one of the tapes, and once with the other of the tapes used on the Jondaryan base, a fourth measurement being made with a new tape. The angles were measured with 10-inch and 6-inch theodolites, and connection was made with one of the sides of a primary triangle, being the line—about 9 miles 25 chains in length—between Mount Petrie and Eildon Hill, and the result as arrived at independently through each system of triangulation—involving 27 primary triangles and 11 triangles of the minor system—shows differences of four seconds in the azimuth and about four-fifths of an inch per mile in the length of that line, representing a difference of about three-tenths of an inch in the length of the Botanic Gardens base.

A standard traverse of South Brisbane—run along the main streets and with stations permanently marked by iron castings set in concrete—was effected by Messrs. Bedford and Spowers, Staff Surveyors, in 1893. The traverse was connected with the minor triangulation, and the probable error in linear measurement (each surveyor using different methods and steel tapes of different lengths) was, when compared with the trigonometrical values, in the one case 1.52 inches, and in the other 1.07 inches per mile.

To connect and compare the numerous surveys made on many unknown meridians by different surveyors who have worked—with chains and tapes of various lengths—around Brisbane since its settlement, a standard traverse survey surrounding it and its suburbs—at an average distance of about 4 miles from the city—was completed by Mr. Staff Surveyor Spowers in 1894, and the results as reduced and checked by the co-ordinates of the minor triangulation were very satisfactory.

The Surveyor-General—in his annual reports—has frequently recommended that the trigonometrical survey of the coastal districts of Queensland should be resumed, and it is to be regretted that there is still reluctance on the part of the Government to incur the necessary expense.

As it now stands, the amount already spent on it is comparatively unremunerative, and, although the Department possesses the necessary instruments, Queensland is in the unenviable position of being probably the only civilised State in the world that hesitates at the yearly expenditure of a sum—say £5,000—which would be sufficient to allow of the triangulation being steadily extended in accordance with modern requirements.

PLACES ASTRONOMICALLY DETERMINED.—In addition to the astronomical observations connected with the triangulation, observations have been made to determine the latitude and longitude of sixty-one places, situated in various parts of the State; these places are shown by red dots on the map attached hereto, and their positions in longitude have been determined by the automatic exchange of time signals, over the telegraph lines, with the Brisbane Observatory, the position of which—in longitude—has been similarly determined from Sydney.

In the field observations, the clock errors have been mainly determined from the zenith distances of suitable stars—east and west; and the latitude by circum-meridian altitudes—north and south of the zenith. As one instrument—an altazimuth—can be used for both kinds of observations, these methods have been found to be the most expeditious when time and the staff are limited; and a 12-inch and an 8-inch altazimuth have been thus employed. The instruments are mounted on a post of suitable diameter, firmly fixed in the ground, and the observations are made in the open air with the aid of a chronograph and sidereal chronometer.

The latitudes of a few stations have been determined with a 30-inch zenith telescope, and the 12-inch altazimuth has been lately improved by the addition of a micrometer microscope in altitude for reading the differences of zenith distance.

As there is good reason to believe that the probable limit of error in the position so determined of any one of these astronomical stations is within a-quarter of a mile, it is of immense value to the cartographers, in dealing with such a large area as is comprised within the boundaries of the State, to have a large number of fixed points distributed over the territory from which compilations may be extended, and these stations have been, and will be, of very great utility in aiding the accurate compilation of maps.

In support of the assumption that the limit of error in the positions of these astronomically determined stations is within a-quarter

of a mile, the case of the boundary between South Australia and Queensland may be instanced.

In the year 1868 a point called the Boundary Pier was selected near the assumed boundary between New South Wales and South Australia, in latitude 33 degrees 55 minutes 0·8 seconds south, and time signals were exchanged between it and Sydney and Melbourne.

The longitudes of these latter places having been determined independently, the longitude of the pier was obtained and an offset made to intersect the thus adopted 141st meridian, which was then produced north to its intersection with the 29th parallel of south latitude.

Subsequently, this meridian was produced to intersect the 26th parallel, which was run due west to the 138th meridian and then north—along that meridian—to the Gulf of Carpentaria.

In 1885 the longitudes of Sydney, Melbourne, and Adelaide were determined by the exchange of time signals from Greenwich *via* Port Darwin, Singapore, &c.

From Sydney the longitude of Barrington was determined by the same method, and thence the distance along the 29th parallel was measured west, a distance of 285 miles, to its intersection with the marked boundary of the 141st meridian.

From Adelaide a chain of triangles was extended northerly to the same point.

Thus, there were three distinct determinations of its longitude, the latter two agreeing within 90 feet and the greatest difference being about 360 feet.

The South Australian triangulation is also connected with the intersection of the 26th parallel and the 138th meridian, the difference of longitude being about 180 feet.

On the boundary between Queensland and South Australia, at a point west-north-west of Boulia, in latitude 22 degrees 17 minutes 13 seconds south, another check has been made. This depends upon the distance—viz., 138 miles—between the marked boundary and Boulia (traversed with theodolite and steel tape by Mr. Staff Surveyor C. Twisden-Bedford in 1885 and 1886), and the longitude of Boulia (determined by Mr. Staff Surveyor R. G. McDowall in 1887) from Brisbane, which has again been determined from Sydney on three separate occasions; the comparison here is not so favourable, the difference amounting to about 1,200 feet, or nearly 18·2 chains, but a considerable part of the error is possible in the boundary survey work.

Although, taking the adopted value of the longitude of Sydney as datum, the positions of the places mentioned have been determined in relation to each other within certain limits, it is not assumed that the position assigned to either of them is considered to be correct within the limits mentioned in relation to the meridian of Greenwich.

They are only quoted to demonstrate the value and utility of the methods employed; and, as the results must be considered as being satisfactory, they encourage the belief that the Queensland astronomical stations have considerable value for geodetic purposes.

Neither is it contended that the positions of these stations have been determined with an accuracy comparable with that which could be attained by means of a carefully conducted trigonometrical survey;

but they have a present value, and it must be remembered that there is no probability of these astronomically determined stations being reached by a triangulation within a definite period of time.

**THE OBSERVATORY.**—The Observatory, Brisbane, No. 17 in Nautical Almanac for 1901. Longitude, 10 hours 12 minutes 06.40 seconds E.; Latitude, 27 degrees 28 minutes S.; is provided with the following instruments, viz.:—A 30-inch transit with reversing gear by Messrs. Troughton and Simms, a sidereal and a mean time clock, a few sidereal and mean time chronometers, an embossing two armature combined Morse and chronograph. The sidereal clock hangs against a brick pillar built up through the floor, and is giving fairly satisfactory results with a “Riefler” pendulum, which has recently replaced the mercurial pendulum with cylindrical bob previously attached.

The mean time clock is by Kullberg, made in 1893. It is supplied with contacts for the automatic transmission of seconds, and also of hourly signals lasting about 3 seconds; the pendulum is a Dennison’s compensation, and is controllable by an electro-magnetic attachment for the purpose of eliminating the daily rate.

The work done in the Observatory is limited to the determination of local time from the observed transits of the sun or of stars, mostly of the former, which is observed every other day if visible. If it cannot be observed, the error of the sidereal clock is estimated from its rate, and checked by comparison with one or more of the best chronometers. For finding the clock error, when signals are being exchanged for longitude, star transits alone are relied upon, and about a dozen star transits are observed in one position of the instrument before, and a similar number in the other position after comparison. A distant meridian mark, about 115 chains south of the instrument, is used. By electric signal from the clock a time-ball is dropped at the shipping signal station each day (Sundays and holidays excepted) at 1 p.m. standard time, *i.e.*, the time of the 150th Meridian of East Longitude. This clock is also connected with an electric bell at Roma Street Telegraph Office, where the hourly signals can be received, so as to ensure correct time for Railway purposes.

The present Observatory building is very small and is unsuitable to the requirements of astronomical work, while the site combines every possible disadvantage. A better site, a more suitable building, and some new instruments, principally a transit circle and an astronomical clock, are urgently required.

**MODES OF SELECTION AND SURVEY.**—Crown lands are made available for occupation by settlers—either by sales at auction, or by a system of “selection” under certain conditions of residence, improvement, rental, or deferred payments, covering specified periods of time, at the expiration of which leases may determine or grants in fee-simple be issued, as the case may be.

The system of selection before survey, which was permitted under the Crown Lands Acts of the State in force prior to 1884, was found to be detrimental to the public interest. The early settlers were often able to obtain unfair advantage by securing water frontages and the most favourably situated areas of land. Confusion ensued in the matter of the location of roads, which were not always laid out systematically, or with due regard to engineering requirements.

Under "*The Crown Lands Act of 1884*" and "*The Land Act, 1897*," selection before survey was almost entirely abandoned, and the principle generally adopted—as far as may be found to be expedient—of surveying lands before opening to selection.

But as indiscriminate survey of lands would lead to a greatly increased expenditure, a system of "mapping out" lands for selection—on partial survey—is frequently substituted, the surveys being completed after selection.

**MAPPING OUT COUNTRY LANDS ON PARTIAL SURVEY.**—Prior to the opening of lands to selection as grazing farms under leasehold tenure, or as agricultural farms for subsequent alienation, Crown lands are inspected by surveyors, suitable roads—forming part of recognised road systems—are chosen and located by a preliminary traverse survey with theodolite, or, in the case of wide roads, on even country with compass.

Roads and reserves being provided for and plotted, the area is divided on the map into farms in such manner as appears to best conserve the public interest, locating boundaries on lines of country suitable for fencing, and preventing monopoly of the water supply or of other natural advantages.

The maps show the portion number of each farm, its area, the county and parish in which they are situated, the land agent's office at which, and the date when, they will be opened for selection, the upset price or the annual rental, the maximum area that may be selected as one farm, the survey fee, and, in the case of leasehold, the term of the lease.

The maps also show watercourses and other natural features, the position of improvements, if any, and a description of the soil, timber, and grass is written across each portion.

A local sketch on the map—drawn on a small scale—shows the relative positions of the farms with respect to the nearest town, railway station, or port. All possible information is gathered by surveyors, and is noted on the maps so as to afford the fullest information to intending selectors.

These maps are drawn on suitable scales, are critically examined in the Survey Office, and on approval by the Land Court are reduced by photography, lithographed, and are issued for free distribution as "Sketch Maps" to the public.

In cases where there is good evidence of lands being immediately selected, the surveys may be completed before the lands are opened to selection.

**SURVEY AND MAPS OF LAND FOR SALE BY AUCTION.**—Crown lands in town or country for sale—in fee-simple—by auction, are first surveyed and marked on the ground; in the case of town lands, in addition to the marking by posts, pegs, and trenches, rods of 1-inch iron, 1 foot or more in length, are located by the survey at the exact intersection of the centre lines of streets, and are sunk 18 inches below the surface of the soil.

Plans of auction lands are supplied by surveyors, drawn suitably for photographic reduction, and show all possible information as to locality, soil, grass, water, improvements, &c., the place and the date of sale. After examination, and on approval, the plans are suitably reduced, lithographed, and issued free to the public.

**SURVEY OF LAND, GENERAL DIRECTIONS.**—"The Rules and Directions for the Guidance of Surveyors" issued by the Survey Department, set forth the duties of surveyors, regulations as to equipment and camp, the conduct of surveys in relation to selections and reserves, town and suburban lands, roads through unoccupied lands, roads through leasehold and freehold lands, re-surveys, re-establishment of old boundaries, and real property work. Astronomical and geodetic observations, the marking of surveys on the ground, the manner in which field-notes are to be kept and plans are to be drawn, computations by double longitudes, correspondence, schedule of fees payable to licensed surveyors, &c., and the methods directed to be adopted, are further explained and illustrated by thirty-one appendices, which include specimen plans and field-book.

**ANGULAR MEASUREMENT.**—Angular measurements are made instrumentally, and all straight lines are run out with 6-inch or 5-inch transit theodolites constructed by the best makers and divided to 10 or to 20 seconds of arc. Excepting for the purpose of preliminary survey work, the magnetic needle has been discarded.

All angular work is checked by surveyors in the field by frequent—generally daily—reference to the true meridian, and in ordinary survey work the method of observation for astronomical azimuth found to be most convenient is that of solar observations taken in the morning or in the evening, and the average limit of error in observations by this method is estimated as being within 30 seconds of arc.

In a.m. observations the lower and the left-hand limbs of the sun are observed in exact contact with the horizontal and the left-hand diagonal crosswires respectively; the upper plate and the telescope are then reversed, and the upper and the right-hand limbs of the sun are observed in exact contact with the horizontal and with the right-hand diagonal crosswires respectively; the mean of the readings give the observed altitude and azimuth of the sun's centre, and the deduced arbitrary azimuth compared with the instrumental azimuth by survey,  $\pm$  the correction for convergence, gives the instrumental error of survey.

In p.m. observations the sun is first observed in the left-hand upper section of the crosswires, and after reversal of the plate and telescope in the right-hand lower section. The positions described are the apparent positions of the sun as seen through an astronomical or inverting eyepiece.

So that a complete observation of the sun may be made with the instrument in one position, some surveyors use a glass diaphragm or reticule on which—with the intersection of the crosswires as a centre—is described a circle which is a little less in diameter than the apparent diameter of the sun's image as seen in the telescope. This circle is adjusted on to the sun by means of the tangent screws of the instrument so as to be concentric with its image; the horizontal and vertical circles are read, and the observation repeated with the instrument reversed in position, and the mean of results adopted.

The exact positions of all observing stations are shown in the surveyor's field-notes and on his plans. Field-notes and calculations of all astronomical observations are forwarded to the head office and are checked in the computing branch.

**LINEAR MEASUREMENT.**—All linear measurements on survey work are required to be made with five-chain steel tapes, following the contour of the surface of the land, the angles of inclination from the horizontal being observed with theodolite or clinometer, the temperature and tension of the tape at each measurement being also noted; measurements are reduced to horizontal lengths, and further corrected for the expansion or contraction of the tape from standard length. The theodolite is used to read angles of inclination exceeding 8 degrees, as the clinometer cannot be relied on for the accurate measurement of greater angles.

A five-chain steel tape correctly adjusted to standard length is supplied free of cost to each surveyor working for the Survey Department, to be used solely as a standard of linear measurement with which to compare working steel tapes. Particulars are supplied with the tape of the tension and temperature at which it is of standard length. In the comparison and adjustment of the working steel bands with it, the given tensions are applied by means of a spring balance. When the standard tapes and the working tapes are of the same width and cross section, and the comparison is made direct, tape with tape, the effect of temperature on them is disregarded, it being assumed that they expand and contract equally.

The standard steel tapes supplied are in one unbroken length and are of steel one-eighth of an inch in width, and steel tape of this width is that most generally used by surveyors for working chains which are generally made with four chains in one unbroken length, the leading chain—which is marked to links—being detachable for convenience in measuring short distances. As steel tapes of this width are very elastic, a spring balance is used by surveyors in all measurements, and tensions are used which have been discovered by comparison will pull the working tape to standard length. Correction for change of temperature on working tapes is generally made on each measurement by means of scales attached to the tape at each chain's length. These scales are divided and arranged so that the correction may be made by inspection. These scales are divided on the assumption that a steel band expands or contracts 0.0000625 of its length for a change of temperature of 1° Fahrenheit.

The average limit of error in linear measurement in the ordinary work effected for the Department does not exceed one in eight thousand.

**SURVEYORS' PLANS.**—All plans supplied by surveyors of survey work effected for the Department, are required to be drawn in a bold and open style on mounted plan forms supplied by the Survey Department. Accepted plans are reproduced by either of several methods. If required without a reduction in scale and when only a few copies are required, tracings on linen are made and copied by the Ferro-gallic process, which gives a black line on a white ground. When the scale is to be reduced, the plans are photographed and copies made from the negatives by the Ferro-prussiate process; the negatives are also suitable for photo-lithography which is the process employed when a large number of copies is required.

The copies are used for various official purposes, and the originals are catalogued and stored in the strong room.

**MARKING OF SURVEYS.**—Surveys are marked by horseshoe marks cut into the heartwood on opposite sides of the trees standing nearest to the line, and by split hardwood pegs 18 inches long and 2 inches square driven 12 inches into the ground at distances along surveyed lines not exceeding 10 chains apart, and truly aligned with the theodolite. On each side of the split pegs, and distant about 1 foot, lockspits—or trenches—5 links in length, and 1 link in depth, are dug truly in the direction of the surveyed line.

Corners are marked by hardwood posts 3 feet 6 inches in length and not less than 4 inches square, sunk 2 feet into the ground; lockspits or trenches, 10 links in length and 9 inches in depth, are dug in the direction of the boundary lines.

The nearest suitable tree to a corner post is barked about 5 feet from the ground, and facing the post, in the form of a shield; on this barked space the broad arrow and the portion number are cut with a chisel deeply into the wood; the bearing and the horizontal distance to the post are observed and measured from a bench mark cut into the heartwood at the base of the tree and exactly facing the post. Bearings and distances from reference trees are recorded in field-notes and on plans.

The removal, obliteration, or defacement of trigonometrical stations, survey posts, pegs, or marks, is a misdemeanour under section 237 of "*The Land Act, 1897.*"

**TERRITORIAL DIVISION.**—The State is divided into 319 counties as nearly as possible equal in area, so that they may each be contained in the county maps which are published in uniform size.

The counties are again divided into parishes, each averaging about 216 square miles.

Portions of land alienated, leased, or reserved for public purposes, are officially numbered in each parish in numerical sequence.

**MAPS OF THE STATE.**—The largest map of the whole State is on a scale of 16 miles to an inch, and is published in ten sheets, the latest complete edition being that of 1894, but some of the sheets have since been revised and re-issued.

In 1900 a four-sheet map on a scale of 27 miles to an inch was issued for the use of schools, and from this, for various purposes, single-sheet maps have been produced by photo-lithography.

**FOUR-MILE MAPS.**—It having been at one time proposed to compile a new 16-mile map of the State in eight sheets, each of these sheets being intended to comprise four 8-mile sheets, and each of these again to comprise four 4-mile sheets, a commencement was made with the 4-mile sheets, and the polyconic was adopted as the most suitable projection, the central meridian being that of 145 degrees 30 minutes east longitude. Seventeen 4-mile sheets have been completed, but the proposal as regards the 8-mile sheets has been abandoned, and the preparation of the new 16-mile map is indefinitely postponed.

**COUNTY, PARISH, AND TOWN MAPS.**—For the most closely settled parts of the State a series of county, parish, and town maps is in course of preparation, and these will eventually supersede the 4-mile sheets. The object now held in view is to represent the State by county maps,

giving general information as to natural features, road systems, surveyed lands, &c. Parish maps showing more detail, and town maps showing yet more detail of town and suburban lands.

**COMPILATION.**—The principle adopted—as being the most economical—is to make accurate compilations on a large scale, and by pantagraphic and photographic reductions to produce maps on any reduced scale required; generally, maps are drawn on tracing linen on double the scale required, and are then reduced by photo-lithography: thus town plans are drawn on 4 chains to an inch, and are reduced and published on 8 chains to an inch. Similarly, parish maps are drawn on 20 chains to an inch and published on 40 chains, and county maps are drawn on 80 chains to an inch and published on 2 miles to an inch.

**PARISH MAPS.**—A skeleton county map is first prepared by accurately laying down—on the projection for the county—long base lines connecting astronomical or geodetic stations or other fixed points. Maps of the parishes in the county are then carefully compiled on the arbitrary meridian for the county, and in exact relation to the long base lines, the meridians of old surveys being reduced to the arbitrary meridian. The position of any astronomical or geodetic station, and the intersection of a convenient parallel of latitude with a meridian of longitude, are shown on each parish map, and the distance of this point of intersection due east or west from the true initial meridian, the amount to be allowed for convergence, and the angular difference at that point between the true meridian and a line parallel to the arbitrary meridian, are also shown.

**COUNTY MAPS.**—A polyconic projection to every fifteen minutes of latitude and longitude is prepared for each county map, and so that errors of projection may be reduced to a minimum, a separate central meridian is adopted for each county. When maps of all the parishes in a county have been compiled they are reduced by pantagraph to the one-mile scale, and are fitted by the projection into the county map. The positions of any astronomical or geodetic stations within or adjacent to the county are shown, together with the initial point of the arbitrary meridian, and the angular difference between the arbitrary and the initial true meridians.

It may be noted that practical tests have proved that, with proper precautions, maps and plans can be exactly reproduced by photo-lithography to any required scale without distortion, and without other error than is liable to occur by the contraction or expansion of the drawing-paper in dry or in humid weather.

**REAL PROPERTY AND MINING SURVEYS.**—The subdivisional surveys of freehold lands for transfer under the Real Property Acts are—without reference to the Survey Department—carried out by licensed surveyors under instructions from proprietors, plans being deposited with the Registrar of Titles.

And in the goldfields and mining districts (in area fully one-tenth of the State) surface surveys, whether for mining, leasehold, residence areas, on town lands are—also without reference to the Survey Department—marked out by surveyors instructed by the Department of Mines.

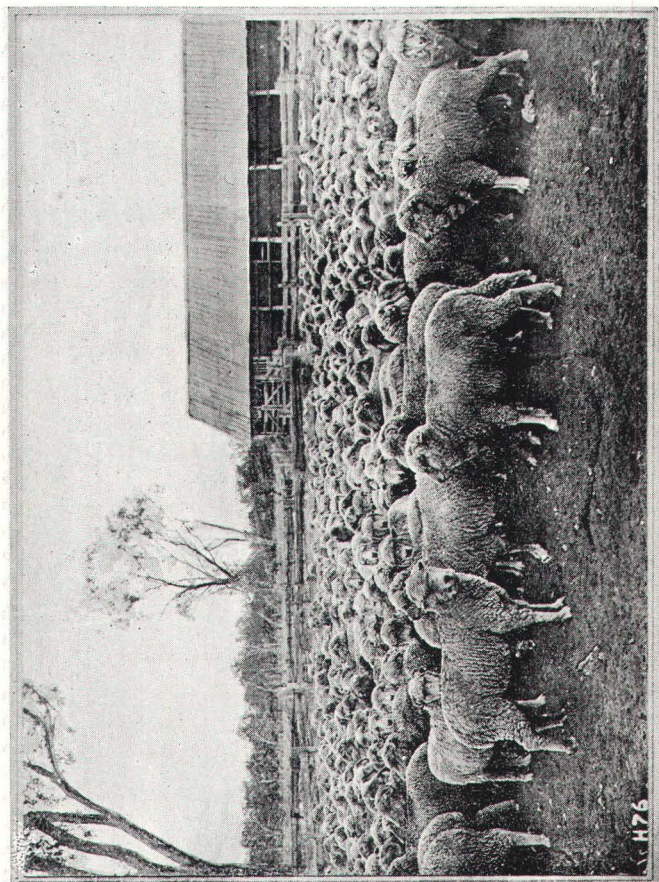
In neither instance is there any supervision or inspection of such surveys on the ground, and the consequent want of uniformity in survey work is detrimental to the public interest.

It is the opinion of the best authorities on surveying that all surface surveys, except those required for engineering and kindred purposes, should be under competent supervision, made under the same system and controlled by one department. It would be a matter for congratulation if the whole conditions governing survey in the State received the attention of the Legislature with a view to co-ordinating the existing systems of surface surveys to a uniform standard, under the direction of the Survey Department.

THE INSTITUTE OF SURVEYORS.—The recently-formed Queensland Institute of Surveyors, Incorporated, aims to represent the views of surveyors on all matters affecting the profession, to encourage the study of and improvements in surveying, to secure uniformity of practice, and to preserve the integrity and status of the profession.

Papers of practical value are read at its meetings, and are printed and circulated among its members.

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PASTORAL INDUSTRY.—SHEEP AT YARDS.

## Part IX.

# PASTORAL AND AGRICULTURAL.

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## LIVE-STOCK OF QUEENSLAND.

[Contributed by P. R. GORDON, Chief Inspector of Stock.]

The early history of the live-stock of Queensland must, necessarily, be that of New South Wales, since up to 1859 Queensland was an integral part of the parent State.

### SHEEP.

As the products of our flocks form the largest item in our exports, the sheep stock of the State merit first place in this short review.

By far the larger proportion of sheep in the State are of the Merino breed, the proportion of Merinos to coarse-woolled and cross-breeds being about 96 per cent.

A few facts concerning the origin of the Australian merinos, although they have been previously told, will be of interest to many of the younger generation of sheep-breeders.

The first introduction of Merino sheep into Australia was due to an accidental circumstance. Some sheep of the Escorial or Royal Cabaña (flock) were presented by the King of Spain to the Dutch Government, and went into possession of a Colonel Gordon at the Cape of Good Hope. Colonel Gordon shot himself, and his sheep were sold by his widow.

At that time, two English warships—the “Reliance” and “Supply”—arrived at the Cape for supplies. Captain Waterhouse, of the “Reliance,” purchased 29 of the sheep and placed them on board the vessels for Sydney. Some died on the voyage, and the remainder were landed at Sydney in 1797—just 104 years ago. Captain Macarthur offered £15 a head for the lot, but Captain Waterhouse refused to sell them all to one person, and distributed them. Some of them were purchased by Mr. Cox—a name that has since become famous in connection with the fine wools of Mudgee. Captain Macarthur secured three rams and five ewes, and he was the only one who had the foresight and sagacity to appreciate the importance of Merino breeding to the colony. Those purchased by other buyers disappeared from the scene, and therefore—next to Captain Waterhouse, the actual importer—Captain Macarthur is justly entitled to the honour of establishing Merino breeding in Australia.

It is interesting and instructive at this distance of time to glance at the reasons that induced Captain Macarthur to place so much faith in Merino breeding. There was a Government flock of coarse woolled sheep, obtained from Bengal and the Cape, kept for the use of the Settlement, and it was from observing the improvement in the wool of those, the effect of climate, that induced Captain Macarthur to speculate on the advantages that would accrue to the State by the adoption of fine-woolled sheep.

In 1802 Captain Macarthur went to England, and before returning to the colony, in 1805, he purchased at the annual sale of the flock of George III. at Kew, ten rams and ewes.

These were of pure Spanish descent, from sheep presented to the British Monarch by the King of Spain, and were of the Negretti flock, which was considered more robust, and the wool not quite so fine as the Escorial flock. Just before the sheep were shipped an old Act of Parliament was unearthed, which prohibited the exportation of Merinos under a penalty of cutting off the right hand and branding on the forehead; but, like many Acts still on the statute-book, this one was more honoured in the breach than in the observance. With these sheep, together with the few received from the Cape, was founded the great Merino wool industry of Australasia.

In 1823 there were several importations of fine-woolled Saxon Merinos, and in 1825 the Australian Agricultural Company imported the first of the Rambouillet sheep from the French Imperial flock.

But the importation that will always be of greatest interest to Queensland sheep breeders arrived in Sydney in 1829, for the late Mr. J. Brindley Bettington, of Brindley Park, on the Upper Hunter. These were a large consignment of Saxon merinos brought out in charge of the late Frederic Bracker, subsequently and for many years favourably known throughout Australia, in connection with his Warroo flock, as a most skilful breeder. In the early forties Mr. Bracker came overland to Darling Downs in charge of a number of sheep from the Brindley Park flock, to establish a flock for the North British Australasian Investment Company, at Rosenthal, near Warwick, and one of the offshoots of that flock was the Glengallan flock, established by the late Mr. John Deuchar, and now so widely known as the property of Messrs. Marshall and Slade, and under the able management of Mr. W. B. Slade, the resident partner. This flock was subsequently improved by the importation of some fine sheep from the flocks of Baron Von Maltzahn, in Mecklenburg. Mr. Bracker's flock was established on the same blood, but improved by frequent importations of German and Silesian Merinos, and it may safely be said that there is not a flock of sheep in Queensland that does not to a greater or less extent claim descent from these two flocks.

Up to and during the sixties large numbers of German Merinos were imported direct from Hamburg and by way of England, but it was not until 1864 that records were kept in the Stock Department, of the numbers so imported. The number imported from 1864 to 1871 was 540. The last importation of German Merinos was in the last-named year, when the late Mr Donald Gunn, of Pikedale, imported seventeen pure German Negrettis of a purely clothing type of wool, and notwithstanding that the type had sunk into popular disfavour in Queensland, the wool from the progeny of those sheep exceeded in price per lb. and value per sheep any other clip in the State. Unfortunately, through the many changes in ownership of sheep properties, the identity of these sheep has now been lost.

The success of Messrs. Learmonth, of Victoria, and Messrs. Murray and Fisher, of South Australia, in establishing a purely Australian type of Merino, induced breeders all over the Australian continent to follow their example, and thenceforth the flocks of the

Southern States and Tasmania (principally the latter) were largely drawn upon by Queensland breeders in the improvement of their flocks.

The foundation of the Tasmanian flocks had been laid on the pure Saxon Merino type, and they have been maintained on that variety of the Merino family ever since. That type came to be generally adopted in Queensland until about twenty years ago, when sheep-breeders in the north-western districts found the stronger combing description of wool that had arisen into prominence on the Riverina pastures well adapted to the Western plains. The effect of the fierce sun, with little shade, and the dry climate of the Western plains has a tendency to decrease the supply of yolk, and on the introduction of the American Vermont Merinos, which have a wealth of yolk far in excess of the acclimatised Merino, that type has been largely introduced into many of the flocks. There are still, however, on the Darling Downs and throughout the State many flocks into which the Vermont element has not yet entered, and as opinions are still divided on the subject it may be said that the Vermont type is still on its trial in Queensland.

For many years brook washing was almost universally adopted throughout Australia, and later hot water and spout washing was generally practised. Now, however, both brook and spout washing has been entirely abandoned. It has been found more profitable to sell in the grease, except on runs far removed from the coast, where the grease and dirt forms an important item in the cost of carriage, and such clips are usually scoured. There are excellent facilities for scouring at the termini, and at several of the side stations on the various lines of railway.

As above stated, only about 4 per cent. of the sheep in Queensland are of coarse woollen description, and these consist of only a comparatively few pure of their respective breeds, the remainder being mostly crosses between the Lincoln and Merino. These give a very lustrous staple of great length, and a good mutton sheep ranging from 60 to 90 lb. weight.

The history of cross breeding in sheep in Queensland dates back to 1869. In that year the late Mr. F. J. C. Wildash, then of Canning Downs, introduced a pure English Leicester ram into a small flock of Merino ewes. The success of this cross was so marked that in 1870 and 1871 he and the late Mr. George H. Davenport, of Headington Hill, introduced a number of Leicesters into their flocks. In the following year the late Sir Joshua P. Bell, of Jimbour, introduced a number of superior Leicesters—rams and ewes—from England and New Zealand. In consequence, however, of the favourable reports from the other colonies on the Lincoln-Merino cross for certain fabrics, the Leicester cross was gradually abandoned, and the Lincoln is now almost solely used for crossing purposes. At various times Southdown, Shropshire, Cotswold, Romney Marsh, and Border Leicesters have been tried, but the consensus of opinion would appear to be in favour of the Lincoln.

In none of the other States are the sheep so free from disease as in Queensland. No scab has existed since 1864, and then only in one or two flocks. Fluke is all but unknown in the State, and malignant footrot, which existed in a very few flocks on Darling Downs, was

stamped out in 1870, and was one of the first diseases with which I had to deal on assuming office in 1868.

Intestinal worms in weaners were troublesome at one period; and were conterminous with the marsupial pest, the marsupials being to a large extent a means of the dissemination of the parasites; but of late years comparatively little trouble has been experienced from that cause.

At the time of separation from New South Wales, 1859, the number of sheep in Queensland was 3,166,802. This number, with several checks from periods of drought, increased to 21,700,000 in 1892; when, in consequence of several intervals of severe drought, it decreased to 19,000,000 prior to the commencement of the present unprecedentedly severe drought; the effects of which are to be seen in the returns as at 1st January last, when they numbered 10,339,185.

#### CATTLE.

Queensland started its career in 1860 with a total of 432,890 cattle. The increase was rapid until 1894, when thirty-four years after separation the number had increased to 7,012,997. From that date, partly in consequence of periods of drought, partly from the visitation of ticks in the coastal districts and from the large numbers of cattle operated upon at the various meat exporting and boiling establishments, the numbers decreased until at the end of 1899 the number stood at a little over 5,000,000. The numbers returned for 1900 were 4,078,191.

No correct estimate can be made of the number at present in the State until the state of the country permits of a muster being made in the west.

As with sheep, the nuclei of our herds were derived from New South Wales. The first English cattle introduced into the parent State—independently of the few imported from India and the Cape for the use of the penal establishment—were of what was then known as the Durham breed; a name still largely applied in many parts of Australia to the improved breed now universally known as Shorthorns. These have been greatly improved by frequent importations of stud cattle from Great Britain, but latterly, and principally, from the stud herds of the other States and New Zealand.

In the large station herds stud cattle-breeding is not followed to any great extent, as the owners depend for their stud stock on selections from the herds of those who make a speciality of breeding pedigree stock.

The late Mr. David C. McConnel, of Cressbrook, was justly regarded as the first and greatest improver of the Shorthorn in Queensland. For many years he imported, at short intervals, Shorthorn cattle from the best herds in Great Britain. He established an extensive herd which has since been dispersed.

One of the principal pure Shorthorn herds in Queensland, and now one of the largest pedigree herds on the Australian continent, is that of Glengallan, near Warwick, the property of Messrs. Marshall and Slade. The herd was established by the late Mr. John Deuchar, on importations from English and Scotch herds; but for nearly thirty years it has been under the personal management of Mr. W. B. Slade, the resident partner.



PASTORAL INDUSTRY.—HERD OF HEREFORDS.

Messrs. Bracker, of Warroo, on Darling Downs, are also extensive breeders of pure Shorthorn stock.

Until the occurrence of the protracted drought of the last few years there was an extensive and high-class pedigree Shorthorn herd on the Monkira Station, as far west as the 140th meridian. Mr. T. de M. Murray-Prior has a pure stud Shorthorn herd on Maroon, in the Moreton district, and a branch of high-grade cattle—about 1,000 head—on Bulliwallah Station, in the Kennedy district. Into this herd was introduced some years ago the blood of the now celebrated Scotch Cruikshank type of Shorthorns.

The Shorthorn breed comprises about 80 per cent. of the cattle in Queensland.

#### HEREFORDS.

This fine beef breed comprises about 15 per cent. of the cattle in the State, but of these by far the larger proportion are "grade" cattle—that is, cattle that have been bred up on the Hereford type by successive employment of pure Hereford sires on Shorthorn foundation.

The first Hereford cattle introduced into New South Wales were said to have been imported from the Van Dieman Land Company's Circular Head herd in Tasmania, and the first, or one of the first, to adopt that breed, was Mr. Hobbler, on the Hunter River, near Maitland.

It is the opinion of many practical men that the Herefords are of a more hardy constitution than the Shorthorn, and on that account better adapted to the high lands and ranker vegetation of the coast watershed.

One of the largest pure Hereford herds in Queensland is that of the Durundur Estates Company on the head of the Stanley River. The herd, including calves, numbers over 1,100 head. The Hon. William Allan\* owns a large and very valuable pedigree Hereford herd on his Braeside Estate on the Warwick-Wallangarra line of railway. This herd comprises over 950 cattle of pure pedigree. Messrs. Archer, of Gracemere, near Rockhampton, are also owners of a large pure herd, into which has, at various times, been introduced stud animals from the leading English herds. Among the most notable of the large Hereford herds, which have been graded up on Shorthorn foundation, are the Lammermoor, the property of Mr. R. Christison, and the Lyndhurst herd in Cook District, the property of Barnes Executors.

#### DEVONS.

In 1832 or 1833, Mr. Dickson, of Camden, imported some cows and bulls of this breed, and later the Australian Agricultural Company also imported cattle of the breed; but the influence of those soon became obscured in the Shorthorn herds.

The late Mr. Reynolds of Tocal, on the Paterson River, himself a Devonshire man, was a persistent breeder of Devons; and it was he who first brought them into general notice at the second show of the Agricultural Society of New South Wales (now the Royal Agricultural Society) in 1870. Messrs. White, of the Hunter, then took the breed in hand, and for several years there were large annual importations from England. Notwithstanding that the Devon cross on Shorthorn admittedly produces the finest of meat and carcasses admirably suited

\* Since deceased.

as freezers, the Devon has not made the headway in Queensland that was predicted for it. There would appear to be a general opinion that the size of the Devon militates against its adoption; but the cross on Shorthorn produces a carcass of from 700 to 750 lb. of most excellent meat, and the Devon has the reputation of being hardy and a thrifty feeder.

#### ABERDEEN-ANGUS.

The late Mr. William Hogarth, of Balgownie, was the first to introduce this breed into Queensland, by the purchase of a portion of the herd imported by the late Mr. John George Dougherty from the herd of Mr. McCombie, of Tillyfour, and brought to Victoria in charge of the late Mr. J. L. Thompson, afterwards Principal of the Dookie and Richmond Agricultural Colleges. The herd was added to and improved by importations from Scotland and New Zealand. For a time there was a prejudice against the black colour; and it to a certain extent still exists in some quarters, but there can be no doubt that they are excellent beef producers, and their cross on the Shorthorn is preferred by the butcher to any other breed or variety.

#### DAIRY BREEDS.

The principal dairy breeds of cattle in Queensland are the Ayrshire, the Jersey, with a few specimens of Guernsey, Holstein, and South Coast breeds. Of late, special attention has been given to the dairy type of Shorthorn, which is rapidly coming to the front in the Southern States.

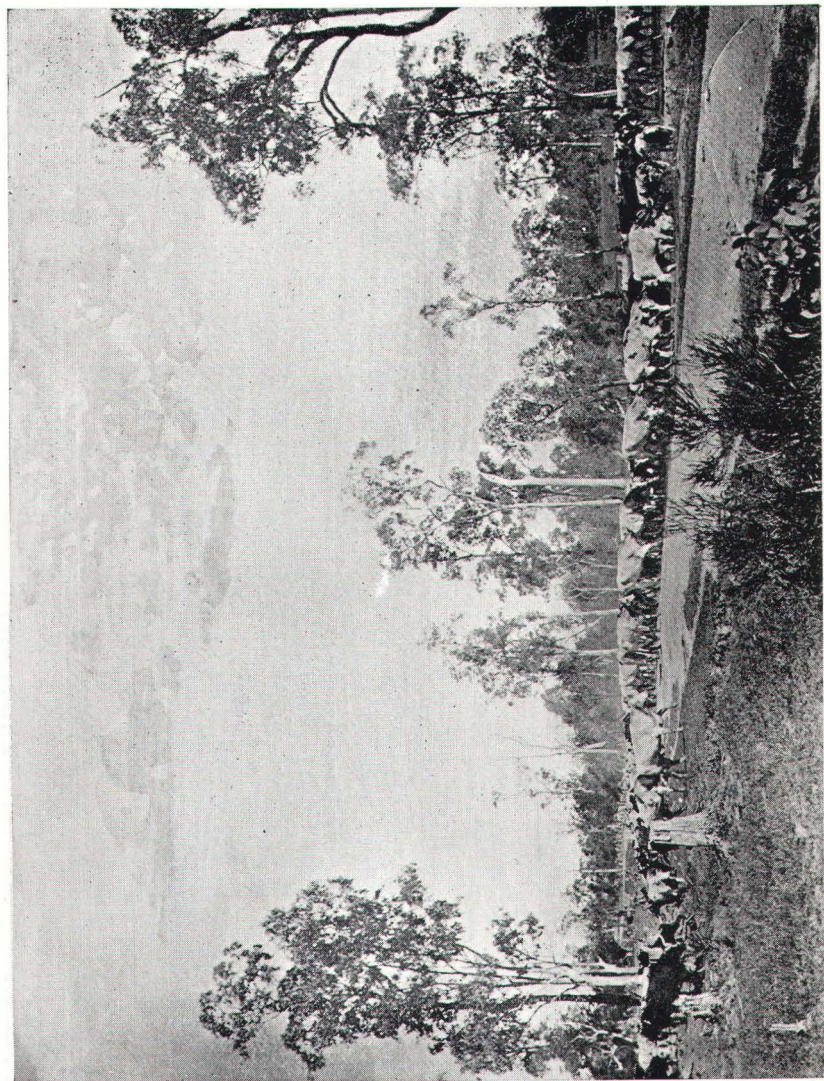
#### AYRSHIRES.

At the show of the National Agricultural and Industrial Association, at Bowen Park, in 1880, there was a solitary exhibit of an Ayrshire cow from Victoria, consigned to Messrs. Fenwick and Co., and sold by that firm to the late Mr. A. A. Brown, of Barolin. The little cow afforded some amusement to country visitors, who generally voted her "a scrubber." Ten years later the Ayrshires formed the principal feature at the same society's show. Great care has been bestowed on this breed, and numbers are now to be seen in all districts in which dairy farming is followed. Fine herds of the breed have been established on St. Helena Island and at the Agricultural College, Gatton. The cross of the Ayrshire bull on Shorthorn cows of good milking strains produces an excellent dairy cow for our natural pastures, and is generally preferred to the pure breed.

#### JERSEYS.

This neat little breed of dairy stock came rapidly into prominence some years ago, and has maintained its popularity up to the present.

Wherever centres of dairy farming have been established, some cattle of the Jersey breed are to be found in the neighbourhood. Although not so heavy milkers as the Ayrshire or Dairy Shorthorn, the richness of their milk in butterfat compensates for their smaller milk yield. As a pure breed they are most valuable in a dairy in imparting natural colouring to the butter. Crossing the Jersey with other distinct breeds has not been a success.



PASTORAL INDUSTRY.—FAT CATTLE FOR MARKET.

## THE SOUTH COAST OR DAIRY SHORTHORN.

All things considered, this is the type of dairy cow that would appear to answer the requirements of Queensland in preference to any other breed. The South Coast cattle have been developed by the rational process of selection, carefully excluding from the herd all cows whose record at the pail does not reach a certain fixed standard, and all males whose dams have not come up to that standard.

## HORSES.

The number of horses in Queensland at date of separation from New South Wales was 23,504. The number at the close of 1899 was 479,127. The number at the end of 1900 was 456,788.

The proportions of the various descriptions are approximately: Thoroughbred, 2 per cent.; saddle, 56 per cent.; light harness, 38 per cent.; heavy draught, 4 per cent. The foundation of the horse stock of Australia was laid on importations from the Cape of Good Hope and some excellent Arabs from India. Many of the best saddle horses of the present day trace back in direct lineage to those early Arabs. Australia was also exceedingly fortunate in the class of thoroughbreds imported in the early days.

The elastic nature of our atmosphere and the heavy seeding grasses, such as the *Anthisteria* and *Andropogon*, then growing in luxuriance, were largely responsible for rendering our saddle horses the most hardy to be found in any country. On the discovery of gold in 1851, an unprecedented demand set in for draught stock, and, unfortunately, much of the care that had been expended by the pioneers in building up such a valuable description of saddle horse was suddenly undone by the introduction of heavy draught sires on the light stock, producing a nondescript animal that has taken and will take years of care and anxiety to eliminate.

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 AGRICULTURE.

[Contributed by P. McLEAN, Agricultural Adviser.]

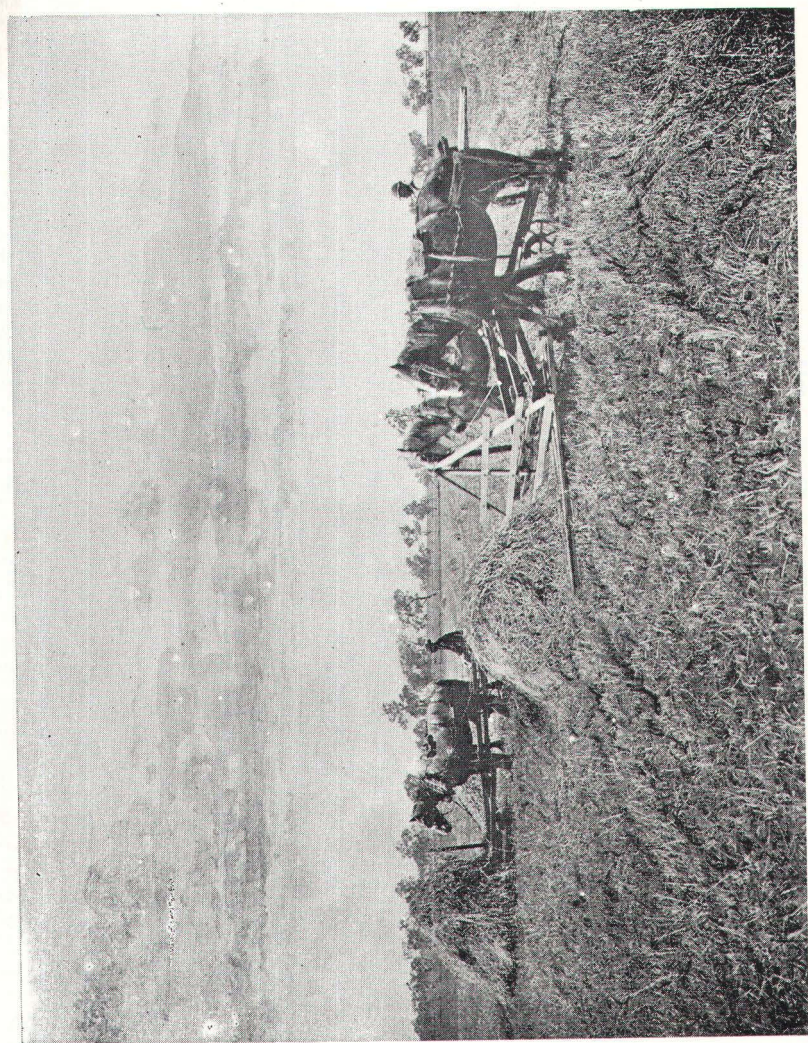
Agriculture was probably the first art or occupation that engaged the attention of man. To live man must eat, and to eat he must produce, for although in certain countries Nature has been most bountiful in her supplies of nuts, fruits, roots, and cereals, still the world's demands for food must be met, and that can only be accomplished by what may be termed artificial means of cultivation.

The oldest records extant to-day make reference to the production of corn and wine. The paintings and inscriptions on Egyptian tombs give a clear insight into the state of agriculture among that remarkable race thousands of years ago, but it would be most interesting could we learn from those paintings and inscriptions more fully the mode of operations carried on by that ancient people. While we learn that the Israelites were largely a pastoral people engaged in some sort of husbandry, still it was their sojourn in Egypt that trained them for the more purely agricultural life awaiting them when they passed into the land of Canaan.

Agriculture has been defined as the art of treating the soil in such a manner as to make it produce in the greatest abundance and perfection those products which are useful to man and the animals depending on him for subsistence, and yet, of all the arts or professions followed by man, agriculture is generally looked upon as the one that requires least training or knowledge. This false idea has unfortunately arisen from so many people entering upon the industry in new countries, while entirely destitute of the most elementary knowledge or skill in dealing with the great problems requiring solution. Fortunately for those people with no knowledge or experience, virgin soil under anything like fair treatment yields a liberal response for a short time and affords an opportunity to the man willing to learn to gradually feel his way to that state of educational acquirement so essential to ultimate success.

In the earlier stages of farming in this State what may be characterised as random farming was largely carried on. With a virgin soil to operate upon, Nature responded so readily to the most rudimentary forms of cultivation that a maximum of muscle and a minimum of brain were brought into requisition. The industry was a sort of speculative business carried on with a constant endeavour to overreach the soil. Large areas of the land consisted of rich alluvial scrub, volcanic ridges, and rich loamy black-soil plains. The tillage was of the rudest description. In fact, on the scrub lands anything like a proper system of tillage was impossible owing to the presence of the stumps of the trees remaining in the ground until either grubbed or burned out, so that for some years the hoe was the only tool that could be used. On such land the saying that if the land was only tickled with a hoe it would smile a harvest was literally borne out. On the heavier black-soil plains, owing to a desire to compass a large area the land in most cases was only scratched with the plough, sometimes hurriedly harrowed, and just as often not harrowed at all, but seeded straight off the plough. As a consequence the results were in many cases most disastrous, as the treatment was not adequate to either the necessities of the soil or the climate.

Agriculture has been, and doubtless will continue to be, progressive in character. This is manifestly the case in new countries, and this State is beginning to take its place among other countries where progress and development have wrought marvels in the interests of those engaged in the industry. Progress and development are brought about by the introduction of labour-saving machinery, skill in manipulation, and careful management. Muscular effort has largely given place to mental operations: in other words, more brain and less muscle has been put to the soil. The single furrowed plough has been replaced by the three, four, and in some cases six and seven furrowed implement. The home-made wooden harrow has given way before the latest improved spring-toothed one. The sickle and scythe no longer cause heartache and backache in the harvest field, as the whir and click of the reaper and binder are heard in all our grain-growing districts from morning till night, and sometimes, when the moon is favourable, during the whole twenty-four hours. The tiresome and painful operation of stripping the maize from the cob with the forefinger and thumb, or the more easy and speedy operation of placing the cobs in a sack and threshing out with a stick, has practically passed into the



FARMING INDUSTRY.—RAKING HAY.

traditions of ancient history, as it is a small farmer who does not possess a cornsheller, and even that useful machine is bound to disappear before the steam husker, shredder, and sheller.

The bark humpy has been replaced by the neat commodious framed house, so that physical and domestic comforts are enjoyed. The establishment of schools of arts in our country towns has opened a means and afforded opportunities for mental culture which I have reason to know are largely availed of.

The present advanced stage of agriculture in this and other lands is largely due to the institution of agricultural societies, State Departments of Agriculture, agricultural colleges, and experimental stations or farms. The agricultural societies in older lands than this were the means of collecting a vast quantity of valuable statistical and general information connected with the industry, and by the holding of annual shows and the publication of periodical reports were productive of great benefit to the agriculturist. Local societies led to the establishment of national associations. These, again, by their enlarged revenue, larger sphere of operations, wider sources of information, and by the practice adopted of holding periodical meetings for the discussion of important questions by means of essays prepared by carefully selected writers, did good service in the cause of agricultural progress.

Subsequently the large field was occupied by the establishment of National or State Departments of Agriculture, and it is noteworthy that these Departments were established in newer countries like America and Australia before conservative Britain saw fit to come to the aid of the struggling farmers by the inauguration of a National Department.

In Britain much had been done by such men as Mr. Michie, who spent a fortune in agricultural experiments, and the world is all the richer to-day by the experiments carried out by Sir J. B. Lawes, Bart., L.L.D., F.R.S., F.O.S., &c., and Professor J. H. Gilbert, L.L.D., F.R.S., P.C.S., &c., at Rothamsted, Herts, England, published in their valuable memoirs, and given to the world for the instruction and guidance of those who are prepared to receive instruction from such faithfully carried out work. Nor must we forget the work done by different Government Departments on the continent of Europe, where money is freely and wisely spent in promoting what the people there recognise as the first and most important industry in a nation's progress and well-being.

It may safely be said that the public welfare and all other industries of a nation depend upon the prosperity of agriculture. Hence the wisdom of establishing a State Department for the purpose of carrying out experimental work that it is almost impossible for a private individual even to enter upon. Apart altogether from the monetary aspect of the question, which is a very essential one, other considerations come into operation that are possessed by comparatively few engaged in agricultural pursuits. No other occupation requires such intimate acquaintance with the many and mysterious laws of Nature, or is so dependent upon the practical application of the latest and best research in every branch of natural science, as while the value of natural science, as applied to agriculture, is generally admitted, the individual farmer will never be able to accomplish much to solve the many problems met with at every turn. In addition to all recorded

experiments of the past, new experiments to determine truths of practical value are constantly needed. It is true some individual farmers have conducted experiments so carefully and persistently as to reach conclusions of a practical value. The work remaining to be done, however, is greater and more important than all that has been accomplished and requires time and means which cannot possibly be supplied by farmers themselves, singly or collectively. However creditable the results of private efforts in agricultural experiments, such labours are usually found unconnected and fragmentary, and only useful for local application. Experimental work to be of public service must be carried on during a term of years, and, as a correct plan of operations must be laid down at the beginning and carried out with absolute accuracy, such work can only be scientifically conducted by well-trained men. Hence the necessity for the establishment of Agricultural Colleges and Experiment Farms.

Towards the end of 1887 and during the administration of the Lands Department by Hon. C. B. Dutton, M.L.A., a Department of Agriculture was instituted in this State. The constant aim and effort of that Department has been to inaugurate and encourage the introduction of labour-saving machinery, new and improved methods in cultivation and manipulation of crops, the introduction of new seeds and plants, the inaugurating of Annual Conferences, which have been largely successful in extending the benefits of scientific and enlightened inquiry among agriculturist, pastoralist, and horticulturist.

These conferences have widened the knowledge of our farmers as to the various phases of the industry as carried on in different parts of this vast State, and have induced habits of thought which have led to practical experiments with soil, climate, and products, which are always necessary to prove the value or worthlessness of new theories in agriculture as applied under special conditions.

With a view to affording the youths of the State an opportunity of receiving a thorough training in practical and theoretical agriculture, and further to afford those already engaged in agricultural pursuits object lessons that would be of great value in their every day operations, an Agricultural College has been established near Gatton, in a purely agricultural district. The College lands embrace an area of 1,692 acres, combining river flats of rich alluvial deposit, ridges of inferior quality, yet all eminently suitable for experimental work. Several hundred acres are suitable for irrigation purposes, and with a plentiful supply of water in the Lockyer River, which borders the farm on one side, work on these lines can easily be carried out; the whole forming a property which cannot be surpassed in facilities for imparting a thorough training in agricultural pursuits.

The buildings are all constructed on the most modern plan, lighted by the electric light, and every attention has been given to the hygienic aspect of such an institution devoted to the training of young men. Accommodation is provided for fifty-six students. Three bursaries are available from our State schools, by which students receive a full course of two years' instruction free of charge. Paying students are charged £25 per annum, including board, washing, and tuition.

Experiment farms have been established in different parts of the State, principally for experiment purposes, and the work carried on at



CARTING WHEAT ON THE DARLING DOWNS.

these farms has already had an undoubtedly beneficial effect in their immediate vicinity, and those who visit such institutions.

It has been truly said that agriculture constitutes the chief source of a nation's greatness; and without doubt no country has ever, or can ever become great, that neglects the development of her agricultural resources. Such being the case, Queensland has within her boundaries all the elements that go to make the formation and building up of a great nation. As a country for the development of agriculture this State occupies a unique position—situated within the latitude  $10^{\circ}$  to  $28^{\circ}$  south, and longitude  $138^{\circ}$  to  $154^{\circ}$ , and an altitude up to 3,000 feet above sea line, with a vast area of soil of the very greatest productive capabilities, and a climate favourable to the production of all kinds of fruits, roots, cereals, and vegetables.

Along what is called the coastal district all classes of tropical product, such as sugar-cane, coffee, tea, cocoa, ginger, cassava, cardamons, pepper, vanilla, yams, &c.; of fruits the banana, orange, lime, lemon, pineapple, mangoes, persimmons, granadilla, papaw, passion fruit, &c., and in the same area, maize, potatoes, rice, cotton, millet, sweet potatoes, pumpkin, and all kinds of vegetables, are raised, while one of the most delicious fruits, the Cape gooseberry, is indigenous to the soil. On the higher tablelands these latter will be found side by side with the wheat, oats, rye, barley, &c., while the fruits of the temperate climes, such as the grape vine, apples, pear, plum, peaches, cherries, strawberries, &c., grow to perfection.

For the pursuit of dairying few countries are better adapted than this State, and few, if any, have made such rapid advances in development. In the early history of the State, though dairying was not a neglected industry, the haphazard manner in which operations were carried on, and the want of knowledge displayed as to the proper methods to be followed, resulted in those engaged in the industry being unable to meet local requirements for butter, cheese, bacon, &c. And the articles produced were so inferior in quality that a strong prejudice existed against the locally produced article. Happily that state of affairs has passed away, and Queensland can now not only supply all her local requirements in these articles, but such is the abundance of production and excellence of quality, that she has entered into competition in the world's markets outside her own border.

To show the advance that has been made I will just allude to one or two articles, such as butter and cheese. In 1889 there was imported into this State 1,297,411 lb. of butter and 1,258,522 lb. of cheese. In the short space of twelve years not only were the quantities produced locally, but during the year 1900 there was exported to markets outside the State 600 tons of butter.

A large quantity of cheese would also doubtless have been produced for export had the facilities for shipment been such as to offer inducement to our factory owners.

I am aware that statistics are generally regarded as what is termed dry reading, and I have no intention of inflicting upon the readers of this article a mass of statistics, still I think it only right to give a comparison in figures as between ten years of, say, wheat to show the progress made during the last ten years of our agricultural life.

While the general principles of agriculture are applicable to all countries, different climatic conditions require the adoption of different

systems of operation—as, for instance, the climatic condition of this State is more favourable to the development of rust in wheat than what prevails in colder lands. Hence the necessity for adopting methods by which that dread enemy to the wheatgrowers may be combated. And this has been accomplished by breeding wheat so as to secure to the plant a constitution that will enable it to resist the attacks of this insidious enemy. This is accomplished by what is called cross fertilisation, and as wheat seed secured by this process is now largely grown by our farmers, rust is no longer looked upon with any degree of dread. As an evidence of the success that has attended this system we have only to contrast the area some ten years ago and affected by rust with the area sown last year and affected by the farmers' enemy.

During the year 1891 the total area seeded to wheat was 18,735 acres, and the area affected with rust was 1,545 acres. During the year 1900 the area seeded was 79,304 acres, only 77 of which suffered from the scourge.

A glance at the above figures shows also the general advance made in this one branch of agriculture. A further advance of from 12 to 15 per cent. will probably be the result of this year's planting.

But it is when we come to compare the average yields per acre of wheat in this State with that of other Australasian States and other countries of the world that the adaptability of Queensland in the production of this cereal is so manifest, as the following will prove:—

	Bushels.
United States of America, average yield per acre ...	12·29
Argentina .....	12·53
New South Wales (preliminary) ..	10·60
Victoria .....	8·84
Manitoba ... ..	8·90
Queensland ... ..	15·31

In all other branches of the farming industry corresponding advances have been made.

**FRUITS.**—It is only of late years that much attention has been paid to the production of fruit, and while one naturally expects that a State like Queensland will produce and export large quantities of such fruit as bananas and pineapples, the climate being favourable to the growth of such plants, yet it is not generally known that such fruit as strawberries are produced in large quantities, and the southern markets of Sydney and Melbourne supplied with this most luscious of temperate clime delicacies. The season being much earlier in this than in the southern States, and the soil of certain parts of the State eminently suited to the growth of the strawberry plant, our fruitgrowers have not been slow to take advantage of soil and climates, and secure the early market in the south for their product. And it is generally known that an early market means the best prices.

A great deal could be written on agriculture in Queensland, the adaptability of the soil and climate for the growth of all economic plants, and the manipulation of these products into marketable commodities; but I think the above will indicate in a general way the considerable advances made in agriculture in this young State, and by a people sparsely settled over a very large area of country.



HARVESTING WHEAT WITH REAPER AND BINDER ON THE DARLING DOWNS.

## DAIRYING.

[Contributed by J. MAHON, Principal Agricultural College.]

This industry has made great progress during the past few years, and, indeed, it may be said with truth that no other industry in this State has made such rapid development. The importance of this branch of farming is making itself felt in all parts of the State, not only by those actually engaged in the business, but also by large landowners and business people in every centre. Indeed, it is freely admitted by all who have watched the growth of the dairying industry that the success of our farmers in all the leading centres is to be attributed to dairy farming combined with pig-raising. Maize-growing in most of the best agricultural districts has been superseded by dairy farming, and only a small area of land is now under cultivation, sufficient to raise green fodder for dairy stock, with small patches of maize for pig-feeding. It is noticeable, too, that many landowners who a few years ago produced only sufficient milk to supply their household demands are now large vendors of milk, and admit having found the business to be most remunerative. Another noticeable and important feature in connection with the business is the enormous increase in the value of lands in the near vicinity of a railway station or a dairy factory. The prices have advanced beyond the expectation of the most sanguine person. Lands that years ago were practically unutilised are now being successfully carried on as dairy farms. Dairy cattle have also reached high values of recent years: there is now an unlimited demand for this class of stock. The Agricultural College has done a good deal in this connection by showing the advantage of a good herd as compared with inferior stock, and also by the distribution, at reasonable prices, of pure-bred sires which have gone to many of the best dairying centres. High-priced cattle have also been imported from the Southern States, thus proving that efforts are being made to raise the standard of the dairy herds, and further, that the people are acquainted with all requirements necessary to bring the industry to a still greater issue. The Government, too, have done a great deal towards placing the industry on a sound basis. In the first place, instructors, fully equipped with modern ideas and appliances of the most approved pattern, were sent amongst the farmers in the various centres; and by this means the dairy farmers were shown what could be done by well conducted methods, and it is by this means of disseminating education that the industry has advanced to such large proportions. The Meat and Dairy Encouragement Act then became law, and has served its purpose well, so far as advances to co-operative companies and assistance to the export trade are concerned. The article manufactured and exported with assistance from this Act cannot be termed bounty-fed stuff, because the funds actually come out of the pockets of the cattle-owners themselves, and advanced judiciously by officers deputed to carry out the Act.

The following statistics show what rapid strides have been made during the last nine years:—In the year 1889, there were imported into Queensland 781,422 lb. of butter, valued at £35,041; also

1,274,310 lb. of cheese, valued at £31,853. There were exported from Queensland during the years 1899-1900—

Year.	Cheese.		Butter.	
	Quantity.	Value.	Quantity.	Value.
	Lb.	£	Lb.	£
1899 ... ..	11,358	250	1,159,255	49,517
1900 ... ..	30,814	604	1,389,250	51,729

The increase in the exports during the year 1900 was not great, owing to the severe dry season ; but, nevertheless, the drought served a purpose, being an object lesson to show the necessity of conserving fodder for times of need.

*Total Butter Manufactured.*

1899 ... 8,462,595 lb.                      1900 ... 8,680,389 lb.  
Increase in production, 217,794 lb.

**CHEESE MANUFACTURED.**

Year.	Manufacturers.	Milk Treated.	Cheese Produced.
		Gallons.	Lb.
1899 ... ..	221	1,911,214	1,910,300
1900 ... ..	115	1,940,672	1,984,705
Increase for 1900 ... ..	...	29,458	74,405

*Manufactories for Butter and Cheese.*

1898 ... 204 (butter only) ... Creameries 131  
1899 ... 256                      „ ... Creameries 438

From the above figures it may be seen that each year the business has been gaining a sounder footing, inasmuch as the old individual system is fast becoming a thing of the past, all the cheese and butter of the best quality being manufactured under the factory system, by skilful handling aided by the most up-to-date appliances.

It is a fact that Queensland possesses some of the best equipped factories to be found anywhere. No money has been spared in this connection. There is a good deal of private capital invested in the business, and also a large sum from the pockets of the producers who are sparing no efforts to bring about co-operation, and are being very successful in this endeavour.

The fact of the factory system being well established is fully borne out by the prices realised for dairy produce in the London market. The shipping facilities are much better than when the export trade was first begun. At that time the boats called every six weeks. This really did not ensure the quality of the article being equal to that shipped under a fortnightly service, as is the case with New South Wales and Victorian butter. This difficulty has been overcome by the Government arranging for a fortnightly service with Sydney,

where the butter is transhipped for London. This method of shipping has reduced the cost of cold storage in Brisbane, and also lessens the period which the article is kept before being consumed. All these facilities ensure the produce reaching the consumer in a better condition than hitherto. Taking the above facts into consideration, it may be safely said that all that can be done in connection with the manufacturing and marketing of Queensland dairy produce has been done, not only by the legislators of the State, but also by all interested in the welfare of the industry; and it now remains for the farmer and producer to put forward their best efforts to supply the raw material in such condition as will enable the manufacturers to turn out an article that will do credit to the State.

A very noticeable feature in connection with pastures in Queensland is that they have been considerably improved by being well-stocked and grazed down, thereby doing away with the rank growth that years ago was to be seen in many of our pasture lands. Although many of our indigenous grasses are suitable for the production of a large quantity of milk, our landowners are alive to the necessity of planting a portion of their land with permanent artificial grasses. The grasses most favoured at present are prairie and *Paspalum dilatatum*, both of which have been found excellent for the production of a large flow of milk. Green and conserved fodders are also receiving marked attention, and are to be found growing in the fields or stored by our progressive farmers who have fully realised the importance of this advanced method of dairying.

**DAIRY CATTLE.**—A great deal of attention has been given to the improvement of our dairy herds; a system of culling out the inferior animals, and replacing them with cows that pay for the amount of food they consume, is now the usual practice: by this means the average yield of milk per cow per annum has been increased by over 40 per cent. during the last six years. The above facts go to show that every branch of the industry is receiving careful consideration from those engaged in the business, and it must in consequence assume very large proportions in the near future.

The large increase in the manufacture of bacon and hams has been brought about by the development of the dairying industry. The extent to which these two branches of farming are likely to increase is incomprehensible. It has been freely admitted long ago that Queensland is well adapted for great expansion in dairying and pork-raising. The climate is congenial for the growth of almost every kind of fodder; the winter season is short and mild, thereby doing away with the housing of cattle, &c.

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## VITICULTURE.

[Contributed by E. H. RAINFORD, Instructor in Viticulture.]

### HISTORICAL.

The introduction into Queensland of the *Vitis vinifera* dates back about fifty years. It was in the early forties that young vines or cuttings were brought up from New South Wales and planted about Brisbane. At Enoggera and on the site of the present Convent were planted the earlier vineyards, and wine was made from them in the

early fifties or even before. The varieties introduced appear to have been well selected, as amongst them were the Black Hermitage, Pineau, Gouais or Burger, and Sweetwater. Prizes for three wines were taken by a Queensland exhibitor at the London Exhibition for 1862. It was at a later period, towards the end of the sixties, that a number of cuttings of American varieties such as the Isabella, Concord, Goethe, &c., were brought over from the United States by sailing ships which quickly ousted many of the European grapes by reason of their superior disease-resistant powers. The Isabella in particular found especial favour, and is now met with in all parts of the State. Ipswich was one of the first places in Queensland to cultivate vines to any extent, and from there this branch of the agricultural industry spread to Toowoomba and the intermediate districts. At the present time the area under vines round Ipswich has greatly decreased, only 15 acres having been under crop in 1900 as against 130 in 1884.

The earliest record of the area of land under various agricultural produce is in 1860, and that under vines was stated to be 40 acres; that for 1900, the latest statistics obtainable, being 2,019 acres. The following table shows the decennial increase in acreage, with the respective areas in the Brisbane, Toowoomba, Roma, Rockhampton, and Warwick districts:—

Year.	Total Area.	Brisbane.	Toowoomba.	Roma.	Rockhampton.	Warwick.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860	40	24	6	...	...	4
1870	416	174	90	5	15	42
1880	739	262	130	57	4	111
1890	1,981	354	189	537	12	172
1900	2,019	161	139	585	90	82

For 1900 South Brisbane figures for 128 acres, which, added to the above amount for Brisbane, gives a total area of 289 for Brisbane and suburbs. A perusal of the above table shows that in the districts of Brisbane, Toowoomba, and Warwick the viticultural area is decreasing, whereas in the districts of Roma and Rockhampton it is increasing. The acreage under vines at Gatton and Maryborough follows closely upon that of Warwick.

The total area of 1,734 acres under bearing vines for 1900 produced 3,634,949 lb. of grapes, from part of which 132,489 gallons of wine were made, the remainder being sold as table grapes.

VALUE OF 1900 CROP.—Calculating 120 gallons of wine to the ton of grapes leaves 519 tons sold as table grapes. At the lowest price of 1d. per lb., this quantity realised £4,844. Add to this the value of 132,489 gallons of wine at a minimum price of 5s. per gallon, £33,122, making the total value of the 1900 crop £37,966. In normal seasons the value of the grape crop of Queensland calculated at minimum prices would amount to upwards of £46,000.

#### CLIMATE.

CLIMATE OF QUEENSLAND.—Although the climate of Queensland ranges from semi-tropical to tropical, yet over a large area of the State the vine can be successfully and profitably cultivated, if precautions are taken to plant those varieties best adapted for the districts

they are to be grown in. Where the climate is humid, as is the case along the coast, and vines are more liable to be attacked by fungoid diseases, varieties which are most resistant to those diseases should be planted, whereas across the ranges on the Southern and Central Downs the choicest European varieties may be grown successfully.

**VITICULTURE AT CHARTERS TOWERS.**—The most northerly district of Queensland where the vines can be said to do well is from Townsville to Charters Towers; at the latter place about 1,000 feet above the sea level excellent table grapes are raised and sold at a profitable price. At one or two of the orchards between Charters Towers and Townsville some good grapes are raised, but the environs of Townsville itself do not appear very favourable for viticulture, the shortness of the winter being one reason.

**BOWEN.**—At Bowen there are a few vines grown, but the proximity of the ocean and the mildness of the winter climate prevent them from doing well.

**MACKAY.**—Further south at Mackay the cultivation of the vine is very limited, soil and climate being against them generally speaking, but across the range at Nebo, where there is a sharp winter, the vine does remarkably well.

**ROCKHAMPTON.**—At Rockhampton the vine is found to do well, and this is the most northerly district of Queensland where it is cultivated on any scale, the area for 1900 being 70 acres in bearing. Part of the crop is made into wine, and the remainder fetches remunerative prices for table purposes. The wine grapes of this district are of the poorest quality. As Rockhampton is a town yearly growing in size and importance, there is a field here for the enterprising vignerons. From Rockhampton to Barcaldine along the Central line small vineyards are met with where the vines do well as the soil and climate are congenial; there are here unlimited possibilities for the winemaker and grapegrower. Any failures that have taken place in this part of Queensland are not to be ascribed to unsuitability of soil or climate, but either to an utter disregard of the fundamental principles of pruning and cultivation, or to planting varieties fitted for colder climates.

**NORTH COAST.**—From Bundaberg to Brisbane along the North Coast Railway numberless small vineyards are met with, planted as a rule with American varieties, as in consequence of the humidity of the climate of the coastal districts the European varieties suffer from fungoid diseases; but want of care in taking proper precautions against disease also accounts for the loss of grapes by oidium, &c. Across the range at Gaydah, Nanango, and other places the best European varieties could be successfully grown with ordinary care.

**SOUTHERN AND WESTERN DISTRICTS.**—From Brisbane south to Wallangarra and west to Mitchell, numerous vineyards, some of considerable size, are met with producing grapes as fine as anywhere in Australia. The most important district is Roma, where there is a greater acreage of vineyards than in any other part of Queensland; not that the soil there is better adapted for viticulture, but with the small and uncertain rainfall the vine is more to be depended upon by farmers than other crops; the vine resisting, without injury, two years' drought.

This part of the State, *i.e.*, from Brisbane to Wallangarra and Mitchell, is undoubtedly the best in Queensland for viticulture, as the winter is sufficiently long to ensure rest to the vine, and the climate is dry and temperate. There is an area of over 6,000 square miles of country waiting to be exploited by the coming hosts of vignerons, for the viticultural industry of Queensland is only yet in its babyhood.

#### RAINFALL.

The rainfall in those districts of Queensland where the vine is principally cultivated is amply sufficient for its needs. The following table is compiled from official figures, giving locality, mean annual rainfall, and number of years recorded:—

Locality.	Annual Rainfall.	Years Recorded.	Locality.	Annual Rainfall.	Years Recorded.
	Inches.			Inches.	
Gympie ... ..	49·5	30	Toowoomba ... ..	41·5	13
Maryborough ... ..	49·0	29	Warwick ... ..	29·5	35
Bundaberg ... ..	50·0	17	Roma ... ..	22·6	6
Rockhampton ... ..	43·0	29	Emerald ... ..	26·0	17
Brisbane ... ..	51·0	40	Mitchell ... ..	24·0	16

The annual rainfall for Roma in the above table is too low, as the mean of five years' records gives 31 inches.

#### SOIL.

SOILS.—Every variety of soil favourable for viticulture is to be met with in Queensland—granitic, volcanic, calcareous, sandy, alluvial, &c. In every district is found one or more of the above soils, but at the same time there is a large area of flat country with clay subsoil, which should be discarded for viticulture. The surface soil is good enough, and for general farming purposes satisfactory, but the clay subsoil is injurious to the vine (which loves well-drained land), causing sickness of the roots and consequent attacks of fungus diseases. The stiff, red, and chocolate volcanic soils derived from basaltic formations are rich, and adapted for the vine if well drained naturally; table grapes do remarkably well on these soils, which are very common in the southern parts of the State. Granitic soil is excellent where there is no clay subsoil. Where clay is present the vine should never be planted. Both wine and table grapes are found to do well on granitic soils. Calcareous soils are not so frequent as other kinds in Queensland, but where met with the vine flourishes on them, especially wine grapes. Sandy and alluvial soils are found everywhere on the borders of creeks, and the vine thrives splendidly upon them. Generally speaking, the black soils of the Downs should not be planted with vines, as they are retentive of moisture and difficult to keep free of weeds; they also cause too much rankness of vegetation, to the detriment of the fruit.

#### VARIETIES.

Both European and American varieties are grown in Queensland, and of the latter the Isabella is universal in gardens and small vineyards, being grown principally for its resistance to disease and the abundance of its crop. But wine made from it is detestable, and as a table grape its slimy pulp and biting acidity are against it.

**VARIETIES GROWN.**—Along the coast the American varieties, such as Rulander, Concord, Iona, Goethe, Wilder, &c., are found to do best as they are rarely attacked by fungus diseases, but they are not to be compared with European varieties for quality or size of bunch, and should only be grown where it has been proved that European varieties will not succeed with proper treatment for fungus attacks. The Lenoir or Jacquez appears to be the favourite wine grape on the coast, but it is altogether inferior to many others which would do equally as well. Some excellent Muscats were grown this season near Bundaberg, and also about Rockhampton, where the Chasselas and Black Hamburg do well. These latter, with Royal Ascot and Lady Downe, were thriving at Charters Towers, and the Muscat Hamburg nearer Townsville. It is strange that some of the choicest European varieties should do well so far north and yet prove a failure at Maryborough, Gympie, &c. It is to be accounted for partly by excessive humidity in the latter districts and possibly to more care being given to the vines by northern growers.

In all probability, some of the table varieties lately introduced into Queensland from France, Italy, and Spain will prove valuable additions to the list of grapes already cultivated in these districts.

South and west of Brisbane all varieties of European wine and table grapes do well with ordinary care and precaution against disease; but there is a disposition to plant those varieties which give the heaviest crop, irrespective of quality, which is a mistake, as 10 lb. of choice grapes realise as much as 15 lb. of coarser kinds, and there would be a saving in cost of picking, packing, and carriage. The same mistake has been made in planting wine grapes; but this subject will be dealt with further on.

#### POSSIBILITIES OF THE INDUSTRY.

As said before, viticulture in Queensland is in its babyhood, and few realise yet its great possibilities. This State, being happily free from the Phylloxera pest, is in a position to send Queensland grapes to the southern markets.

**QUEENSLAND EARLY SEASON.**—As our early varieties ripen at least a fortnight before those of New South Wales and Victoria, shipments of early grapes could be made to Sydney and Melbourne, realising profitable prices; but up to the present none have been sent, for the simple reason that we only grow enough to supply our own market and have none to spare for other countries. Queensland has practically ousted the Victorian strawberry-grower from the Melbourne market with fruit grown on the Blackall Range; but with equally favourable prospects for grape exportation, nothing is done, and all the advantages of our earlier season are thrown away.

**PACKING GRAPES.**—But before inaugurating any exportation of Queensland grapes to Sydney and Melbourne, a far better system of packing them will have to be initiated if they are to arrive in sound condition and fetch good prices. The present arrangement of dumping them into old fruit cases lined with newspaper is unsightly and inadequate. Grapes packed in this manner must arrive at their destination messed about, damaged, and shorn of all their attractiveness. The American system of packing grapes in chip baskets containing 5 lb., 8 lb., and 10 lb. each, a number of which are packed in crates, should

be closely imitated. The fruit travels in excellent condition, the cost is trivial, and the fruit fetches a higher price in the market, which covers the extra cost of packing. Pending the substitution of the chip baskets for the present fruit cases, grapes should be packed in hinged flat cases like those passion fruit are packed in at Sydney, size 20 inches by 12 inches by 7 inches.

**CURRANTS.**—There should be in parts of Queensland an opening for the industry of growing and drying sultanas and currants. In all probability these fruits could be successfully produced in those districts which, having enough rainfall to permit of vine cultivation, possess at the same time sufficiently dry atmospheric conditions to allow the fruit to be sun-dried. Such conditions are fulfilled in many parts of the Southern and Central districts from 150 to 300 miles from the coast. South Australia and Mildura have already a considerable acreage of these fruits under cultivation, and the area is yearly increasing, as it is found to be a very profitable occupation. The climatic conditions of the abovementioned Queensland districts are similar in many respects to those of South Australia and Mildura, and possessing, as they do, many varieties of soils to choose from, there should be no difficulty in raising as good a currant or sultana in Queensland as in the Southern States, and quite as cheaply.

**IMPORTS OF CURRANTS, ETC.**—The imports of currants and sultanas into Queensland for 1899 and 1900 were as follow:—

Year.		Currants.	Value.	Rasins.	Value.
		Lb.	£	Lb.	£
1899	...	1,636,185	13,646	970,264	16,478
1900	...	1,596,448	22,233	802,663	13,392

Or a total value for 1900 of over £35,000. To produce the 2,399,111 lb. of fruit imported in that year about 1,100 acres of vines would be required, calculating 1 ton of dried fruit per acre—a liberal allowance, but hitherto not a single pound weight of dried fruit has been produced except as an interesting experiment; there is, therefore, a large and expanding market for those who decide to go in for this branch of viticulture.

There are large areas of land eminently adapted for viticulture in the Southern and Central districts, but too far removed at present from railway lines to be able to get fresh table grapes carried speedily and in good condition to the nearest market. In these cases the cultivation of currants is indicated, as the dried fruit could be taken to the market at the producer's own time and convenience. The plant required for the drying process is simple and inexpensive. In this way much land at present used only for grazing purposes could be made to yield a handsome income. Again, in a few years, with an inevitable increase of acreage under grapes as more and more land is put under the plough, there will come the danger of a glut of table grapes in Queensland, as the population is limited, and its requirements soon supplied. It is true that there are the southern markets to look to for disposal of surplus fruit, but two strings to a bow are better than one; and if Almeria grapes can be successfully grown and shipped to Great Britain and Canada, arriving there in the off season and

fetching high prices, it would open up great possibilities for Queensland grapegrowers, and permit a considerable increase in the acreage under cultivation.

### WINE.

**GENERAL CHARACTER OF QUEENSLAND WINES.**—There is a mistaken impression abroad that Queensland is unable to produce good wine. This is not the case; on the contrary, this State could produce in the south-eastern districts as good wine as the bulk of that made in other parts of Australia, if more care was shown in the choice of grapes, the treatment of the must during fermentation, and the subsequent manipulation of the young wines. But, unfortunately, inattention is far too frequently paid to one or more of these points, with the result that the few good wines pass unnoticed in the bulk of the wine made which is of a decidedly mediocre quality.

Until a year or two ago there was not a single Carbenet or Malbec vine in the country for making wine of the Bordeaux type; the grapes used being principally the Mataro, Black Spanish, Lenoir, and some Black Hermitage. Now their value is being recognised, and they are being more extensively planted. There is a better choice of white grapes in Queensland; the White Hermitage, Sauvignon-Vert, Mauzac, and Clairette being fairly abundant, but there is room for other varieties, especially for production of sherry types. Some Spanish and Portuguese varieties have lately been introduced into the State by this Department for propagation and distribution with a view to improving the port and sherry types made here.

**LIGHT WHITE WINES.**—Generally speaking, the light white wines made in Queensland are of better quality than the light red, many of the latter being coarse, heavy, and astringent, whereas some very creditable wines of the Chablis class are made round Roma. In some cases the light wines are ruined by the addition of preservatives to keep them sound; the vitality of the wines is paralysed by the action of these antiseptics, and no improvement or maturity of the wine can take place until the preservatives are removed by chemical decomposition; if when that takes place a second dose is added the conditions continue, and the wine remains in a permanent state of youth and rawness.

**LIGHT RED WINES.**—With a judicious blend of Carbenet, Malbec, and Black Hermitage, and a few acid white grapes such as the Folle or Burger, and with attention to the must acidity, temperature of fermentation vat, and duration of vatting, Queensland should and will produce as good wines of the Bordeaux type as any of the southern States—wines that would find a ready sale in London. One or two Queensland wines of the claret type, prepared with more care than is usually the case, compared very favourably with some of the well-known wines from Victoria and South Australia.

**PORTS AND SHERRIES.**—Very fair wines of the sherry and port class are made in this State, which will probably be improved with the vines lately imported.

**CHAMPAGNE.**—Some effervescing wines of the Champagne type are produced which, considering the difficulty of producing this class of wine, reflects credit on the makers, but they tend to be too heavy and sweet. Queensland vigneron are inclined to resent criticism of the products of their vines; but it should be borne in mind that only by

defects being pointed out can constant improvement take place, which should be the aim of all concerned. It can hardly be upheld by anyone that no improvement in Queensland wines is possible. France is always moving forward, and she has made wine for a thousand years; little wonder, then, if there is much to learn in Queensland with her fifty years of viticultural history. The day will come, and it is not distant, when Queensland will want a market for her wine outside the State, and it will only be by making it with up-to-date methods and plant, and from suitable varieties of grapes, that she will be able to compete with other wines abroad and at home.

**QUANTITY PRODUCED YEARLY.**—The amount of wines made in Queensland in 1900 was 132,489 gallons, a considerable decrease on former production, as will be seen from the following table. This must be attributed either to bad seasons and failure of crop or to more grapes being sold for eating purposes than formerly, as the acreage under vines for 1896 and 1900 was practically the same:—

Year.					Number of Persons Engaged in Winemaking.	Acres Under Vines.	Wine Made.
							Gallons.
1896	...	...	...	...	704	2,020	170,733
1897	...	...	...	...	722	2,167	207,745
1898	...	...	...	...	613	2,020	134,334
1899	...	...	...	...	512	2,003	131,045
1900	...	...	...	...	556	2,019	132,489

The amount imported in 1900 was 51,000 gallons, making a total consumption for the State of 186,000 gallons, for exportations were practically nil. At present there is a duty of 6s. per gallon on all wines entering Queensland from beyond Australia. The establishment of the Commonwealth has abolished this duty so far as other Australian wines are concerned, so that our vigneronns will have to compete against them both for price and quality. It may be presumed that in Queensland the price of wine will fall, with the inevitable result that consumption will increase, for the present price of wine is beyond what many would-be wine drinkers can afford to pay. With greater consumption will come extension of area under vines, for it is inconceivable that Queensland vigneronns will allow the Southern vigneronns to absorb all the increase, and those who extend existing vineyards or plant fresh ones should select appropriate varieties of vines for the class of wine they wish to produce. That Queensland vigneronns may be put on an equal footing with their Southern competitors as regards cost of carriage, some concessions to them should be made by the Railway Department in the way of reduction of freight, as at the present time it costs much more to send wine in cask or bottle from Roma to Brisbane than it does from Adelaide to Brisbane by sea, not to mention Melbourne and Sydney, which are nearer still.

#### ADVICE TO BEGINNERS.

There is a promising opening in viticulture for an intending settler in this State, for, as has already been mentioned, there is ample room for extensions of the industry, and it is a pleasant and profitable occupation.

At the lowest price that table grapes sell—viz., 1d. per lb.—the returns from an acre of ground would be from £13 to £18, calculating the crop at from  $1\frac{1}{2}$  to 2 tons. Wine grapes sell from £5 to £8 per ton, according to quality, season, &c. The profit on wine grapes is less, but at the same time a larger acreage can be cultivated by one person, as they are sold in bulk, and time is saved in picking and packing. The demand for wine grapes in Queensland is increasing; consequently, there is room for extension in this direction, as consumption of wine must and will increase with reduction of price. There is a want, moreover, of the finer varieties of wine grapes, which are scarce in Queensland, and command top prices: those who take up this branch of viticulture should plant these finer kinds, as they cost no more to cultivate and will give a better return. For those who prefer to cultivate table grapes there is a large and increasing market in this State, with Southern markets absolutely untouched for early varieties. The man who plants a carefully selected list of vines in an appropriate soil, cultivates them rationally, and markets his crop in a pleasing and attractive manner, cannot fail to make a success in what should be a very profitable industry. But attention to details, which, unfortunately, is too frequently neglected, is absolutely necessary if the best results are to be obtained. These are: choice of variety, adapted to the district to be grown in; a rational system of pruning adapted to the variety of vine; and, above all, systematic treatment for fungus diseases where such are to be feared, besides other details of cultivation unnecessary to mention here. The Department affords all information and assistance on these points, so that there should be no reason for inattention to them.

## FRUIT CULTURE IN QUEENSLAND.

[Contributed by ALBERT H. BENSON, Instructor in Fruit Culture.]

Although fruit culture has been largely looked upon in the past as an adjunct to the other branches of Agronomy, it is now taking its place in this State as one of the primary agricultural industries, and is the main source of income to a large number of agriculturists. Fruit-growers are realising the necessity for confining their attention to this particular branch of agriculture, and of growing only such fruits as are climatically and commercially adapted to their particular districts; with the result that the production of the leading lines of fruit to which this State is best adapted is year by year steadily increasing.

In a great State like Queensland, where we have a great variation in soils and climate, fruit culture to be carried out successfully and profitably must be conducted on systematic lines, and only such fruits as are best adapted to the particular soil and climate of the district in which the industry is carried on can be produced with reasonable hope of the undertaking proving a financial success.

In other words, fruit culture, to be a financial success in this State, depends mainly on the growing only of such fruits as are of commercial value and are best adapted to the particular soil and climate of the district in which they are grown.

Owing to the great variation of the soils and climate in this State, we are enabled to grow a very large number of different varieties of fruits to perfection, as with the exception of the extreme tropical fruits such as the Durien and Mangostein, and a few of the hardier berry fruits, we can grow in one part or other of the State practically the whole of the cultivated fruits of the world.

The area of land adapted for the culture of many of the fruits suitable for commercial purposes is somewhat limited, as such fruits as cherries are practically confined to the Stanthorpe district, and the more valuable varieties of summer fruits such as almonds, apples, apricots, nectarines, peaches of Persian origin, pears, plums, and prunes are confined to the Stanthorpe district, the Darling Downs, and those parts of the State where the winter temperature is low enough to permit of these trees undergoing their requisite winter rest, or dormant state, which is not obtainable in the warmer or more humid parts.

In the eastern coastal districts from the Tweed to Cooktown such fruits as the orange, mandarin, citron, cumquat, lime, lemon, China peaches, Japanese plums, persimmons, custard apples, guavas, passion fruit, strawberries, Cape gooseberries, &c., can be grown anywhere if the soil is suitable; and pines, bananas, mangoes, granadillas, papaws, &c., will thrive where there is a practical absence from frost and the soil is of a suitable character.

During the past year there has been a considerable extension of the fruit industry, especially in the Stanthorpe district, where a large number of early apples, early peaches, and early cherries have been planted. This district is noted for the quality of its apples, plums, and peaches, and for the earliness of its cherries, the first to ripen in Australia.

The crop of summer fruits has been, on the whole, a satisfactory one despite the very dry spring and prevalence of late frosts in one or two districts; the quality of the fruit has been good, and it has been comparatively free from pests.

The culture of citrus fruits has also made great strides, especially in the North Coast and Wide Bay districts. There has been a considerable increase in the area planted, and the trees set out consist largely of worked varieties of high merit.

The crop in many districts was a heavy one, and during the height of the season the local markets were somewhat glutted in consequence, owing mainly to a lack of system in the proper distribution of the fruit. An endeavour to test the outside market was made, a trial shipment of 105 cases of oranges being sent from the Woombye and Buderim Mountain district to Vancouver. The fruit, which was carefully handled and packed, was shipped as ordinary cargo, and reached its destination in good order, thus proving the carrying qualities of the fruit. The shipment was a commercial success, the fruit realising about 1s. 6d. per case net above its local market value at time of shipment, and this is considered satisfactory.

Mangoes produced a heavy crop, and inferior fruit was consequently a drug on the market. A certain quantity of such fruit was

utilised for chutney, but there is room for a considerable extension for this industry, as the whole of the Australian market will shortly be open to us.

Pines suffered somewhat from the drought, and were consequently late and slightly undersized, but there was no injury worth mentioning to any of the plantations through frost.

Bananas also suffered from the dry weather in the Southern part of the State, though not to the same extent in the North. The presence of fruit fly in this fruit has also caused considerable loss to growers, and has necessitated a careful examination of all fruit at port of shipment. The ravages of this pest can, in my opinion, however, be entirely obviated by covering the bunches with a coarse but strong mosquito netting, costing about 1d. per square yard, so that the expense would not be great and the fruit being free from the larvæ of this insect would carry better.

Strawberry culture is being carried out on a commercial scale in the Cleveland, Brisbane, Ipswich, Blackall Range, Gympie, and Bundaberg districts. New varieties of seedlings are being raised, and some of them show considerable promise, being early bearers, prolific and free from blight. This fruit does remarkably well in this State, and on account of its early ripening meets with a ready sale in the southern States at a time that they are unable to produce it. The past season was not a satisfactory one, as owing to the dry weather the late crop, which is largely used for jam-making, was a partial failure.

As in other parts of the world, the Queensland fruitgrower has numerous pests of different kinds to contend with. During the year great strides have been made in the methods that are adopted for keeping pests in check, and growers are becoming more conversant with the various pests and the best means to use in order to keep them in check.

The question of opening over-sea markets for our fruit, especially those of the citrus family, is becoming a pressing one, as with the large area of land lately devoted to the culture of these fruits, their production is likely to become increased to such an extent that our local markets, and the markets of the southern States, will be unable to consume them. The carrying quality of our oranges has been proved by the Vancouver shipment, and there is every reason to believe that a profitable export trade to Europe and North America can be established, owing to the fact that our season is their off season, and that in consequence we can put our fruit on their markets at a time when they are comparatively bare.

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## TOBACCO.

[Contributed by R. S. NEVILL, Tobacco Expert.]

The tobacco industry in Queensland, like all new ventures, has had rather a hard time of it, for want of experience on the part of the growers in the handling at various stages, and also owing to a want of knowledge of the conditions required for the best results; they

assuming that where it grew most luxuriantly, best results were to be expected, not knowing that as a weed it would grow anywhere, and that peculiar conditions were essential to the making of a good quality.

Various districts were tried from time to time with varying success. The first tobacco grown in this State was a small crop of  $3\frac{1}{4}$  acres in 1860, and  $17\frac{1}{4}$  acres were grown in 1861, the increase after this being very little up to 1869, at which time the first tobacco factories were established; after this the increase was very slow having only amounted to 117 acres in 1885, when the increase became more rapid and culminated in the large crop of 1,061 acres in 1895. Since then the crop has varied from 600 to 900 acres annually.

The districts about Warwick and Killarney produced considerable quantities at one time, Mr. F. C. Ransome being the pioneer. He sold this first crop at 8d. for the leaf and 6d. for the lugs; later crops realised as much as 1s. a pound crop all round.

In the meantime experiments in the cultivation of tobacco were being tried in the districts about Texas, the first grower being James M. McPhillips, who planted  $1\frac{1}{2}$  acres in 1882, and produced 25 cwt., and sold it to Mr. Corten, a manufacturer, of Toowoomba, for 11d. per lb.

The following year Alfred and Edgar Greenup and others took up the growing, and the production continued to increase until it had become the principal agricultural industry in this district; the manufacturers preferring this tobacco to that grown on the heavier soils of the Downs. The manufacturers of the State have ever been friendly to the growers' interest, usually taking all that was grown in this preferred district at from 5d. to 7d. per lb. The annual product of this district, and Inglewood adjoining, is from 175 to 340 tons, rarely falling to the former figure. When it is understood that the producing cost is not above 3d. per pound, these prices show good profits to the grower. The tobacco grown in this district is of the heavy pipe variety, and an analysis of the leaf compares favourably with that grown in the United States, of same variety. Since the development of this industry, the importation of the raw leaf has fallen from 164,886 lb. in 1890 to 44,054 lb. in 1899; while the importation of manufactured tobacco was 867,878 lb. in 1890; 912,852 lb. in 1899; and 690,684 lb. in 1900; but the year 1899 was the only year of the decade in which it reached the amount of 1890, and fell as low as 578,046 lb. in 1896, thus showing that the increased consumption in the State is being supplied by our home product.

Our local manufacturers have done all they could to popularise the locally-grown leaf, and have spared no expense in their efforts, and as a result their output has grown from 133,430 lb. in 1894—the first year that statistics were available—to 584,397 lb. in 1899. There was an increase of 77,571 lb. for 1900.

It will be noted that the consumption of Queensland-grown tobacco within the State has been nearly 50 per cent. of the whole amount consumed.

If there is no adverse legislation under federation, there is no doubt that the consumption of Queensland leaf will not only increase within the State but will extend to the other States of Australasia.

The experiments so far made with better varieties, and improved methods of cultivation and curing, have resulted most satisfactorily, but the experiments have necessarily been limited because tried in a limited way by private individuals; but now that the Government has established an Experimental Farm we hope to come very near producing a heavy variety equal to those produced in Virginia, Kentucky, and Tennessee. The private experiments give promise of this, the samples showing fine texture, elasticity, and gum, and, smoked in its natural state, the flavour is good.

The difficulties attending the growing of the crop in this State are, in the early stages, the various pests attacking it, either in the seed bed or when first transplanted—all of them practically disappearing when the weather gets hot and the plant is growing thriftily—the older plant having no such enemies as the bud and horned worm known to the growers of the United States, though sometimes the miner does slight damage. The result of this absence of pests in the later stages of growth is a leaf particularly sound and free from holes, and, if properly managed, a very small percentage of lugs and trash, or No. 2, as it is called here. The yield is exceptionally large, being fully 1,000 lb. per acre, on properly worked soils, and from  $\frac{3}{4}$  to 1 ton per acre is not unusual, and this product is not coarse and rough where proper varieties are grown.

The character varies from a heavy, dark-brown, suitable for dark wrappers and heavy smoking, to a cinnamon and mottled, adapted to mottled wrappers and medium strength smoking, these varieties being determined by character of soil, variety of tobacco, together with the time of year the crop is harvested. There are over 200 people engaged in the growing of tobacco, and the industry has proven so profitable as to build up a good farming district and support a village of some 200 people. The future of the industry is most promising and tobacco-growing bids fair to be one of the most valuable industries of the State.

The growing of cigar leaf in this State has not been systematically undertaken. A few farmers have from time to time grown a small lot, but lacking experience both as to curing or packing, and failing in a local market, they have one after another abandoned it. It is to be regretted that some one among those who have tried it did not have practical knowledge of how to prepare it for other markets, for some of the samples examined had much merit, and one sample was said to have been valued in London at 2s. 6d. per lb. From Maryborough north, and below the range, there is a great deal of fine cigar land—rich sandy alluvial soils that in the hands of experienced growers and sweaters could be made to pay handsomely—and now that federation is accomplished, a ready market could be found within the States for all that could be grown for several years to come, and the pioneer would reap a rich harvest. The fear of competition need deter no one proposing to undertake it, as these lands produce a tobacco superior to the Manila, and I believe fully the equal of Borneo, and with Sumatra seed very superior wrapper leaf could be produced. These lands are abundant.

**YELLOW OR AROMATIC TOBACCO.**—The soil necessary for growing this character of tobacco is to be found in several parts of the State, but for several reasons there has been no effort to produce them, the chief of which is the uncertain rainfall in the districts where the soils are to be found. There has been only a limited local demand for this class of tobacco for cigarettes, besides the fact that farmers in these districts cannot afford to put up the expensive curing sheds necessary for the proper curing of this class of tobacco.

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## COFFEE.

[Contributed by H. NEWPORT, Instructor in Coffee Culture.]

Coffee culture in the State of Queensland has increased considerably during the past few years, and is rapidly spreading. At present there are between 700 and 800 acres under this staple; the acreage would be slightly increased if every coffee-tree were noted in the returns, but some plants no doubt are included in the statistics with "Gardens and Orchards," their number in each case being too small for definite collection. The largest estate in North Queensland is on the Lower Russell River, near Cairns, and is about 100 acres in extent. The average size of holdings is, however, only some 5 to 10 acres, and in many instances 1 or 2 acres are cultivated in mixed farming as a by-product rather than a staple.

In all instances where coffee is being grown and properly cultivated, paying returns are being obtained. The conditions of soil, climate, temperature, and rainfall are eminently suitable for coffee culture in Queensland. The conditions obtaining admit of its successful cultivation on the comparatively level lands and at all elevations down to sea-level, and give the planters an advantage over those in countries where the higher levels, steep hills, and more inaccessible places have to be sought to obtain the necessary conditions: advantages especially noticeable in the direction of cultivation and transport, and the by no means to be despised advantage of a healthy and congenial climate.

Generally speaking, coffee may be grown throughout the coastal districts of the whole of Queensland, but, though in a few places south of Brisbane and even in the northern portion of New South Wales a little is cultivated, only specially selected situations protected from frost or cold winds can be planted with success. No hard-and-fast line can be drawn as the southern limit for the successful cultivation of coffee, but it is more in its natural habitat within the tropics. To the northward the only limit is that of settlement and communication with civilisation, while the more especially suitable locality lies between Mackay in the south and Cooktown in the north. These coastal lands, for the most part densely wooded, extend on the average some 5 to 6 miles inland from the seaboard. A broken and irregular range of hills extends along this area varying in distance from the coast-line, on the west of which the country becomes unsuitable for coffee culture owing chiefly to irregular or short rainfall.

The area specially suitable for coffee may therefore be said to be bounded by this range; and while the eastern slopes at varying elevations from 100 to 1,500 feet above sea-level are the more generally chosen sites for plantations, the more level land between them and the sea is equally suitable climatically, and has often advantages in the way of transport, &c.

The average rainfall for the whole of this area may be taken at about 71.50 inches per annum; the heaviest being about the town of Geraldton, which has an average of nearly 150 inches, and the lowest about Rockhampton with 42 inches or so.

The mean temperature for the whole year is about 60 degrees Fahr., with a minimum in the cold month varying from 42 degrees to bordering on the point of frost. The summer maximum averages in the north from 95 degrees to 100 degrees Fahr., and 85 degrees or so in the south. The sun is by no means fierce in spite of fairly high summer temperatures, so that drooping of coffee or drought is seldom known.

The soils are mostly of volcanic origin, and vary from a red porous basalt, rich in potash and phosphoric acid, to deep chocolate loams and lighter and more sandy alluvial deposits, strong in humus and vegetable mould. They are exceptionally rich, and under the tropical sunshine and showers, with the nevertheless mild conditions of the southern latitude, produce coffee-trees that are exceptionally vigorous and prolific, and a quality of coffee seldom attained in other countries. The soils are naturally retentive of moisture, so that in the driest of districts and seasons the coffee does well: the setting of blossom is assured, and burning of blossom unheard of.

The principal centres of coffee culture at present are Port Douglas, Cairns, Geraldton, Mackay, Rockhampton, and Mount Buderim, of which the largest and principal is Cairns.

The Port Douglas district has an average rainfall of 83.36 inches. The soil is rather heavy, with alluvial patches interspersed with light basalt ridges. The coffee plantations are chiefly about the rivers that wind among the mountains and flow into the sea between Port Douglas and Cooktown. The district is hilly, some parts being difficult of access, but it has a forcing climate inducing rapid growth and quick and heavy bearing.

Cairns, the principal of the coffee-growing centres of North Queensland, comprises both high and low land. The climate is perfect for coffee; the average temperature for the year being from 62 degrees to 65 degrees Fahr.; the minimum being about 36 degrees Fahr., and the maximum about 95 degrees Fahr. The rainfall average is 98.34 inches. Several estates on the lower lands, varying in elevation from 50 feet to sea-level, are doing well. The majority of clearings are, however, on the tablelands of the ranges some few miles inland. Kuranda, the central township, is reached by rail from Cairns after a journey of an hour and a half through most picturesque scenery. The railway line winds up the range among hills, crossing gorges, and passing waterfalls, reaching an altitude of some 1,100 feet at Kuranda itself. The climate of this tableland is clear, cool, and invigorating.

Slight frosts are experienced in winter occasionally in exposed situations, but no trouble is met with in this way upon coffee clearings judiciously selected and carefully opened. The water supply is plentiful, and machinery for coffee curing in several instances is worked by water-power. The quality of the coffee produced here is high. At Kuranda a coffee-grower has opened a factory, and manufactures tins, and disposes of a large proportion of the products of the locality.

From Cairns to Geraldton is a tract of country comprising 50 square miles or more, magnificently wooded, well watered, and having a rich basaltic soil that carries coffee exceedingly well, and in which the few estates already planted are giving good returns. This land is to a large extent open to selection. It gradually rises from sea level at and about Geraldton to 1,200 or 1,300 feet on the ranges towards Kuranda. The average rainfall is 148·80, and the temperature is more even, rising neither as high in summer nor dropping as low in winter as in other districts. Frost is unknown in the locality. The moist atmosphere of this district, as well as of parts of the two more Northern districts, necessitates the drying of coffee crops by means of kilns, which, however, are erected at comparatively little cost.

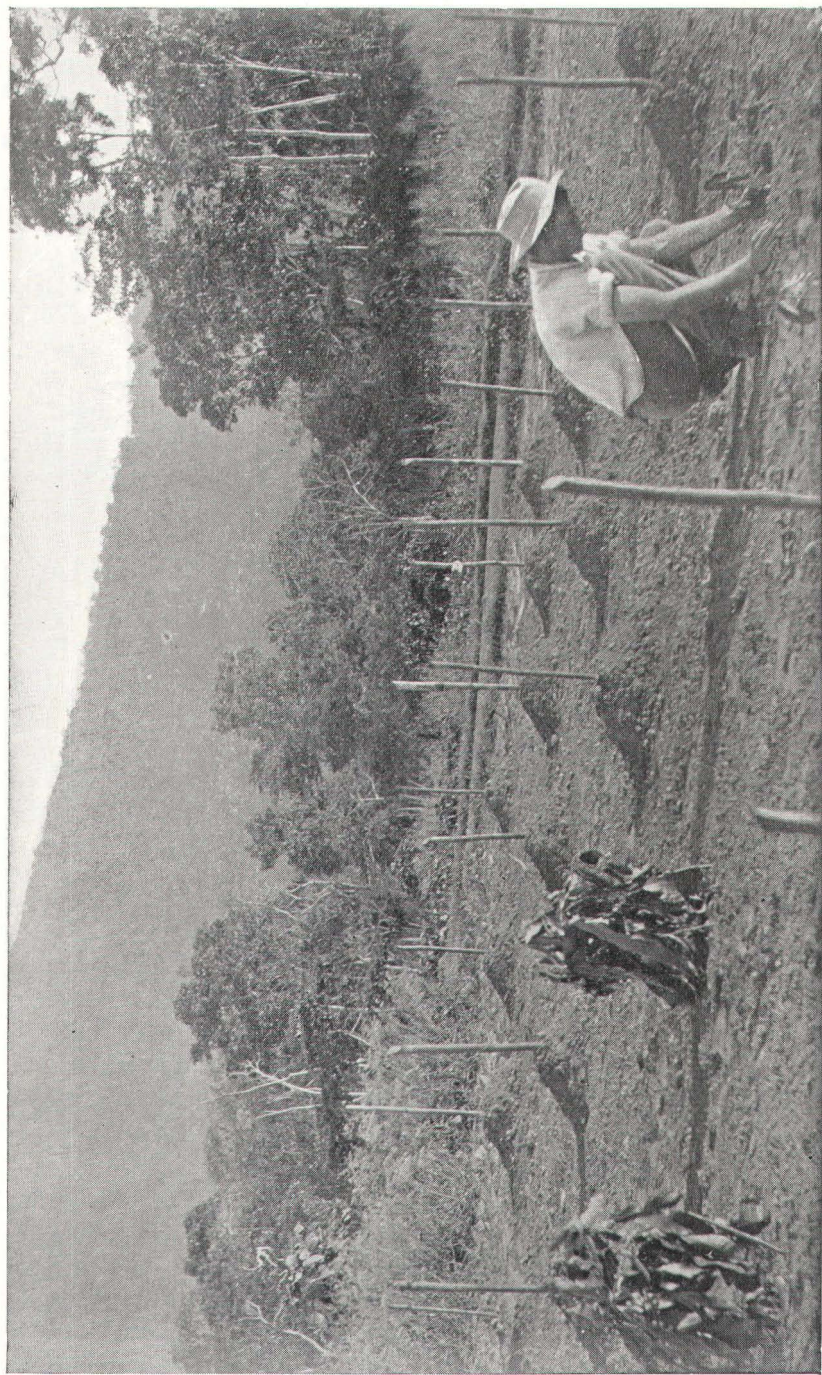
The Mackay district has an average rainfall of 72·43 inches; has generally soil of a lighter nature and a considerably drier climate, so that the curing of coffee can to a great extent be carried out without artificial assistance,

The rainfall of Rockhampton is 42·51 inches. The coffee districts are somewhat inland, and, near or on the slopes of mountain ranges where the rainfall is somewhat heavier, the land is good, but care has to be taken in choosing aspects free from any possibility of frost.

Mount Buderim, situated within two miles or so of the sea, is a small tableland some 500 feet in altitude. The area of coffee land is not large, but is very good. Frost is never experienced. Both the quantity and quality of coffee produced in this district is noticeably good.

Work in connection with opening up coffee land is generally set in hand about June, when, the rains being over, the weather is cool and fine. The scrub may be felled and the seed set in nurseries then. The weather continues cool during July and August; the next four or five months are dry and warm. Felled scrub may be burnt off about Christmas time, and the pitting set in hand during January or February when the rainy season commences. The plants by this time will be ready to be put out in the field. Planting is done early in February, when the plants have more or less regular rain until April or May, during which warm and moist weather the growth is rapid and healthy. The young trees come into bearing in from two and a-half to three years, the blossoming season being about December, and the picking season from July to November.

The methods of cultivation of coffee differ considerably in Queensland from most countries. Owing to the fact of labour being at a premium the bulk of the work is carried out by the planter himself



PLANTING COFFEE, STATE NURSERY, KAMERUNGA, CAIRNS.

rather than by a gang of dusky labourers. Labour costs from 15s. per week with rations to 40s. or so without. For picking, however, children can frequently be obtained, and this, as with the preliminary work in opening up, can be done by contract. The conditions of soil and climate in North Queensland admit of the white man working, while in most coffee growing countries this is impossible. The growth of the coffee and its bearing capabilities also are so much greater that the area necessary to produce a given return is materially reduced, admitting of paying returns from an area well within the scope of a man's work.

For this reason and the fact that large holdings become difficult of management in picking season, the average size of clearings is smaller than in most coffee-growing centres.

Land adjacent to railways or main roads is of course more expensive than that more distant. In many such localities, however, land may still be obtained from the Government at purely nominal cost. The average cost of land that may be purchased from holders may be taken at about £4 per acre.

To open up a ten-acre estate, therefore, the outlay required will be about as follows:—

	£
Cost of 10 acres of land at £4 ... ..	40
Clearing and burning-off (by contract) ... ..	40
Grubbing stumps ... ..	80
Digging holes ... ..	60
Fencing 10 acres ... ..	40
Dwelling-house ... ..	150
Stock and implements ... ..	100
Pulper, machinery, and drying-shed, &c. ...	50
Living for three years at, say, £100 ... ..	300
Sundries, say ... ..	40
<b>Total ... ..</b>	<b>£900</b>

The contract rates vary somewhat in different localities, and according to the amount of timber to be felled or grubbed. The grubbing of stumps, while admitting of cheaper and easier subsequent work, and the use of horse-power in weeding, &c., is not a necessity. If not done, the expenditure under the heading of stock and implements is also materially reduced, but hand hoeing must be resorted to. Fencing can also be frequently dispensed with. These estimates allow for a four-roomed cottage and a living wage only.

Allowing that the work of the plantation is carried out by the owner, the subsequent cost annually will be only in connection with picking, which is now being generally done by contract at from 2 to 3 lb. of cherry per penny. This represents about 2d. to 2½d. per lb. of dry parchment coffee. The returns from the 10 acres will be about 2 tons in the third year, about 3½ in the fourth, and 10 cwt. per acre,

or 5 tons, from the fifth year on. A larger return is quite possible in a favourable season, or with good and careful cultivation, the highest returns per acre obtained lately being nearly three times as much, and 15 to 16 cwt. per acre not infrequent, under such conditions.

Coffee is selling in the parchment at from 6½d. to 7½d. per lb., or about £70 per ton. The returns from a 10-acre estate from the fifth year may be taken, therefore, at about £350, of which from £150 to £200 is net profit.

An investment of £900 would return from 15 to 20 per cent. A working man accustomed to ordinary farm labour could open up under coffee at much less cost, and by working himself save many of the items enumerated. A man with a family also would have many advantages by being able to get the picking done during the few months of crop season by his own children.

A market for the staple exists in the State, where there are several manufacturers who buy up the coffee in the raw or parchment state. With the federation of the colonies that has been recently effected a larger market still has been opened to this product of North Queensland, with a protection against the imported article. The consumption of the Australian continent is at present very much in excess of the production, and will continue to consume all the local produce for many years. In the open markets of the world the coffee of North Queensland, though only small quantities have as yet been offered owing to the local demand, is rapidly gaining in favour, and the generally high quality readily acknowledged. For buyers, who having no hulling machinery desire only the clean bean, there are mills in the town of Cairns where the hulling and cleaning is done at a cost of ½d. per lb., after which the coffee is worth from 9d. to 1s. per lb. according to grade and quality.

Articles and papers dealing with coffee culture appear from time to time in the *Agricultural Journal*, published by the department, and the headquarters of the Instructor in Coffee Culture, who gives advice, information or demonstration and tours as required, are at the State Nursery, Kamerunga, Cairns.

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## HORTICULTURE.

[Contributed by PHILIP MAC MAHON, Director, Botanic Gardens.]

In its widest sense this includes the application of the science of vegetable physiology to the cultivation of plants, and in its narrowest sense the cultivation of garden plants, whether for utilitarian or ornamental purposes. It is conducted on a smaller scale than agriculture, but the subjects with which it busies itself are infinitely more varied, and it aims to achieve a greater result from a relatively small area by concentrated effort and intense culture.

I am asked to briefly indicate the adaptability of Queensland for this branch of human effort, how far it has been developed in the

past, and especially what hope of prosperity there is now here for persons who have been trained to this art in Great Britain.

The first thing which strikes the gardener from the "old country," and indeed the ordinary visitor, when he lands in the capital of Queensland and pays a visit to the public gardens, is that scores of plants which he had seen grown in glasshouses, carefully heated with hot-water pipes, and sedulously guarded from any cold draught, are here flourishing a hundred times more luxuriantly in the open air, exposed to every wind that blows. And when he finds that the air has a freshness which he has certainly not been led to associate with the interior of a hot-house, he wonders at once if the method of cultivating these plants in the old country can, after all, have been the right one.

As I write, it is the last week in April, a time corresponding to the last week in October in England.

The Allamanda is covered with huge yellow flowers, contrasting beautifully with the green, glossy leaves. Coffee-trees are in full bearing; tall, feathery bamboos are waving far overhead. All day it is clear and bright, and exertion is not fatiguing. Outdoor work is pleasurable, and at night it is distinctly cool.

A few days ago, in driving along the road not far from Brisbane, I passed a field which, for the varied nature of the crops it bore, was certainly illustrative of a strange phase of the Queensland climate.

First were healthy potatoes in full bloom, then came a patch of pineapples, some in fruit; then a few rows of peas, then tomatoes, followed by several rows of strawberries, succeeded by a breadth of Indian corn, which was flanked by a patch of turnips. Around this field grew mangoes, oranges, loquats, Japanese plums, and bananas. These diverse productions were not there for experiment. They were being grown in the ordinary way, in the sure expectation of being able to secure a crop from each.

In the public and private gardens around Brisbane this month, all the annual plants which render the parterres of the English garden gay during the summer are being planted out, and in a few weeks will be a blaze of beauty. Pansies, asters, stocks, dianthus, mignonnette—all the common English garden flowers—will flourish during the next five months—May, June, July, August, and September—with a luxuriance never excelled in Europe. Roses, too, will bloom with lavish prodigality; and all these familiar features of an English garden, when viewed in conjunction with towering palms, waving bamboos, and gorgeous exotic flowers, make a newcomer a little inclined to doubt for a moment the reality of the scene.

The nature of the climate is a matter of paramount interest to the horticulturist, and the *résumé* of the weather in Brisbane during the past year (1900), compiled from information furnished by Mr. Wragge, Government Meteorologist, will give the English gardener, accustomed as he is to watch carefully the fluctuations of the thermometer, a broad idea of the range of Queensland climate.

## CLIMATE AT BRISBANE DURING THE YEAR 1900.

Month— Queensland.	Corresponding Month in Great Britain.	Grand Mean Temperature.	Grand Mean Temperature of Evaporation.	Maximum Shade Tempera- ture.	Minimum Shade Tempera- ture.	Mean Force of Wind per Hour.	No. of Wet Days (0.006 and over).	Greatest Rainfall in 24 Hours.	Total Rainfall for Month.	General State of Weather.	Seasons in Queensland
January ...	July ...	74.6	69.8	90.5	63.4	12	12	3.767	6.511	Hottest month ; heavy rains ; thunderstorms.	Autumn commences, 21st.
February ...	August ...	77.3	71.6	95.1	64.6	11	11	3.540	5.184	Very hot ; humid ; heavy rains.	
March ...	September	75.3	69.8	92.3	64.2	10½	16	0.790	3.365	Cooler ; generally dry.	
April ...	October ...	69.6	63.8	93.0	48.6	10	7	0.860	1.378	Cool ; dry ; chilly nights.	Winter commences, 21st.
May ...	November	63.9	58.3	83.8	47.8	10½	15	1.657	5.448	Cool ; fine delightful days ; cool nights.	
June ...	December	60.9	55.2	80.4	44.5	9½	11	0.959	2.678	Clear fine weather ; cold nights ; heavy dew.	Spring commences, 22nd.
July ...	January ...	56.0	50.7	77.7	37.5	8½	8	1.796	4.363	Beautiful clear bright days ; cold nights.	
August ...	February	61.0	54.7	86.2	40.3	8	3	0.573	0.794	Cold, especially at night ; sunny days.	Summer commences, 21st.
September	March ...	64.0	60.3	80.4	49.6	10	16	0.427	2.484	Becoming warmer ; Spring opens.	
October ...	April ...	66.6	61.6	100.1	43.3	12	8	0.575	2.260	Much warmer ; thunderstorms ; sometime hail.	
November	May ...	73.6	66.7	95.1	51.8	12	7	0.811	2.328	Queensland Summer weather ; hot.	
December	June ...	75.9	69.6	92.2	61.5	12½	11	2.050	7.614	Strong sunshine all day ; very hot ; nights often cool.	

In low-lying parts of the Botanic Gardens at Brisbane slight frosts were experienced during the month of July, and on the vast inland and upland country known as the Darling Downs frosts are frequent during the winter months. Generally speaking, the climate of Queensland is such that any garden crop ordinarily raised by civilised man can be grown in some part of the State in the greatest perfection, and with the minimum of labour and expense.

Now, this very luxuriance is somewhat disconcerting at first to the newcomer. Gardening is not by any means carried out in the extensive and highly organised manner which obtains in Great Britain. There are very beautiful Botanic Gardens of 42 acres at Brisbane maintained by the State, and there are a few other gardens at some of the principal towns receiving State assistance, but the large establishments with acres of glasshouses, carefully tended plots and shrubberies, extensive kitchen gardens, and large staffs of men have no existence here.

Consequently the young gardener who comes to Queensland expecting to step into a billet and to take up a routine similar to that which he has just left, will find himself vastly mistaken. The man who can dig and prune and perform other gardening operations, and is ready to turn his hand to anything, can always find work. But there is very little fancy work. In the 427,000,000 odd acres of Queensland, there are not so many square yards of glasshouses as might be found in the establishment of a nurseryman in an English country town. They are not wanted. There is practically no demand for the highly specialised skill of which so many English gardeners are so proud. All private gardens are very small indeed, viewed from an English standpoint, and absorb only a comparatively trifling amount of labour.

But it is in his knowledge of the principles which regulate the growth of plants, and in his training and adaptability for a life on the soil that the British gardener scores in Queensland. Who would work all his days for a landed proprietor when he can become a landed proprietor himself? And this the land laws of Queensland enable him to become with the greatest ease.

But what is he to do with the land when he gets it? As I jot down the notes for this brief paper, there stands beside me a gentleman who has had twenty-five years of land selection and cultivation here. He was a gardener in England, and tried his fortune in Queensland. He did not rush into land selection all at once. This is a mistake very often made by newcomers. I have heard them often descant on the fertility of soils, because they produced surprising growths of timber—soils which I knew to be absolutely worthless for horticultural purposes. Well, our friend took any work he could get—scrub felling, sugar-growing, &c.—and finally selected land, and he assures me that in five years he was independent. He had, of course, to work early and late, to learn how to manage cattle and horses, and to do many things which, as a gardener in England, he had not to do; but he was working for himself, and reaped a reward in the independence of his life and in a quickly acquired competence. Having lost heavily in certain speculations, he turned his attention again to the soil, and three years ago purchased two properties. He began to grow early vegetables, his rotation being—June, July, and August, early cucumbers; September, October, and November, tomatoes; December, January,

and February, French beans; March and April, late cucumbers. For three pickings of early cucumbers off 4 acres he cleared £50; and for the whole year he cleared off the 4 acres £230. He was, of course, engaged in growing other crops as well. He has now paid for one property, and has in the meantime supported a large family. His land was carefully selected, well sheltered, and free from frost. A concrete example of what has been, and is being, done, such as this, is worth many academic treatises upon something which might be done.

In many cases the first crop has paid for the land and for the cost of clearing and cultivation.

Of great interest to the horticulturist intending to make his home in a new country are the answers which can be given to the questions:—What proportion of the population are already engaged in land tillage? What do they grow? And where do they find a market?

In 1899, 2,699 persons held 7,750 acres in farms up to 5 acres, the average holding being 3 acres; 5,063 persons held 60,845 acres in farms of from 5 to 20 acres, the average being 12 acres; 4,133 persons held 131,876 acres in farms of from 20 to 50 acres, the average being 31 acres; and 2,103 persons held 255,174 acres in farms of over 50 acres, the average being 119 acres. During the past few years the holdings under 5 acres have slightly decreased, both in number and area; but an increase of 3·26 per cent. has taken place on the general number of holdings, and of 11·33 per cent. on the area cultivated in the year 1899.

The following figures compiled from the returns of the Registrar-General will show how many of Queensland's 427,838,080 acres were occupied by each variety of crop in 1900, and the average yields of these crops per acre. From this table, which might escape his notice in the general mass of figures in statistical reports, the gardener will be enabled to draw most useful conclusions:—

	Area.	Yield per Acre.
	Acres.	
Total area under crop	257,397	
Sugarcane	108,535	1·27 tons sugar.*
Maize	127,974	19·20 bushels.
Hay (all kinds)	42,497	1·85 tons.
Wheat (grain)	79,304	15·06 bushels.
Lucerne and other Green Forage	41,445	
Potatoes, English ( <i>Solanum tuberosum</i> )	11,060	1·81 tons.
Pumpkins	14,232	3·07 tons.
Barley (malting)	6,302	17·12 bushels.
Bananas	6,215	373 bunches.
Potatoes, Sweet ( <i>Ipomoea batatas</i> )	3,614	5·04 tons.
Gardens and Orchards	3,587	
Sundry minor crops	3,151	
Oranges	2,882	708 dozens.
Vines	1,734	2,096 lb. grapes.†
Barley (other than malting)	1,231	1,562 bushels.
Pineapples	939	452 dozens.
Tobacco	665	6·06 cwt. dried leaf.
Oats	385	20·40 bushels.
Coffee	361	190 lb.‡
Arrowroot	401	11·02 tons of tuber.
Rice	271	25·35 bushels.
Vines (not bearing)	285	
Rye	151	12·77 bushels.

\* On acres crushed, viz.—72,651. † From a portion of the crop 132,459 gallons of wine were made.

‡ On bearing trees.

It will be noted that the areas under garden and orchards, 3,587 acres, and sundry minor crops, 3,151 acres, bear a very insignificant percentage to the area of the orchards of an English county, a few of which are—Devonshire, 27,240 acres; Herefordshire, 26,847; Kent, 26,340; Somersetshire, 24,992; Worcestershire, 21,023; Gloucestershire, 19,548. The total area of orchards in Great Britain last year was 232,129, and this was increasing steadily at the rate of 2,900 acres a year.

It will be seen from this comparison that the horticulturist in search of employment must look to some of the products above-mentioned for a large field of exertion, at least to begin with. Fortunately there seems to be no fear of any failure of a market in the near future, since in 1900 Queensland imported, over and above any exports, the following quantities of foodstuffs, easily raised within her own borders by the labours of the farmer and gardener:—

Foodstuffs.	Quantities.	Value.	Foodstuffs.	Quantities.	Value.
		£			£
Flour ...	32,478 tons	269,678	Barley ...	23,291 bushels	3,480
Wheat ...	722,547 bushels	113,426	Barley, Pearl ...	15,760 lb.	35
Maize ...	244,987 bushels	42,010	Oatmeal ...	517 tons	9,879
Potatoes ...	15,942 tons	64,553	Coffee ...	146,509 lb.	6,063
Rice ...	8,136,673 lb.	43,229	Crushed Oats ...	6,449 packages	6,891
Malt ...	132,889 bushels	44,284	Hay ...	2,287 tons	11,323
Oats ...	194,581 bushels	28,759	Jams and Jellies	195,931 lb.	3,827
Onions ...	3,534 tons	19,064	Rye ...	398 bushels	76

Of green fruit, the production of which is of the greatest interest to the horticulturist, Queensland imported 275,820 packages, having a value of £77,030; but against this 1,160,990 packages were exported, having a value of £104,387.

These latter were chiefly bananas, pineapples, oranges, &c., exported to the southern States, but, as the fruits so largely imported could be produced within the State of Queensland, it will be seen that within our own borders there is a large and developing market for the results of the gardener's skill. The total importations of foodstuffs, &c., for the year 1900 reached a value of £1,025,627, and, as all this can be produced as well within the State as beyond it, the intending emigrant to Queensland need have no fear that a market will not be available for the product of his labour, provided always that he makes his selection of land wisely, and works his holding on energetic and business-like lines.

The areas of the staple crops and their yield per acre have been given above, but there is a class of minor crops in which the gardener is much interested, and from the relative area and production of which

he can draw valuable deductions. These and their total yields are given in the following table. The cultivation of many might be extended almost indefinitely :—

Crop.	Acreage, 1900.	Total Produce.	Crop.	Acreage, 1900.	Total Produce.
<b>FRUITS.</b>			<b>VEGETABLES—</b>		
Apples ...	238	5,316 bushels	<i>continued.</i>		
Apricots ...	13	171 "	Marrows ...	8	85 tons
Cherries ...	12	119 "	Onions ...	148	5,951 cwt.
Cocoanuts ...	504	8,333 dozens	Peas ...	32	2,959 bushels
Custard Apples ...	15	221 bushels	Tomatoes ...	170	18,950 "
Gooseberries (Cape) ( <i>Physalis</i> <i>peruviana</i> ) ...	68	76,710 quarts	Turnips ...	191	1,760 tons
Lemons ...	26	31,375 dozens	Parsnips ...	1	100 cwt.
Mangoes ...	411	277,444 "	Asparagus ...	1	500 bunches
Passion Fruit ...	16	3,463 bushels	<b>MISCELLANEOUS.</b>		
Peaches ...	65	4,463 "	Broom Millet ...	104	51,240 lb.
Peanuts ...	11	20,216 lb.	Broom Millet ...	2	3,920 "
Pears ...	10	117 bushels	Seed		
Persimmons ...	14	428 "	Canary Seed ...	2	724 "
Plums ...	88	4,568 "	Cassava, Manioc, or Tapioca ...	2	2 tons
Quinces ...	4	241 "	Chicory ...	16	yield not fur- nished
Strawberries ...	121	401,105 quarts	Cow Pea ...	23	327 bushels
Rhubarb ...	1	2,080 bunches	Kafir Corn ...	1	40 "
Egg Fruit ...	1	150 dozens	Mangel Wurzel ...	85	821 tons
Papaw ...	4	1,256 "	Grass Seed (vari- ous) ...	10	500 bushels
<b>VEGETABLES.</b>			Rosellas ...	3	500 "
Beans ...	32	3,738 bushels	Sisal Hemp ...	1	425 lb.
Cabbages ...	515	255,036 dozens	Sugar, Beet ...	1	7 tons
Carrots ...	6	257 cwt.	Sunflower Seed ...	5	4,480 lb.
Cauliflowers ...	10	1,835 dozens			
Cucumbers ...	160	71,799 "			

The above table furnishes a good index of the variety of crops which can be raised in the State from the apples, cabbages, and mangel wurzels of the northern colder temperate zone to the cocoanut, mangoes, and persimmon of the tropics. It also shows that the fringe of a great and varied industry has been barely touched.

In 1900, 35,330 males and 5,736 females were employed in agriculture and horticulture in Queensland. Of these the large proportion of 31,919 males and 2,468 females consisted of those employed in general farming and 1,586 males and 3,119 females being engaged in dairying.

Queensland is essentially a place where a man cultivates his own land, and literally, as well as figuratively, "dwells safely, every man under his vine, and under his fig tree."

It will be seen from a comparison of these figures with the total area under crop that the labour of 1 male is absorbed for every 14·3 acres cropped, and of 1 female for every 185·3 acres. These proportions would be largely increased with a more intense method of tillage.

The rapidity of the strides made by Queensland in breaking new ground for cultivation may be seen by the areas of land under crop every ten years since 1860. These are—1860, 3,353 acres; 1870, 52,210 acres; 1880, 113,978 acres; 1890, 224,993 acres; and 1900, 457,397 acres. The rate of increase for the last ten years has been 10·3 per cent. per annum.



SUGAR INDUSTRY.—CANE-CUTTING BY KANAKAS.

## THE SUGAR INDUSTRY.

[Contributed by ROBERT W. McCULLOCH, Inspector and Valuator of Sugar Lands.]

That the coastal districts of Queensland, more particularly the tropical belts, are eminently adapted to the cultivation of the sugar-cane has been amply demonstrated by the growth and dimensions the industry has assumed to-day.

The earliest record of sugar in Australia dates as far back as the year 1823, when a Mr. Thomas Scott proved that cane could be grown and sugar manufactured. This gentleman, at Port Macquarie in New South Wales, made something like 70 tons of sugar in the year 1827.

Sugar-cane was therefore introduced into New South Wales as early as the year 1823, but made no progress for quite twenty years later.

About the year 1847 sugar-cane was introduced into Queensland, the manufacture of sugar from Queensland-grown cane being first accomplished by a Mr. Buhôt in 1862. The cane was grown in the Botanic Gardens in Brisbane. The honour, however, of placing the sugar-growing industry on a substantial basis is undoubtedly due to Captain the Honourable Louis Hope, who in 1863 had 20 acres under cane at Cleveland.

During the years 1863-64 the industry took a decided spurt in this colony, considerably assisted by Legislative enactment, initiated by Mr. C. Coxen, M.L.A., whereby sugar lands could be acquired by settlers with the utmost simplicity. Land could be acquired on lease for three years in areas of from 320 to 1,280 acres, at the rate of 1s. per acre, with the right of purchase, conditionally on a sum not less than £1 per acre having been expended on the land, and not less than one-twentieth of the land being planted with either sugar-cane or coffee. Owing to the abuses which crept in, this was withdrawn in 1868.

In 1867 there were close on 2,000 acres under cane, and six mills at work. In 1869 there were twenty-eight mills in existence, and some 5,000 acres under cane. From this out the industry continued to prosper until 1875, when a check was experienced owing to the ravages of a disease known as "rust." It may be mentioned here that at this period of the history of the plant in Queensland a variety known as "Bourbon" was all but universally cultivated. As a matter of fact, the season was an unusually adverse one; the rainfall was excessively heavy, literally drowning the cane, 105·5 inches being registered. Bad cultivation, want of drainage, added to the soft variety of cane, were responsible for this so-called disease. Anyway, the cane became unhealthy and died. The mortality in the cane was so great that financial institutions got alarmed and stopped supplies, and foreclosures were the order of the day; for it must be remembered that quite two-thirds of the sugar estates then in existence were started with borrowed capital, and this sudden stoppage of the supplies considerably checked further extensions for a time.

It was observed at this time that the comparatively small quantity of "Rappoe" or "Rose Bamboo" cultivated was scarcely affected by the disease, and those planters who were financially solvent took the hint and cultivated this and hardier varieties. Fresh confidence was inspired, and matters speedily righted themselves.

During the years 1879-80 there was quite a rush for sugar lands in Queensland. Capital for any purpose in connection with sugar was available in unlimited quantity. In fact, the industry literally "boomed" along for the next year or two.

Government statistics for 1883-84 showed 43,367 acres as being under cane, of which 27,792 acres were crushed. There were 157 mills—that is, complete sugar-making plants and juice-mills—and the output of sugar, 34,148 tons. About this time, 1883-84, a second check was experienced, and the sugar industry bid fair to be wiped out altogether.

In 1885, the Legislative Assembly voted a sum of £50,000 to be lent for the purpose of erecting Central Mills. On the report and recommendation of Mr. W. O. Hodgkinson, M.L.A., this sum was divided between the North Eton and Racecourse Mills, both in the Mackay district. This experiment demonstrated the utility of central mills, and practically settled the question of the unprofitableness of working large plantations; for from this period the large estates were subdivided into small farms, varying from 50 to 100 acres each, and leased or sold on reasonable terms, thus settling hundreds of small farmers on the land.

In November, 1888, the depression in the sugar industry still existing, a Royal commission was appointed to inquire into the cause of such, the best means to be adopted to revive and maintain its prosperity, and generally into the prospects of tropical agriculture in Queensland.

In 1893 the Sugar Works Guarantee Act was passed. This was an Act to authorise the making of advances, by way of guaranteed loans, for the establishment of sugar-works, and to provide for the repayment of the advances.

Under this Act any group of farmers could form themselves into a company, and by mortgaging their lands to the Government obtain sufficient capital to erect a mill.

#### SUGAR DISTRICTS OF QUEENSLAND.

The sugar-growing districts of this State are almost all on the coast, extending from the New South Wales border, latitude S. 28 degrees, to the Bloomfield River north of Cape Tribulation, latitude S. 16 degrees, and may be divided into three districts, viz., Southern, Central, and Northern.

THE SOUTHERN DISTRICT extends from Nerang Creek, near the border of New South Wales, to Gin Gin, embracing within this area the fertile alluvial lands on Nerang Creek, Pimpama, Coomera, Logan and Albert Rivers, Redland Bay, and Cleveland, Hemmant on the Brisbane River, Indooroopilly, Oxley, and Sherwood, also on the Brisbane River; and along the coast to the Maroochy River, to Maryborough on the Mary River and Tinana Creek, to Bundaberg on the Burnett and Kolan Rivers. It will thus be seen that the southern district is a very scattered one, and sugar is not now grown at most of the places above enumerated, such as at Oxley, Sherwood, &c.



SUGAR INDUSTRY.—CANE TO MILL BY TRAMWAY.

**CENTRAL DISTRICT.**—Sugar-cane is not grown to any extent in this district, the cultivation being limited to the requirements of one small mill at Yeppoon.

**NORTHERN DISTRICT.**—Extending from Cape Palmerston to Port Douglas. Embraced in this area are the rich sugar lands of Mackay on the Pioneer River, Sandy and Plane Creeks, and the coast fringing Repulse Bay; the Proserpine River in the Bowen district; the Burdekin River, the Herbert and Johnstone Rivers; the Mulgrave and Russell Rivers at Cairns and the Mosman at Port Douglas. No cane is grown further north than the Mosman at present.

The industry has assumed large proportions in the North, and notwithstanding the areas now under cultivation there are thousands of acres of tropical scrub lands of great fertility still untouched.

Of the three districts abovementioned the northern is by climatic and soil conditions more suited to the growth of the sugar-cane than the southern and central, which are more subject to the disastrous effects of frost and prolonged periods of dry weather. Light frosts are occasionally experienced in the Mackay, Proserpine, and Herbert districts, but not severe enough to cause serious damage.

#### SUGAR LANDS.

There are two classes of country in Queensland on which sugar cultivation is carried on, viz., scrub and forest.

*Scrub lands* may be classed as "True Scrub" and "Bastard" or "Forest Scrub." The difference being that in the former, or "True Scrub" lands, the undergrowth is very much denser and almost impenetrable with vines, and the timber is generally "soft wood"—that is, "true scrub wood," the roots and stumps of which decay in a very short time. In the "Bastard Scrub" there is a mixture of hard and soft wood, the former predominating, and an almost entire absence of vine growth.

Scrub lands are again of two classes—alluvial and volcanic soils; the former commonly termed "a made soil," a soil which bears indication of having been deposited by flowing water, and having no relation to the underlying rock. The alluvial soils of Queensland, particularly on the Northern rivers, are composed of clay, fine sand, gravel, vegetable, and mineral matters, brought down from the higher levels by flowing water and floods, and deposited, layer upon layer, for years past, and are exceptionally fertile.

The volcanic soils are those formed by the decomposition of basalt and other volcanic rocks generally; are usually reddish or chocolate coloured, rich in lime, potash, and phosphoric acid, and are extremely fertile. Immense tracts of this class of scrub land are to be seen at the Isis, at Bundaberg, on the Johnstone River, and at Cairns, and the Atherton Scrub, north of Cairns.

The forest lands of Queensland are too well known to need any particular description; they contain a diversity of soils and timbers. There are also alluvial and volcanic forest lands, and a red soil forest often erroneously called a volcanic soil. A good deal of cane is grown on forest land and profitably. Generally bloodwood and acacia country

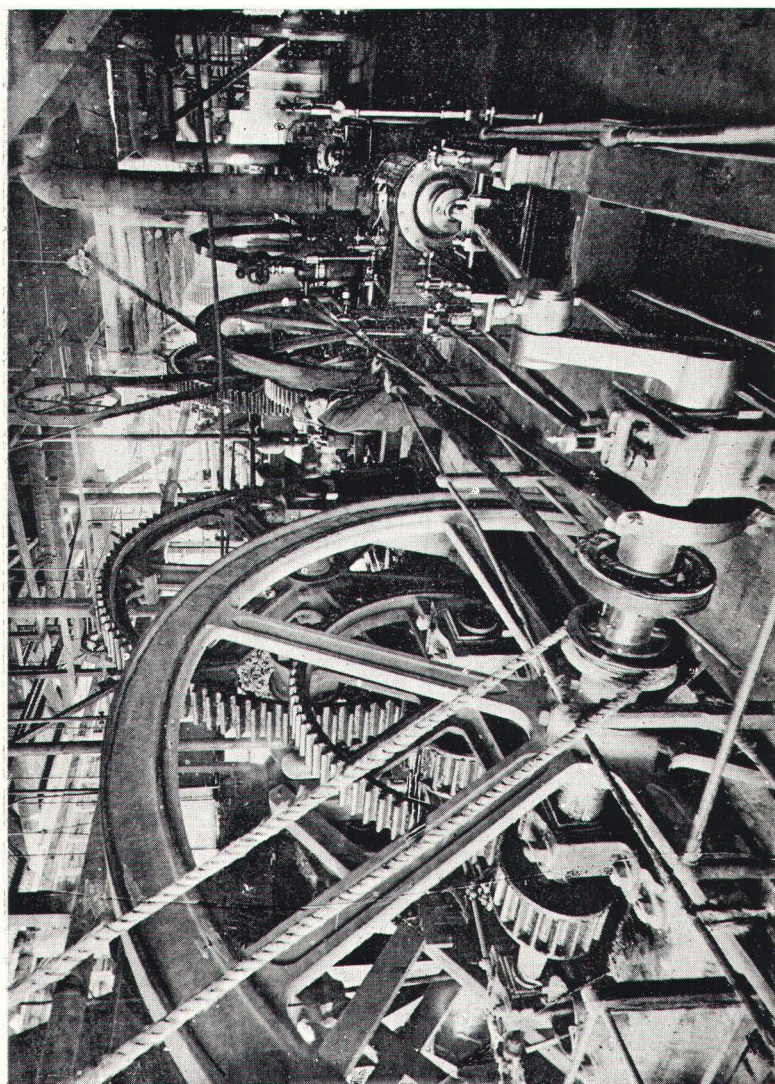
covered with a good growth of broad-leaved "blady grass," with a porous subsoil, is selected for sugar-growing; the crop, perhaps, not being quite so heavy as on scrub lands, but invariably richer in sugar content.

The following particulars taken from the report of the Registrar-General will serve to show the expansion of the sugar industry in Queensland:—

Years.	Number of Mills.	Area under Cane.	Tons Sugar Made.
		Acres.	
1864 ... ..	...	93	...
1866 ... ..	3	608	10
1876 ... ..	70*	13,690	8,214
1886 ... ..	160*	54,010	56,859
1896 ... ..	81†	83,093	100,774
1897 ... ..	63†	98,641	97,916
1898 ... ..	62†	101,012	163,734
1899 ... ..	58†	110,657	123,289
1900 ... ..	58†	108,535	92,554

\* Including juice-mills—that is, where crushing only is done and the juice conveyed elsewhere for manufacture into sugar.

† Complete sugar making plants only.



SUGAR-MILL MACHINERY.

Part X.

MINERAL WEALTH.

GEOLOGY.

Contributed by W. H. RANDS, A.R.S.M., F.G.S., Government Geologist.

The following notes are intended only to give the very briefest outline of the Geological Formations of Queensland.

In such a short paper it would be impossible to enter into any details of such a vast subject, and for further information I must refer the reader to the work on the Geology and Palæontology of Queensland and New Guinea, by Jack and Etheridge, 1892; and also to the numerous reports and publications issued by the Geological Survey.

Queensland, from a geological point of view, may be divided into two great parts, occupying nearly equal areas, but possessing very different physical features.

The one extends along the eastern coast from the New South Wales border northwards to the 12th parallel of latitude, and has an average width of about 200 miles from east to west. To this division also belongs an area in the north-west portion of the State, in the Burke district, extending from the extreme north-west southwards to Cloncurry and Boulia. The loftiest mountain ranges occur in this division, the remnants of what was once a high tableland, the highest peak being Bellenden Ker at an elevation of 5,150 feet.

The rainfall is comparatively large, and the country is generally well watered and timbered; and in places where the soil is good it is covered with dense scrubs. The drainage east of the main range, which runs in a north-north-west direction parallel with the coast, is eastwards into the Pacific Ocean.

This region consists of stratified rocks of different ages from the oldest palæozoic (the exact age of older rocks has not yet been determined) up to those of recent origin.

There are also large areas of granites, porphyries partly of igneous and partly of metamorphic origin, as well as other intrusive and interbedded igneous rocks.

It is in this division that most of the mineral wealth of the State exists.

The other large division is what is known as the Western Interior, consisting almost entirely of the Lower Cretaceous Rocks, locally known as the Rolling Downs Formation, overlaid unconformably in places by the Desert Sandstone, which is of Upper Cretaceous Age.

This presents a vast area in parts of almost treeless plains, with here and there clumps of gidya scrub.

The rainfall over this division, more especially in the south-west districts, is very small, and consequently the river beds are generally dry. The want of water renders it impossible to stock to anything like its full extent some of the very best pastoral land in the State; but this difficulty has to some extent been overcome in recent years by the tapping of vast supplies of artesian water that these Lower Cretaceous Beds contain.

The rivers to the north of the high open downs in latitude about 21 degrees 50 minutes flow in a northerly direction into the Gulf of Carpentaria, while south of this they flow in a south or south-westerly direction.

Following is a table, and a brief description of the geological formations so far known as occurring in Queensland:—

TABLE OF GEOLOGICAL FORMATIONS.

QUATERNARY AND CAINOZOIC ... ..			Recent Alluvia, Raised beaches, Post-Tertiary or Tertiary Alluvia, and Bone-Drifts
MESOZOIC ... ..	{	<i>Upper Cretaceous</i> ...	Desert Sandstone
		<i>Lower Cretaceous</i> ...	Rolling Downs Formation
	{	<i>Trias-Jura System.</i> { <i>Upper</i> {	Blythesdale Braystone
			Ipswich Formation
	PALÆOZOIC ... ..	{	<i>Permo-Carboniferous</i> { <i>Lower</i> {
Upper Bowen Formation			
Middle Bowen Formation			
Lower Bowen Formation			
Star Formation			
Gympie Formation			
	<i>Devonian...</i> ...	Middle Devonian Formation	
	<i>Silurian</i> ... ..	Silurian Formation	
	<i>Age undetermined</i> ... ..	Slates, Schists, and Quartzites, &c.	

#### PLUTONIC AND METAMORPHIC ROCKS.

Large areas of granites, syenites, porphyries of both plutonic and metamorphic origin and of different ages, occur right away from the south to the north of the State.

In these rocks a number of mineral areas are included, viz.:—The Charters Towers, the Croydon, Etheridge, Eidsvold, Normanby, Jimna Gold Fields; the Ravenswood Gold and Silver Fields; Kangaroo Hills and Running Creek Silver and Tin Fields; the Herberton and Annan, Bloomfield, and Stanthorpe Tin Fields; and the Mount Perry Copper Field.

#### METAMORPHIC ROCKS (*Slates, Schists, &c., of Undetermined Age*).

These rocks are all older than the Burdekin Beds (Middle Devonian), and are all more or less metamorphosed. They consist of metamorphic granites, quartzites, slates, schists, gneisses, and shales. No fossils have up to the present been discovered in them, and their exact age has not yet been worked out.

The principal mining areas in connection with these rocks are:—The McKinlay, Cape River, Gilbert and Woolgar, Coen, Normanby, Clermont and Peak Downs Gold Fields, and the Peak Downs Copper Field.

#### SILURIAN.

In the last edition of the Geological Map of Queensland, published in the year 1899, a large region in the north-west part of the State, which had hitherto been included in the slates and schists, &c., of undetermined age, were transferred to the Silurian. The evidence as to the age of those rocks was the determination by Mr. R. Etheridge, junr., of certain fossils found near the Cairns Range. They were identified by him as follows:—(1) *Orthoceratites*, sp. ind.; (2) *Actino-*

ceras (beaded siphuncle), sp. ind.; (3) Univalve and bivalve (casts and impressions). These are interesting as the first Silurian fossils found in Queensland. The area mapped as Silurian extends from the south of Boulia to the extreme north-west, and from 20 miles east of Cloncurry to the western boundary of the State, but their boundary has not yet been accurately mapped.

The principal mining areas are the Cloncurry, McKinlay, and Leichhardt Gold Fields, the Cloncurry Copper Field, and the Lawn Hills Silver Field. There are also the rich ironstone deposits of Mount Leviathan, and of other hills in the neighbourhood of Cloncurry.

#### MIDDLE DEVONIAN (*Burdekin Formation*).

Rocks containing characteristic fossils of the Middle Devonian occur in various parts of the State.

The principal area, and the one from which the Formation takes its name, is on the Upper Burdekin, including the Fanning River, Burdekin Downs, and Broken River. Rocks of this age also occur at Chillagoe; Reid's Gap; on the Townsville-Charter Towers Railway; south of Clermont; at Raglan; and in the neighbourhood of Olsen's Caves, north of Rockhampton.

A doubtful area is shown on the last edition of the State Map in the extreme north-west, in the neighbourhood of Camooweal.

The fossils occur in limestones, and consist almost entirely of corals, with a few Brachiopoda, and one Cephalopod. The most characteristic fossils being *Heliolites porosa*, *Pachypora meridionalis*, *Aulopora repens*, *Stromatopora*, and *Cystiphyllum*.

The Argentine Silver Field occurs in a series of slates and schists, &c., supposed to belong to this Formation.

#### THE PERMO-CARBONIFEROUS SYSTEM.

A glance at the geological map shows that the greater portion of the stratified rocks of the eastern portion of Queensland are included in this system.

The system as hitherto classified includes five formations, beginning from the oldest:—

Gympie Formation,  
Star Formation,  
Lower Bowen Formation,  
Middle Bowen Formation,  
Upper Bowen Formation.

Work has lately been done in Central Queensland which may render a reclassification of these rocks necessary; and the following has been suggested, but until the work is completed it cannot be finally adopted:—

Gympie	...	...	...	...	Marine Series
(?)	...	...	...	...	Basic and Acidic Intrusions
Lower Bowen	{	Lower Marine and Volcanic Series			
		Lower Freshwater Series			
		Upper Marine Series			
		Upper Freshwater Series			
Upper Bowen	{	Marine Series			
		Freshwater Series			
		Old Alluvial Deposits.			

*The Gympie Formation*, named after the type district (The Gympie Gold Field), occupies large areas in the South-eastern, Central, and North-eastern parts of the State. It consists chiefly of sandstones, grits, conglomerates, indurated shales, and limestones, which in parts have undergone considerable alteration. Bedded volcanic rocks are numerous, especially in the type district, as are also intrusive rocks. The strata generally dip at high angles of inclination.

The Gympie Formation contains a very scant flora, represented by Calamites, Lepidodendron; but it has produced the largest fauna of any Formation in Queensland, over 120 species having been described. The following genera are peculiar to this Formation :—

*Protozoa*.—Lasiocladia.

*Actinozoa*.—Zaphrentis, Cyathophyllum, Cladochonus, Monticulipora.

*Blastoidea*.—Mesoblastus, Granatocrinus, Tricælocrinus.

*Echinoidea*.—Archæocidaris.

*Crustacea*.—Griffithides.

*Polyzoa*.—Glaucanome, Rhombopora, Myriolithes.

*Brachiopoda*.—Martinia, Athyris, Lingula.

*Pelecypoda*.—Pterinopecten, Mytilops, Parallelodon, Nucula. Pleurophorus, Astartella, Cypricardella, Eurydesma, Conocardium, Edmondia, Sanguinolites.

*Gasteropoda*.—Loxonema, Euomphalus, Pleurotomaria, Yvania, Luciella, Murchisonia, Bucania.

*Pteropoda*.—Conularia.

*Cephalopoda*.—Nautilus, Gyroceras.

*Pisces*.—Deltodus?

Several gold and other mineral fields occur in this Formation, amongst which may be mentioned :—The Gympie Gold Field, Cania, Calliope, Norton, and other goldfields in the Gladstone district; the goldfields of the Rockhampton district; the Warwick Gold Fields; Paradise, Hodgkinson, Mulgrave, and Palmer Gold Fields. Copper deposits at Glassford Creek, Gigoomgan, Gooroomgan, and Mount Coora; some mercury deposits at Kilkivan; and the Neerdie Antimony Mine.

*The Star Formation*.—There is but little palæontological evidence for separating these beds from the Gympie Series. They contain nineteen species peculiar to themselves, and twelve species common to both. They are, however, less highly inclined than the Gympie Beds, and have not been so much disturbed and altered.

They are best developed at the following places :—Near the junction of the Great and Little Star Rivers, from which they take their name; near Dotswood, Keelbottom Creek; in the neighbourhood of Harvest Home, Lornesleigh, and Mount McConnell Stations (near the latter the nearly complete remains of a fish of the genus Palæoniscus was found); and at Drummond's Range, where numerous scales and teeth of fish occur.

The flora includes species of Calamites, Asterocalamites, Lepidodendron, Cyclostigma, Stigmaria, and Cordaites. The fauna is comparatively small when compared with that of the Gympie Beds, and includes the following genera :—

*Crinoidea*.—Actinocrinus.

*Crustacea*.—Beyrichia, Phillipsia.

*Polysphaera*.—Fenestella.

*Brachiopoda*.—Spirifera, Spiriferina, Retzia, Rhynchonella, Orthos, Strophomena, Chonetes.

*Pelecypoda*.—Entolium, Euchondria, Nuculana.

*Gasteropoda*.—Naticopsis, Porcellia.

*Cephalopoda*.—Orthoceras.

*Pisces*.—Palæoniscus.

*The Lower Bowen Formation*.—This Formation consists of a series of white and yellow sandstones, with beds of conglomerates, containing pebbles of quartzite and porphyry, derived from the metamorphic rocks in the vicinity. The lowest beds of this Formation consist of volcanic agglomerates seen near the heads of Pelican Creek, south-west of Bowen. This series dips under the bedded trappean rocks of Toussaint, Mount Dinlin, and Mount Macedon.

Another area occurs north of Mackay, where they have undergone considerable alteration.

So far no fossiliferous remains have been found in this Formation.

*The Middle Bowen Formation*.—This series overlies the last without any marked unconformity. They consist chiefly of alternate sandstones, blue and grey shales, and impure arenaceous ironstones.

The Middle Bowen extend from the type district on the Bowen River across the Central Railway between Emerald and Duaringa, and for about 120 miles further south up the Dawson and Comet Rivers.

These beds have lately been mapped in detail on both sides of the Central Line, and it is that work which has suggested the proposed alteration in the classification referred to earlier in this paper.

Seams of coal have been discovered in these beds both north and south of the railway line, one 30 miles south of Duaringa being 9 feet thick of perhaps the best coal for steam purposes in the State. It is anthracitic, containing almost 87 per cent. of fixed carbon.

Several seams of coal occur in the type district, but most of them are of a burnt or coked nature which is due to sheets of intrusive trap rock.

The Middle Bowen is mainly marine, although it contains a land flora in places.

The flora include species of *Glossopteris*, which is very common, and *Sphenopteris*, and a species of *Conifer*.

The fauna consists of over fifty described species, of which the most characteristic fossils are :—*Strophalosia Clarkei*, Eth.; *Strophalosia Gerardi*, King; and *Derbyia senilis*, Phill., which, with species of *Productus*, *Spirifera*, and *Martinia*, are very common.

*The Upper Bowen Formation.*—The Upper Bowen Beds are chiefly fresh water, and contain but a small flora and fauna. The flora includes: *Phyllothea australis*, *Sphenopteris lobifolia*, *S. flexuosa*, *S. crebra*, *Glossopteris Browniana*, *G. linearis*, and a species of a *Conifer*.

The fauna includes *Derbyia senilis*, *Productus brachytherus*, and a species of *Goniatites*.

In the type district in the neighbourhood of Jack's and Rosella Creeks the rocks have a low angle of dip. They cover a large area to the south of these creeks. They contain numerous seams of coal, including the Macarthur, Daintree, and Havilah seams. Most of the coal seams have been destroyed through being burnt by intrusive sheets of dolerite.

Beds of this formation occur west of Laura, the terminus of the Cooktown Railway, on the Little River Coal Field; at Hamilton, about 20 miles west of Cooktown; at Stewart's Creek, near Townsville; also further south near Mackay; and at Blair Athol, about 10 miles north-west of Clermont.

Blair Athol is the only place where coal seams in this formation are being actually worked. The coal is one of the best steam coals worked in the State.

#### LOWER TRIAS-JURA—(*The Burrum Formation*).

The Burrum Formation is the lowest member of the Mesozoic Rocks, and it extends along the coast from a point about 50 miles north of Bundaberg to south of Noosa Heads, occupying an area of 3,000 square miles.

The Coal Measures over the greater portion of this area are covered unconformably with sandstones, clays, and conglomerates of a more recent age, and to this fact is attributable the flat and barren nature of the country. The overlying rocks lie horizontally or nearly so, and are from 20 to 50 feet in thickness. The exact age of these rocks has not been determined, as no fossils have been found in them.

The Burrum Formation consists of grey and brown sandstones, conglomerates, and grey and black shales, &c.

The flora and fauna are both very scant. The flora includes:—*Sphenopteris flabellifolia*, var. *erecta*, T. Woods; *Trichomanites laxus*, T. Woods; *Thinnfeldia media*, T. Woods; *Tæniopteris Daintreei*, McCoy; *Alethopteris australis*, Morris; *Podozamites Kidstoni*, Eth. fil.; *Otozamites*, sp. ind., and *Baiera bidens*, T. Woods. The fauna is represented by *Corbicula burrumensis*, Eth. fil., and *Rocellaria terra-regina*, Eth. fil.

Seams of coal are known to occur in these measures from Litta-bella Creek, north of Bundaberg, to near Noosa, in the southern portion of the field.

Coal seams have only actually been worked near the Burrum River in the neighbourhood of the townships of Howard and Torbanlea, situated about 20 and 15 miles respectively north and north-west of Maryborough.

The principal collieries are the Queensland Coal Company's Colliery, the Burrum Colliery, and the Torbanlea Colliery. The latter is now closed down. In the Burrum River, just above the railway bridge,

five seams of coal at least of payable thickness can be seen cropping out in the bank within a distance of half-a-mile. They have a regular dip to the north-east at about 12 degrees.

The Burrum is the second largest coal-producing field in the State.

#### UPPER TRIAS-JURA—(*The Ipswich Formation*).

The Ipswich Coal Measures cover an area of about 12,000 square miles in the South-eastern portion of the State. A small area of Ipswich Beds occurs in the neighbourhood of Stanwell and Wycarbah, in the Rockhampton district; and another on Callide Creek, south-west of Gladstone, where there is one seam of over 30 feet in thickness of solid coal.

The rocks consist of the usual alternations of sandstones, conglomerates, and shales, &c. In the neighbourhood of Brisbane the base of the measures is a volcanic ash, consisting of a felspathic matrix with blebs of quartz, and angular pebbles of schist and quartz. This stone is largely used for building purposes, as are also certain of the sandstones and freestones from this formation.

The Coal Measures on the western portion of this area at Gowrie, Jimbour, and Clifton are on a higher horizon to those in the Brisbane and Ipswich District, from which they are separated by a thick mass of basalt.

The flora of the Ipswich Formation contains over eighty known species, five of which are common to the Burrum Beds.

The fauna is represented by four species only, viz.:—*Estheria mangalensis*, Jones; *Mesostigmodera typica*, Eth. fil. and Oliff; *Unio ipsviciensis*, Eth. fil.; and *Unio eyrensis*.

Several seams of coal occur in the Albert and Logan district, south of Brisbane, and thin coal has been met with close to Brisbane, but no mines have been opened up in either of these localities.

The Ipswich Coal Field has the largest output of any in the State. The mines, with the exception of those at Gowrie, Clifton, and Walloon, all occur in the Ipswich Basin, situated from 15 to 23 miles west of Brisbane, where about sixteen distinct seams are known.

#### LOWER CRETACEOUS FORMATION—(*The Rolling Downs Formation*).

This formation, which covers nearly the whole of the western interior, has already been alluded to earlier in this paper.

The strata have a very great sameness over an immense area, equal to that of over half of the whole State, and consist of shales, sandstones, conglomerates, and thin limestones, in the latter of which, from near Mitchell, some very interesting and well-preserved Diatoms have lately been discovered by Professor David, F.R.S.

Thin beds of coal have been met with in boring.

In 1894 Dr. R. L. Jack and Mr. Maitland made a survey of the eastern edge of this formation, which was followed along the western side of the Main Dividing Range, with the result that a very porous bed of sandstone, which they named the Blythesdale Braystone, was traced from the neighbourhood of Texas, on the southern border of the State, to Normanton, in the north on the Gulf of Carpentaria. This is the chief intake rock of the series from which the supply of artesian water is obtained.

Many rivers run across or along this sandstone, and in time of rains, though running in the upper reaches, their beds are dry lower down after crossing this sandstone, which has absorbed the water.

The amount of water yielded by the numerous bores is almost infinitesimal when compared with the amount of water taken in by this rock and other porous beds that occur, and the only conclusion that can be arrived at is that the water finds an outlet to the sea at the Great Australian Bight and at the Gulf of Carpentaria.

The total number of bores at the end of the year 1900 was something like 820, from 440 of which there is a daily outflow of 266,377,056 gallons.

The Rolling Downs Formation has been classified under the general head of Lower Cretaceous, but it contains amongst its numerous fauna forms allied to the Oolite.

The fauna is represented by over 120 species. Ammonites and Belemnites make their appearance. Amongst the fish remains have been found the following species:—*Lamna Daviesii*, Eth. fil; *Lamna appendiculata*, Agassiz; a species of *Aspidorhynchus*, Agassiz; and *Belonostomus Sweeti*, Eth. fil. and A. S. Woodw. There are also the following reptilian remains:—*Notochelone costata*, Owen; *Ichthyosaurus australis*, McCoy; *Ichthyosaurus marathonsensis*, Eth. fil.; *Plesiosaurus macrospondylus*, McCoy; *Plesiosaurus Sutherlandi*, McCoy.

#### UPPER CRETACEOUS—(*Desert Sandstone Formation*).

This formation at one time covered the greater portion of Queensland, but the work of denudation has left only isolated patches or outliers, which overlie unconformably the older rocks.

Some of these patches are of large extent, especially in the western districts, where they overlie and act as feeders to the Lower Cretaceous water-bearing beds.

The base of the Desert Sandstone is from 1,000 to 1,800 feet above the sea-level in the Southern and Central portions of the State, but in the Cape York Peninsula it is nearly at the sea-level.

The beds are always horizontal or nearly so, and consist usually of very coarse sandstones (often false-bedded), coarse conglomerates, shales, and magnesite shales.

A series of rocks in the neighbourhood of Maryborough, overlying the Burrum Coal Measures, against which they have been faulted, have been included in this formation. They have produced a large number of fossils, some of which are allied to those from the Desert Sandstone at Croydon. Except at these places, the formation is almost barren of fossiliferous remains.

The writer discovered leaves of the genus *Glossopteris* in rocks of this age at Bett's Creek, near the Cape River Gold Field. The genus had not before been discovered in Australia later than in the Permo-Carboniferous. Mr. Norman Taylor found the *Glossopteris* on the tableland between the Mitchell and the Walsh Rivers, and consequently ascribed it to the Carboniferous, though these rocks have since been found to be Upper Cretaceous. The genus makes its reappearance therefore in this formation, as it has not been detected in the formations intervening between this and the Permo-Carboniferous.

The fauna and flora are represented by thirty-five species, of which only the following eight species have been found outside the Maryborough Rocks, and all of these, except the *Glossopteris*, are from Croydon:—*Didymosorus? gleichenioides*, Oldham and Morr.; *Glossopteris Browniana*, Brong.; *Rhynchonella croydonensis*, sp. nov.; *Ostrea*, sp. ind.; *Placuna*, sp. ind.; *Maccoyella Barklyii*, var. *Mariæburiensis*, Eth. fil.; *Teredo*, sp. ind.; *Siphonaria Samwelli*, sp. nov.

The only mineral of commercial value from these beds is the opal, for which there is now a much greater demand. Its chief sources are Opalton, Mayne River, Opal Range, Jundah, Duck Creek, Nickavilla, and Listowel Downs.

#### TERTIARY.

The Tertiary deposits are very poorly represented in Queensland—in fact, with the exception of a few alluvial drifts and some raised beaches, no sedimentary deposits of this age are known.

There was undoubtedly great volcanic activity at this period, as is evidenced in many parts of the State by the outflows of basalt, capping the Desert Sandstone.

#### POST TERTIARY AND RECENT.

This period is represented by bone-drifts on the Darling Downs; Peak Downs; at Maryvale Creek; and along the Burdekin River, &c. They have furnished numerous remains of living and extinct marsupials, such as *Diprotodon australis*, *Macropus Titan*, *Macropus Ajax*, and other species of the same genus; *Thylacoleo*; several species of *Phascologomys*, and *Nototherium*, &c.; a Struthious Bird *Dromornis*; *Dinornis*, and the remains of reptiles and fishes.

The deposits in the Chillagoe Caves of North Queensland, and in the Olsen and Johansen Caves near Rockhampton, have also furnished a few bones, and may be expected to be a rich source of organic remains when they come to be thoroughly explored.

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#### MINERAL DEPOSITS.

In a short paper such as this, it is impossible to refer to the many mineral deposits of the State, or even briefly to the general characteristics of the different fields.

I am, however, adding two appendices—No. 1 showing the yield and value of the minerals of commercial value for each of the last five years, and No. 2 showing the quantities and values recorded of the minerals raised up to the end of the year 1900. This latter table does not really give the true total, as in the early days it was very difficult to get full records, many thousands of ounces of alluvial gold never having been reported, and the same is the case with many of the other minerals.

From these totals it will be noted that the mineral output of the State is gradually increasing, the gold return having jumped from 640,385 oz. in 1896 to 946,894 oz. in 1900. The output of coal in 1896

was 371,390 tons, while in 1900 it was 497,132 tons. The development of the coal deposits on the Dawson River and at Callide Creek, which is now being rapidly pushed forward, will be a great impetus to coal-mining in the State.

The output of copper has remained stationary, but since the rise in price of that metal there has been a great demand for properties containing copper deposits, and much development work has lately been carried on, and a greatly increased output of this metal may be looked for in the near future.

Queensland is notorious for its rich tin and copper deposits, and with such districts as Cloncurry, Herberton, Chillagoe, and Glassford Creek being developed she will probably take the lead amongst the Australian States in the production of those metals.

The present demand for manganese ores will probably lead to the extensive working of the Gladstone and Ipswich deposits.

The following tables show a very great preponderance in the value of gold produced in the State as compared with that of the baser, or less valuable, metals and minerals. This is not due to the non-existence of large deposits of such metals and minerals, but rather to the fact that in such a large and new country, with a comparatively small railway system, the cost of carriage to and from the nearest port has in so many cases rendered it impossible to work them with profit. Thus, for instance, although large deposits of iron ore are known of, no iron has yet been produced, and, for the same reason, several coal, copper, &c., fields have never been worked; but there is not the slightest doubt that as the population grows larger, and the facilities for carriage increase, these deposits will be of great value to the State.

#### APPENDIX No. 1.

TABLE showing the YIELD and VALUE of MINERALS of COMMERCIAL VALUE for each of the Years from 1896 to 1900, inclusive.

MINERAL.	TOTAL OUTPUT.		TOTAL VALUE.	CHIEF SOURCES.			
	Oz.	Tons.	£	Name.	Oz.	Tons.	Value. £
<b>1896.</b>							
Gold ...	640,385	...	2,133,041	Charters Towers	206,838	...	682,565
				Gympie	73,596	...	256,942
				Rockhampton	156,180	...	623,537
				District			
Tin ...	...	1,554	49,018	Herberton	...	1,059	31,770
Silver ...	279,284	...	32,162	Ravenswood	102,600	...	10,260
				Herberton	37,030	...	4,518
Lead ...	...	618	6,180	Herberton	...	482	4,820
Coal ...	...	371,390	154,987	Clermont	...	10,976	10,427
				Ipswich	...	280,094	106,740
				Wide Bay	...	80,320	37,820
Copper ...	...	580	21,042	Herberton	...	409	16,360
Opal ...	...	...	23,300	Fermoy	...	...	15,000
				Thargomindah	...	...	8,000
Wolfram ...	...	3	60				
Manganese	...	300	900	Gladstone	...	300	900

APPENDIX No. 1—*continued.*

TABLE showing the YIELD and VALUE of MINERALS of COMMERCIAL VALUE for each of the Years from 1896 to 1900, inclusive—*continued.*

MINERAL.	TOTAL OUTPUT.		TOTAL VALUE.	CHIEF SOURCES.			
	Oz.	Tons.	£	Name.	Oz.	Tons.	Value. £
<b>1897.</b>							
Gold	807,928	..	2,553,141	Charters Towers	360,489	...	1,030,671
				Gympie	96,251	...	335,033
				Mount Morgan	173,710	...	710,040
Tin	...	1,203	37,509	Herberton	...	935	27,967
Silver	234,065	...	25,118	Hodgkinson	49,980	...	4,995
				Ravenswood	29,400	...	2,940
				Stanthorpe	113,822	...	12,839
Lead	...	385	4,117	Herberton	...	252	2,521
Coal	...	358,407	139,889	Wide Bay	...	77,301	38,691
				Ipswich	...	277,172	97,411
				Clermont	...	3,934	3,787
Copper	...	288	12,645	Herberton	...	154	7,890
				Port Douglas	...	42	351
Opal	...	...	10,250	Thargomindah	...	...	4,050
Wolfram	...	13	195	Fermoy	...	...	6,000
Manganese	...	397	1,506	Gladstone	...	300	1,125
<b>1898.</b>							
Gold	920,048	...	2,750,349	Charters Towers	457,850	...	1,156,944
				Gympie	106,302	...	366,372
				Mount Morgan	172,527	...	699,987
Tin	...	1,025	36,502	Herberton	...	770	26,265
				Stanthorpe	...	90	3,600
Silver	104,021	...	10,585	Herberton	12,040	...	1,354
				Ravenswood	23,816	...	2,389
				Stanthorpe	60,000	...	6,000
Lead	...	248	2,480	Burketown	...	154	1,540
				District	...	...	...
Coal	...	407,934	150,493	Wide Bay	...	91,890	41,526
				Ipswich	...	310,444	103,927
				Clermont	...	5,600	5,040
Copper	...	62	2,166	Thargomindah	...	...	3,505
Opal	...	...	6,645	Fermoy	...	...	3,000
Wolfram	...	78	2,540	Herberton	...	68	2,040
Manganese	...	67	251	Gladstone	...	30	122
				Rockhampton	...	37	129
Bismuth	...	8	700	Ravenswood	...	7	560
<b>1899.</b>							
Gold	946,894	...	2,838,119	Charters Towers	511,021	...	1,357,517
				Mount Morgan	183,809	...	735,190
				Gympie	89,772	...	310,724
Tin	...	1,308	77,302	Herberton	...	1,030	58,058
Silver	145,321	...	15,671	Herberton	11,090	...	1,248
				Ravenswood	54,308	...	5,431
				Stanthorpe	75,698	...	8,516
Copper	...	161½	9,498	Stanthorpe	...	64	4,608
				Herberton	...	17	1,224
Lead	...	56	730	Herberton	...	38	570
Coal	...	494,000	175,715	Ipswich	...	373,655	127,305
				Wide Bay	...	111,414	40,597
				Clermont	...	8,940	7,813
Opal	...	...	9,000	Fermoy	...	...	6,000
				Thargomindah	...	...	2,500
Wolfram	...	259	10,060	Hodgkinson	...	240	9,120
Manganese	...	735	2,831	Gladstone	...	735	2,831
Bismuth	...	2	494	Hodgkinson	...	2	494
Antimony	...	40	200	Cooktown	...	40	200

APPENDIX No. 1—*continued*.

TABLE showing the YIELD and VALUE of MINERALS of COMMERCIAL VALUE for each of the Years from 1896 to 1900, inclusive—*continued*.

MINERAL.	TOTAL OUTPUT.		TOTAL VALUE.	CHIEF SOURCES.			
	oz.	Tons.	£	Name.	Oz.	Tons.	Value. £
1900.							
Gold ...	963,189	...	2,871,709	Charters Towers	454,679	...	1,203,166
				Mount Morgan	206,681	...	819,762
				Gympie ...	78,509	...	324,154
Tin ...	...	1,123	74,041	Herberton ...	...	789	49,199
				Cooktown ...	...	159	12,417
Silver ...	145,325	...	15,671	Stanthorpe ...	68,914	...	7,753
				Ravenswood ...	7,214	...	812
				Herberton ...	5,249	...	500
Copper ...	...	384	23,040	Stanthorpe ...	...	48	2,880
				Herberton ...	...	21	1,260
Lead ...	...	56	730	Herberton ...	...	47	799
Coal ...	...	497,132	173,705	Ipswich ...	...	379,504	126,425
				Wide Bay ...	...	110,849	41,148
				Clermont ...	...	6,774	6,126
Opal ...	...	...	7,500	Thargomindah	...	...	2,500
				Fermoy ...	...	...	1,500
Wolfram ...	...	189½	6,605	Hodgkinson ...	...	188	6,550
Manganese ...	...	75	205	Gladstone ...	...	55	175
Bismuth ...	...	8	1,865	Hodgkinson ...	...	5	1,365
Molybdenite ...	...	11	561	Hodgkinson ...	...	11	561
Gems ...	...	...	900	Clermont ...	...	...	900

## APPENDIX No. 2.

TABLE giving the QUANTITIES and VALUE of MINERALS Raised in QUEENSLAND from the Year 1860 to the end of 1900.

	Quantities Raised.		Value.
	Oz.	Tons.	£
Gold ...	14,837,049	...	About 51,929,672
Tin Ore ...	...	88,722	4,600,143
Coal ...	...	6,156,051	2,632,112
Copper Ore ...	...	60,885½	2,055,465
Silver Ore ...	...	?	725,801
Opal ...	...	...	123,445
Bismuth ...	...	546½	60,728
Antimony ...	...	3,064	35,458
Lead ...	...	2,326	24,870
Wolfram ...	...	672½	20,712
Gems ...	...	...	9,837
Manganese Ore ...	...	2,069	7,196
Molybdenite ...	...	11	561
Total Value of Minerals .. ..			£62,226,000

NOTE.—No records of the quantities and values of many materials, such as lime, building stone, clay for pottery and other purposes, &c., have been kept.

## MINING.

[Contributed by W. H. TRAILL, Esq.]

When, in 1851, tidings that gold in prodigious quantities, and procurable by any active man with a pick and shovel and a tin basin, had been discovered near Bathurst, in New South Wales, spread over Australia, it naturally occurred to every colonist that there might be other places in Australia where similar treasures only needed looking for to be brought to light. The northern districts of New South Wales, now included in the State of Queensland, had at that time a population of only 8,575 persons—6,012 males and 2,563 females. Such of the men as had no sufficiently restraining ties hurried south to join in the scramble for gold at the scene of its first discovery. Others, unable to travel so far, began to examine the country in their own neighbourhood, stimulated by a generally accepted impression that, the mountain system of Eastern Australia being continuous, the presence of gold at one part of its base proved the possibility of a like occurrence at any other part. Among the business people of Brisbane and Ipswich a fund was subscribed to an amount little short of £1,000 to provide rewards to prospectors who might make the wished-for discovery. Numerous parties of prospectors scoured the country, the spurs and flats below the Main Range being particularly examined. Some specimens of gold were unearthed, indeed, but no goldfield was found, and the first excitement died away. The successive prodigious discoveries in the south, however, indelibly stamped into the minds of the people a conviction that there was no saying where gold in abundant deposits might not exist. Thenceforth, in the idea of the wayfarer any tussock of grass might have its roots in a soil spangled with gold dust, every creek might be a Pactolus, and every ridge a treasury, knowledge of the most obvious appearances favourable to the presence of gold, and of the simple methods of testing the "wash," became common among all classes. From this time forth, when bush-labourers erected a fence for stockyard or paddock, there would often be one among them who would scrutinise the soil thrown out from the post-holes, and even carry a dishful to water, there to be washed for gold. If temporarily without paid employment, men occasionally occupied themselves in doing some prospecting. When tramping from station to station in search of a job, some energetic men burdened themselves with additions to the ordinary "swag"—a pick, a shovel, and a tin dish—and did a bit of prospecting here and there as appearances tempted them. But nothing particular came of all this for years. The Moreton and the Darling Downs districts, which were the principal populated parts at the beginning, are not even yet known to store alluvial gold in any considerable quantity. Further out, the area to be searched was practically unlimited, and the casual searchers so few as to be scarcely worth considering.

It was not until the year 1858 that researches, carried on in this spirit, brought to light a deposit of gold in alluvium sufficiently concentrated to attract general attention. This discovery was made by a party of prospectors, led by one named Capel, who had been subsidised and sent forth from the little outpost settlement at Gladstone, Port Curtis. The whole neighbourhood of this township

had been ascertained to be auriferous, but in a tantalising fashion, so far. A little gold could be got almost anywhere in its vicinage and for scores of miles round about, but payable wash had not been come upon. Capel and his mates pushed out far to the northward. Braving the savage blacks, they reached and crossed the Fitzroy River, and at a place now known as Canoona they found what compensated them for their long series of disappointments. Returning to Gladstone, they reported their discovery of payable stuff to the Government Resident, who despatched with them, to inspect and test the place, the best expert at his disposal, the Government surgeon, who had Californian digging experience. This gentleman on his return confirming the prospectors' account, the Government Resident, in an official despatch to the Governor at Sydney, endorsed the statements which had already begun to circulate through Australia, that gold in considerable quantity and easily won existed at Canoona. The actual tenor of the official statement was that in one place it had been ascertained that any active man could with the simplest appliances win gold enough to pay him at the rate of 15s. to £1 per day, and that at numerous other localities a little gold had been found and indications seemed favourable to the existence of more. But other reports from private sources were more glowing. The imagination of the people throughout Australasia broke out in a sort of semi-spontaneous combustion. From the remotest parts of the continent and even from New Zealand men hurried towards Canoona. Steamers were laid on, sailing vessels were chartered, for the conveyance of the eager throngs. From all parts of Queensland men even tramped to the place. The first-comers seem to have done very well. But by the time the tardier arrivals reached the Fitzroy River, and some 15,000 men had crowded to the spot—hundreds of miles from any large settled centre—the rich patch, for it was no more than that, had been worked out. Retreat became an imperative necessity. But a large proportion of the rushers had exhausted their means in getting to the place. The Governments of New South Wales and Victoria had to interpose to avert a catastrophe, and made arrangements with steamship-owners to retransport to their southern starting points those who were unable to defray the cost of their return passage. No record had been collected nor could, under the circumstances, have been secured of the amount of gold dug up at Canoona. Those who had profited by the discovery were few; those who had suffered from it were many, and, on regaining the parts of the colonies whence they had precipitated themselves, diffused far and wide their conviction that the northern parts of what was then New South Wales were dangerous to trust in as regards alleged gold discoveries.

Nevertheless, it cannot be said that the general impression left by the Canoona rush was to depress the expectations of residents in what, during the following year, was constituted the separate colony of Queensland. The discovery at Canoona had, at the worst, proved that a rich, although small, goldfield was among the possibilities of the territory. Provided a rush of men from distant places were averted, any other discovery of equal value would be a splendid thing for people within reasonable access. Prospecting for gold in Queensland was rather stimulated than discouraged by the Canoona affair. A few years later, in 1863, three Frenchmen had discovered and were washing

alluvial gold at Canal Creek, on the southern fringe of forest country adjoining the Darling Downs. But they kept their own counsel, and it was not till some years later that their proceedings were discovered, a small rush ensued, and a goldfield was there proclaimed. During the same year another field of limited area but considerable richness was located in the neighbourhood of Gladstone, at Calliope; and by 1865, within a score of miles of Canoona, the Crocodile Creek, on the opposite side of the Fitzroy, gave employment and profit to a considerable body of diggers.

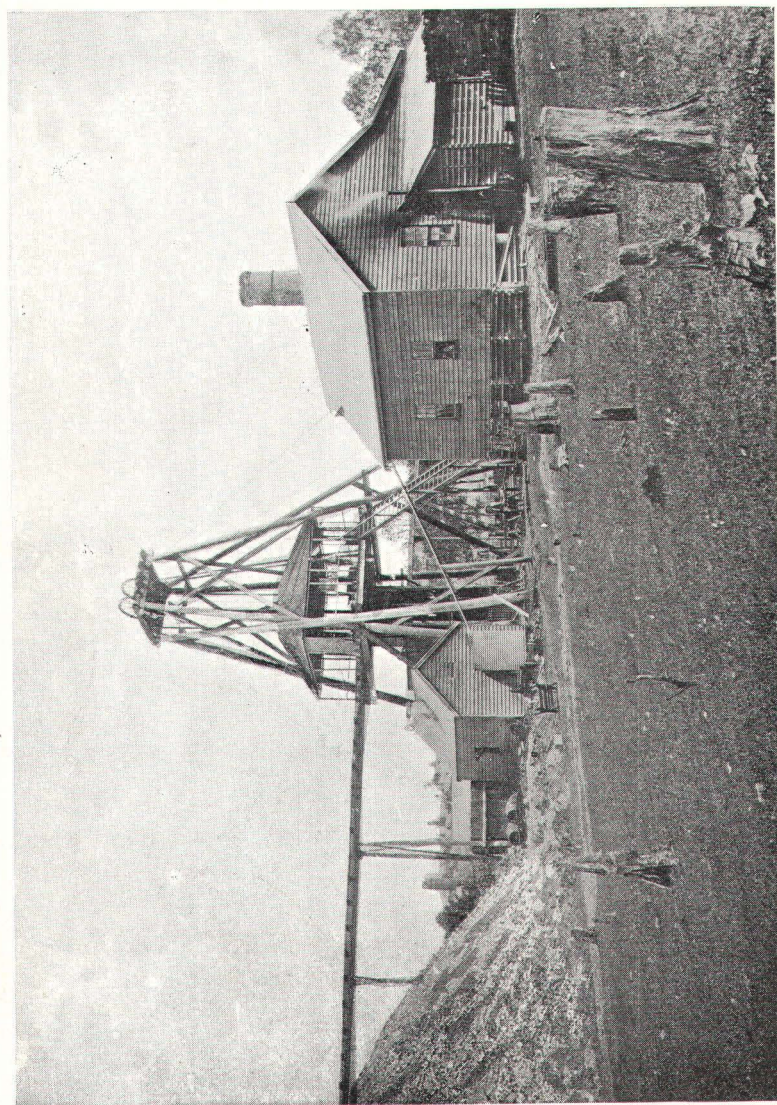
All around the abandoned Canoona field—in fact, from the year 1865 forward, within a radius of 50 or 60 miles from Rockhampton, gold was found in places, isolated from each other, both in alluvial deposits and in quartz reefs. Following the rush to the Crocodile came the unearthing of gold at Morinish, where 500 men for a time did well, and several reefs were broken into. Ridgeland was the next discovery, and excellent results were realised in 1867 from its alluvial and from the surface stone of its reefs. Rosewood followed, and rewarded lucky diggers with an unusual mingling of small nuggets among the gold dust in the “wash,” while its reefs also yielded some rich stone. Gold was found at Cawarral as early as 1863, but it was not till years later that the remarkable extent to which the locality is seamed with reefs was ascertained. New Zealand Gully, Mount Wheeler, Raglan, were among other places within this circuit found thus early to be auriferous.

Nearly 300 miles inland thence, on the Peak Downs, an extensive, although not strikingly rich, area of auriferous alluvial ground was first opened at Clermont. There were other localities where a little gold was being found. At Nanango, for instance, patchy deposits alternately allured and disconcerted prospectors. It was a digger dissatisfied with his luck at Nanango who, tramping thence towards Maryborough, prospecting likely spots along the track as he travelled, hit upon so rich a gully on the Traverston cattle run that he had no occasion to go further. The name of the gully was Gympie Creek, and the discovery of its rich stores by James Nash was the first of a series of disclosures of mineral treasures distributed throughout the territory of Queensland, which still continue, and to-day have among their results the existence of sixty-nine proclaimed goldfields and sixteen districts, enriching the colonists by yields of minerals other than gold and coal.

The story of the discovery and first development of the Gympie goldfield has been repeatedly printed, yet cannot be passed over here without at least an outline. Nash, after procuring a supply of rations at Maryborough, proceeded to get gold as fast as he could, at first single-handed, and presently assisted by a mate, he brought up after a visit to Brisbane to sell gold and buy a horse and dray, tools, rations, &c. But it dawned upon him that there was more golden ground than he could work out in a lifetime, even if he got the chance, while, if he were discovered, he would forfeit his right to a Government reward offered to the discoverer of a goldfield under certain conditions, and also to the extended reward claim allowed to such discoverer. He reported his discovery, and again, as in the instance of Canoona, a thrill of excitement moved the people of Australia.

The situation of Gympie indeed differed in essential respects from that of Canoona. The latter had been far beyond the frontiers of the settled portions of Australia, beyond the navigable reaches of a river never ascended by any vessel of burden, difficult to get at, and still more difficult to get away from, remote from all bases of supplies, and presenting to adventurers only the alternative of success or catastrophe. Gympie was situated but 60 miles from Maryborough, a substantial little town, with regular steamship communication with Brisbane and Sydney. Within a radius of little more than 100 miles were Brisbane, the capital of Queensland, Ipswich, and Toowoomba. There was consequently no reason to apprehend lest the events which concluded the rush to Canoona should be repeated at Gympie. The colonies were at this juncture in the depths of a financial depression. In Queensland itself a considerable proportion of the people of all classes alike scarcely knew where to turn for the next day's bread. Accounts from the first people who hastened at the heels of Nash as he conducted the Acting Gold Commissioner to the place—that is to say about half the population of Maryborough—were emphatic as to the abundance of gold and the ease with which it was procurable. It lay near the surface: it was coarse: nuggety pieces were plentiful among the finer particles: the auriferous area was not confined to Nash's Gully. A rush was inevitable, and a rush took place. The number of persons who gathered on the spot was about equal to that of those who crowded Canoona at its climax—15,000 to 16,000. The element of luck and the test of fitness operated as usual. Hundreds who hurried to the place failed to strike gold at the first essay, and scampered back again whence they came. But Gympie proved a great goldfield. Not indeed very extensive, nor the centre of others as good. But over a sufficiently wide area it yielded the precious metal in profusion—dust and frequent nuggets. The largest of these, found near the site of the present post office, weighed 804 oz. An ounce of coarse gold to the dish was not an uncommon find. Still, when over 10,000 vigorous men working to the fullest stretch of their muscles set themselves to strip even a square mile of ground, the work cannot go on for ever. The auriferous alluvium began to run short, and the end of the Gympie rush appeared imminent. But gold in the matrix—quartz reefs—was sought and found. Reefs corresponding in richness with the alluvium: reefs which as soon as broken into showed stone veined and banded with glittering gold: reefs from which men filled buckets with specimens so mottled with the metal that they were fain to keep watch and watch over them in their tents, the livelong nights, revolver in hand. Some parcels, dollied by hand, yielded at the rate of 1,000 oz. to the ton. Machinery was quickly procured, companies were formed, and Gympie settled down into the reefing centre which it is to this day.

These developments at Gympie having demonstrated that a great and consistent auriferous quartz-reefing field existed so far to the northward of the earlier discovered mining centres in the southern colonies, the population was on the alert, hopeful and expectant that other localities would be found to be as prolific of gold in alluvium or in reefs as Gympie. Prospecting was stimulated. Indications which previously had been or would have been passed over with indifference were now scrutinized with sanguine interest. From



GOLD MINING.—GYMPIE.

Gympie itself parties of diggers who had not drawn prizes in that lucky-bag pushed out, and found sundry patches of fairly rich alluvial in the scrub which clothes the flanks of the ranges at the southerly and westerly heads of the Mary River at Jimna, at Yabba, and also at Kilkivan. The existence of quartz reefs, near where the Frenchmen had been working for alluvial at Canal Creek, and at Lucky Valley, in the Warwick district, was remembered, and steps were taken to test their value. These, in turn, led on in subsequent years to similar discoveries of alluvial and reefs at Thane's Creek, Talgai, Leyburn, Pikedale, and some other places, also in the same tract of country to the south and west of Warwick, on the margin of the Darling Downs.

But it was not in the southern parts of Queensland only that the impulse derived from the splendour of Gympie made itself felt. During the very next year after the discovery there, a party of prospectors located rich alluvial wash in some gullies on a run situated about 80 miles inland, south from Townsville. A rush ensued. As had been the case at Gympie, the alluvial deposits were ascertained to be in close proximity to numerous quartz reefs, rich in gold contents. The Ravenswood Gold Field thus came into existence, and was almost immediately rivalled, in the same year, 1869, by a similar discovery of an alluvial and reefing field on the head waters of the Gilbert River, at a locality nearly equi-distant from the southernmost shore of the Gulf of Carpentaria and the Pacific shore at Townsville. In 1871 the country back from Gladstone was the scene of two rushes—to Cania and to Kroombit, both alluvial fields with reefs adjoining.

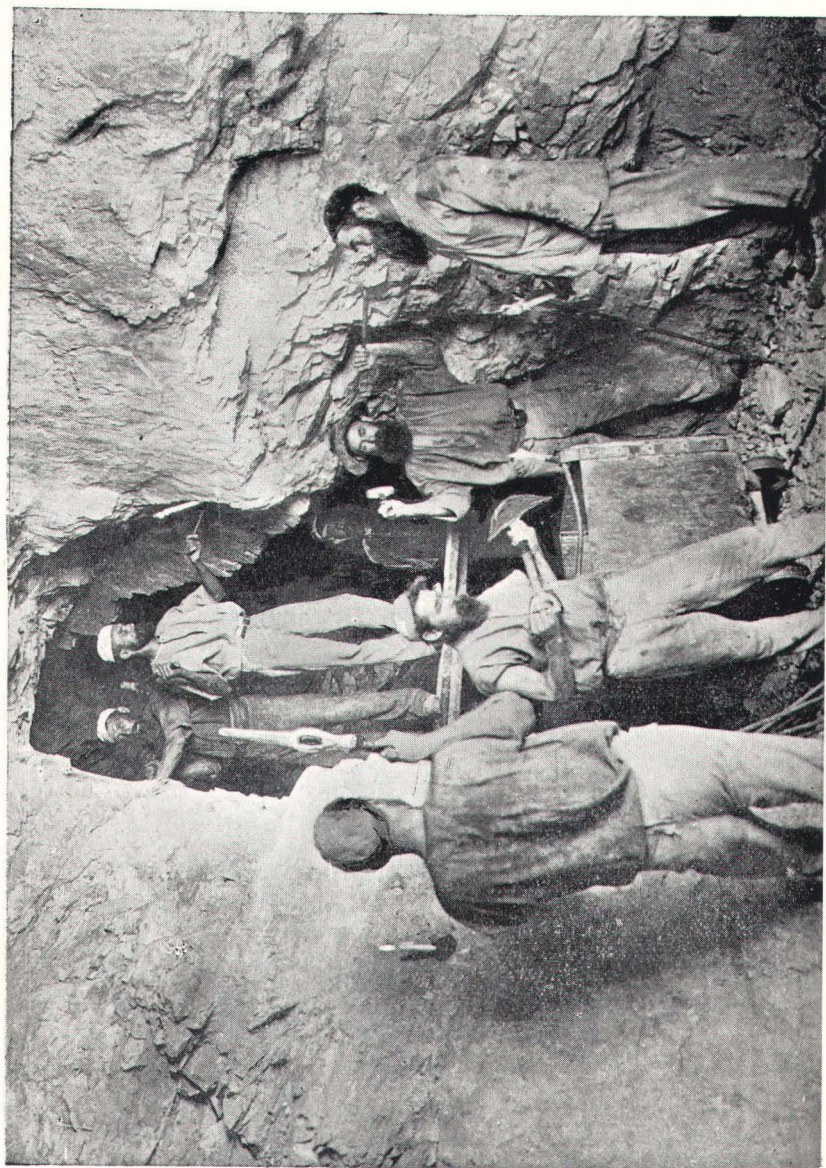
The discovery of gold at Ravenswood led, in the same year, to prospectors coming upon lodes of argentiferous ores in the immediate neighbourhood. The superior attractions of the coincident extension of the auriferous discoveries detracted in a great degree from the interest which these silver deposits would otherwise have excited. But blocks of land were selected and secured in fee-simple, and in subsequent years the production of silver here assumed for a time some importance.

A long distance to the northward, where the Running River, a head of the Burdekin, comes down from the western slopes of the main coast range, a place called Kangaroo Hills was found to be variously mineralised. Tin, silver, and copper there existed, the first-named in alluvium, the two latter in lodes. Beyond the securing of numerous mineral selections including some of these lodes, not a great deal was then effected. The locality was accessible from Townsville only by a long roundabout track, and, although fairly close to the coast at Ingham and at Cardwell, the range interposed an obstacle absolutely prohibitive of wheeled traffic and not surmountable without extreme difficulty even by pack-animals.

The year 1872, however, was as notable in regard to discoveries of minerals other than gold as had been the Gympie year, 1867, in connection with the nobler metal. It was then that the existence of a very extensive stretch of country, in a granite formation almost on the border of New South Wales, about 38 miles south from Warwick, was found to be stored, close under its surface in places, and in the channels of existent and of former watercourses, with stream tin in prodigious abundance. As Warwick was, by this time, connected by railway with Ipswich, access from Brisbane was easy. Citizens of the

capital, of Ipswich, and of the townships on the Darling Downs united in groups of from two or three to a score or more individuals, to despatch emissaries to the place to secure, by pegging, areas of stanniferous ground. At that period, under a law now long repealed, as much as 640 acres—a square mile—of land could be secured, with right to acquire the fee-simple, of mineral lands by one individual or proprietary in a single block. There were disappointments, of course. Many of the men so despatched, not daring to run the risk of being forestalled in the scramble for areas, did not prospect at all, but simply pegged out any land near the first-comers which appeared to be unappropriated. But on the whole the results were amazingly profitable to the speculators. During the first five years the amount of tin ore raised was 14,165 tons, worth £715,330. Tin ore in lodes or reefs was sought, but in vain, and, the stream tin in the alluvial ground being gradually exhausted, Stanthorpe, as the locality was named, has practically ceased to hold a place among the productive mineral districts of Queensland.

Simultaneously with the above discovery of tin, there was a find of copper lodes in the Burnett district, at Mount Perry, which again enlarged the ideas of prospectors. Very rich lodes indeed had previously been located on the Cloncurry, a branch of the Flinders River in the far North. But remoteness, inaccessibility, and local scarcity of fuel had prevented these being turned to advantage. Mount Perry, on the other hand, was but about 60 miles from a seaport at Bundaberg, near the mouth of the Burnett River, and abundance of timber on the spot furnished fuel for smelting, while the ore was easily fluxed. The first discovered mine, which bore the name of the place, was taken in hand by Sydney capitalists, equipped with furnaces and refinery, manned with miners specially brought from the older copper mines of South Australia, and even from Cornwall direct, and took and held the lead as the chief producers in the district. Scores of other lodes, indeed, were located and broken into in immediate proximity and for miles around. But although some of the later discoveries seem to rival the original one in length and bulk of lode, no other got so substantial a financial start, and none has yet put the production of the former into the shade. Still the discovery of tin at Stanthorpe, and copper at Mount Perry, and the distinct success at the outset of several properties there, enlarged the ideas of prospectors generally. Instead of confining their attention to indications of the presence of gold alone, they now took notice of every token of mineralisation, whatever it might be. Thus, former seekers of gold in the Kilkivan spurs, and elsewhere in the Mary Valley, bethought them of certain appearances which they had disregarded at the time. The localities were revisited, and immediately the existence of numerous lodes, impregnated with copper and with quicksilver ores, was ascertained. Blocks of mineral land in great numbers were secured, companies formed, and mining operations commenced. At Mount Clara, at Mount Coora, and elsewhere, furnaces were built, ore raised, and copper smelting undertaken. At Black Snake a furnace for the extraction of quicksilver from cinnabar was erected. At none of these places, however, was permanent success achieved. For various reasons, including heavy falls in the price of copper, all these mines languished, and were sooner or later allowed to lie idle, their furnaces



GOLD-MINING.—DRILLING IN TUNNEL.

crumbling, and their underground workings abandoned to collapse and decay. The particulars preserved relating to the size, contents, and quality of the lodes appear to warrant a belief that the causes of the failure of operations were such as subsequent circumstances have to a great extent removed; and even if conditions be not yet such as ensure their profitable working if reopened to-morrow, they may fairly be reckoned among the valuable reserves of mineral wealth in Queensland which must yet yield appreciable additions to the wealth of the State.

While these disclosures of mines of tin, copper, antimony, and quicksilver were engaging attention in the south, additional goldfields were fully occupying interest in the northern parts of the State. The Ravenswood reefs, on being followed to a depth of a couple of hundred feet or so, below which atmospheric influences ceased to convert into oxides the baser metals which accompany gold in these lodes, were found to be so invaded by these minerals that the ordinary battery treatment failed to separate and save the gold contents. The field was in danger of ceasing to be profitable to work, mines were being abandoned and batteries hung up, when a fresh discovery, not a hundred miles away, of a congeries of quartz reefs, so numerous and, where their outcroppings were broken into, so rich as to draw from all parts every miner who had no powerful attraction to keep him where he was. Ravenswood was forthwith almost utterly deserted, and the Charters Towers Gold Field, destined to become the most productive in Queensland, sprang into existence. Scarcely had the splendours of Charters Towers been realised by Queenslanders, and the existence of secondary fields in its neighbourhood at the Cape River, at Rishton, at Southern Cross, and elsewhere been ascertained, than another party of prospectors, availing themselves in 1873 of suggestions published in a report by an official exploring party, dazzled the population of all Australia by emerging from a remote and savage region in the base of Cape York Peninsula laden with gold, and claiming the Government reward for the discovery of a rich alluvial field. A tremendous rush, not only from Australia and New Zealand, but also from China, ensued when the accounts of these first prospectors were not only confirmed but transcended by reports from the first detachment of diggers who hurried to the spot. Thus originated, in 1873, the Palmer Gold Field, a tract of auriferous alluvial ground not equalled in extent and perhaps not surpassed in richness by any of its Australian predecessors. The success of the Palmer rush, encouraging further researches was followed two years later by the discovery some distance to the southward, in similar country, by an exploratory prospecting party in the Government service, of another rich alluvial goldfield now known as the Hodgkinson, and become a reefing field. At the far off Cloncurry also, the ubiquitous prospector about this time found patches of payable alluvial, and work was commenced there upon several reefs in widely separated situations.

The year 1879 was noticeable for the first disclosures of the existence of important deposits of metals on the tableland situated inland from Cairns and at the heads of the Herbert River (this latter discharges into the Pacific further south), and of the Walsh, Tate, and Lynd, tributaries to the Leichhardt, which disembogues in the Gulf of Carpentaria. On the Wild River, a head of the Herbert, stream tin was

first found, but led to the discovery of rich lodes of that metal, and as prospecting extended the deposits in both forms were ascertained to be spread over a very wide area of country, and to be intermingled with lodes of silver and of copper, besides some gold reefs. Such was the origin of the now famous Herberton, Walsh, and Tinaroo mineral fields. Once miners were attracted to those regions they as usual spread all round, and some plunging into the dense scrubs which clothe the declivities of the coast ranges facing the Pacific, found that the alluvial terraces which break these slopes covered considerable layers of "wash" containing in some parts stream tin and in others gold dust, with occasional auriferous reefs. The Russell, the Mulgrave, the Jordan, and the Johnstone are among the fields thus disclosed. On a branch of the Palmer River also, in the vicinity of Maytown, one of the gold-mining centres of that field, considerable quantities of stream tin were in 1881 unearthed, and promising lodes located at Cannibal Creek in the same neighbourhood.

The discovery in the following year of the phenomenal accumulation of gold in the crest of a hill within 24 miles of Rockhampton was the next sensation. The hill being within a freehold property, and the formation being obviously detached and exceptional, no rush of miners to the spot proportionate to the enormous richness of the find occurred. Such surrounding land as was available was indeed pegged out, but Mount Morgan yet has no local duplicate, and indeed has nowhere in the world its fellow.

The rushes to the Palmer, the Hodgkinson, and to a number of places which have not maintained the expectations which at first they excited, occasioned temporarily the almost total desertion of the Gilbert Gold Field, and of the Woolgar and Etheridge (at first officially designated the Greenhill), over which miners from the Gilbert had meanwhile spread. But these had been re-peopled and were being worked, when in 1884, within a hundred miles of Normanton, a part of the Gulf of Carpentaria, the first of several groups of reefs, which now constitute the gold resources of the Croydon Gold Field, was broken into, found to be rich in the noble metal, and occasioned a rush in that direction, inaugurating one of the most important among the goldfields of Queensland. Since that discovery none of anything like equal importance, so far as has been shown by developments up to this time, has rewarded the researches of prospectors in Queensland. North from Cooktown, on the Starcke River, flowing towards Princess Charlotte Bay, two auriferous areas have been distinguished, but have not proved yet worthy to rank among the important goldfields of the State. Still further towards the apex of Cape York Peninsula, astride of the Main Range, the twin fields of Coen and Rocky River have not only yielded a fair quantity of coarse gold and some nuggets from the alluvial in places, but have reefs from which excellent results have been obtained. The most recent discovery of all, the Hamilton, made within the past two years, may be regarded as an offshoot from the Coen, being situated between that field and the Palmer. A protracted drought since its first discovery has hampered its development, and almost prohibited further prospecting of the regions adjacent to these two fields, although cursory examination encourages expectation that other places equally auriferous may thereabouts be found. Near the north-western corner of the State, on the Gregory River, which flows



GOLD MINING.—UNDERGROUND WORKING.

into the Gulf of Carpentaria, numerous lodes of silver-lead have lately been found, and arrangements for developing these energetically have been inaugurated.

The foregoing statement of the sequence, in order of discovery, of the goldfields and mineral fields mentioned, is not put forward as comprehensive. Only such fields are included as have either established themselves as among the leading producers of metal, or as appear now to be possibly coming to the front. The actual number of proclaimed goldfields in Queensland is sixty-nine, and a list of them is given below:—

## GOLDFIELDS, WITH DATES OF PROCLAMATIONS.

No.		Date.	No.		Date.
1	Agate Downs	2-12-91	36*	Milton	12-5-79
2	Barmundoo	18-6-97	37*	Morinish	7-8-86
3*	Boolbunda	1-12-80	38	Monal Creek	5-8-92
4	Bompa	10-1-90	39*	Mount Spencer	29-11-89
5	Bower Bird	5-9-95	40	Mulgrave	18-2-85
6	Baleooma	27-1-97	41	Mount Wyatt	30-10-85
7*	Calliope	27-9-63	42	Marodian	20-11-96
8*	Canal Creek	2-10-68	43	Mareeba	7-6-95
9*	Cania and Kroombit	17-2-71	44	Nanango	17-1-90
10	Cancona	31-10-89	45	Nebo	5-8-87
11*	Cawarral	7-8-86	46	Normanby	29-11-89
12*	Cape River	24-11-82	47*	Palmer	30-5-84
13*	Charters Towers	5-9-94	48*	Palgrave	3-7-97
14*	Clermont	15-9-98	49	Paradise	28-11-90
15*	Cloncurry	29-11-89	50	Piccadilly	7-10-98
16	Coen River	16-6-98	51*	Pikedale	30-11-77
17	Croydon	11-10-95	52	Rainbow (Mount)	2-7-96
18	Eidsvold	7-11-90	53*	Ravenswood	8-7-98
19*	Etheridge	23-4-96	54	Reid's Creek	17-4-86
20	Eungella	8-11-89	55*	Ridgeland	1-11-71
21	Gaeta	26-10-98	56	Rocky River	25-7-97
22	Glastonbury	3-6-87	57*	Rosewood	2-9-98
23	Grasstree	14-11-94	58	Russell River	14-7-79
24*	Gympie	24-1-98	59	St. John's Creek	16-3-94
25	Green Hills	23-4-96	60	Stanwell	5-9-89
26*	Hodgkinson	25-5-81	61	Starcke	1-9-98
27	Horn Island	31-8-94	62	Strathalbyn	9-7-85
28	Hamilton	2-1-00	63*	Talgai	29-4-89
29	Jordan	22-7-98	64	Tate	13-5-98
30*	Kilkivan	28-7-68	65*	Thane's Creek	28-1-82
31*	Langmorn	18-3-80	66	Ulam	22-2-94
32	Leyburn	21-6-75	67*	Woolgar	3-7-97
33	Lucky Valley	3-12-69	68*	Yabba	28-7-68
34	Mount Morgan	12-11-84	69	Yatton	12-5-87
35	Maxwelton	5-5-97			

NOTE.—All those marked with \* are also Mineral Fields.

Of distinctly mineral fields there are sixteen as under:—

## MINERAL FIELDS, WITH DATES OF PROCLAMATIONS.

No.		Date.	No.		Date.
1	Burketown	15-9-98	9	Tenningering	19-4-83
2	Cannindah (Mount)	12-9-98	10	Kynuna	27-1-97
3	Cooktown	13-2-89	11	Walsh and Tinaroo	8-7-98
4	Kangaroo Hills	31-5-93	12	Cunnamulla	20-7-97
5	Opalton	12-12-96	13	Paroo	30-7-97
6	Sellheim	10-1-87	14	Kilkivan	30-3-99
7	Stanthorpe	3-1-83	15	Cloncurry	5-5-99
8	Star River	31-5-93	16	Glassford Creek	8-9-99

The aggregate area comprised within the proclaimed goldfields is 19,305,650 acres.

The proclaimed mineral fields include 33,828,722 acres.

Taking the goldfields now in the order of their present relative productiveness, glancing at their history since discovery and summing up results, the pride of place is occupied by the Charters Towers Gold Field. This has never been a considerable alluvial field. The country rock is a syenitic granite. The auriferous reefs run in all directions and with a variety of dips. Neither their bearings nor the angle at which they depart from the perpendicular affect their productiveness. The surface ore, known as "brown stone" quartz with small cavities coated with rust, the last trace of sulphides of base metals which had been decomposed by atmospheric influences, is succeeded at a certain depth by stone in which those baser substances remained—"mundic stone." The appearance of this in the lodes at first interfered with gold saving, and created a scare. But chlorination, cyaniding, and even smelting concentrates were applied, and the trouble has been vanquished as regards Charters Towers ores. The productiveness of the lodes shows no diminution as depth is attained. Rich bodies of ore are being worked on the Brilliant line of reef at depths exceeding 1,700 feet. Shafts are being sunk more than 500 feet deeper, and a project is even mooted to sink 5,000 feet to cut one of the ore bodies and ascertain its value. Its reefs attracted the attention of its discoverers, Messrs. Mosman, Clarke, and Frazer, and displayed visible gold as soon as broken into. The reefs first seen have not, however, been those which have been the most enduring yielders of gold or are the most prolific of late years. The best surface show, for example, was the Washington, from the surface stone of which the prospectors took about 1,600 oz. of gold, and which is not to-day among the principal mines of the field. The Day Dawn, for many years so consistent and prolific a gold producer, after a short shute of golden stone close to the surface, became barren, was abandoned by all but one stubborn miner, who persisted in further sinking the shaft on it, single-handed, and, when his money was quite and his credit almost exhausted, penetrated to a second golden zone and laid substantially the foundation for the handsome fortune he now enjoys. The St. Patrick's, after somewhat similar eccentricities, fell almost entirely into the hands of a blacksmith on the field, suddenly showed a wide and very rich reef, made its chief proprietor one of the wealthiest men in Australia almost before he could adjust himself to the situation, and has for years past sunk out of notice. The reef which has for some years been the premier in point of production—the Brilliant—was not distinguished on the surface at all, but fortuitously cut at a depth of over 700 feet in a shaft which was being sunk in search of a supposed continuation of the rich Day Dawn lode. As the productiveness of one reef waned, however, there have constantly been others in which the output of gold has waxed sufficiently to more than compensate for the diminution. There have been periods of fluctuation—alternations of boom and of comparative depression—but, as will be seen by the table given below, there has been a pretty steady, and very handsome expansion, reckoning not by successive single years, but by quinquennial periods. The output of the Cape River Gold Field has been included in the annual returns for Charters Towers, but that minor field was most

prolific in the earlier years, so that the improvement in the returns from Charters Towers has been really greater than the figures represent.

# YIELD OF GOLD BY THE CHARTERS TOWERS AND CAPE RIVER GOLD FIELDS.

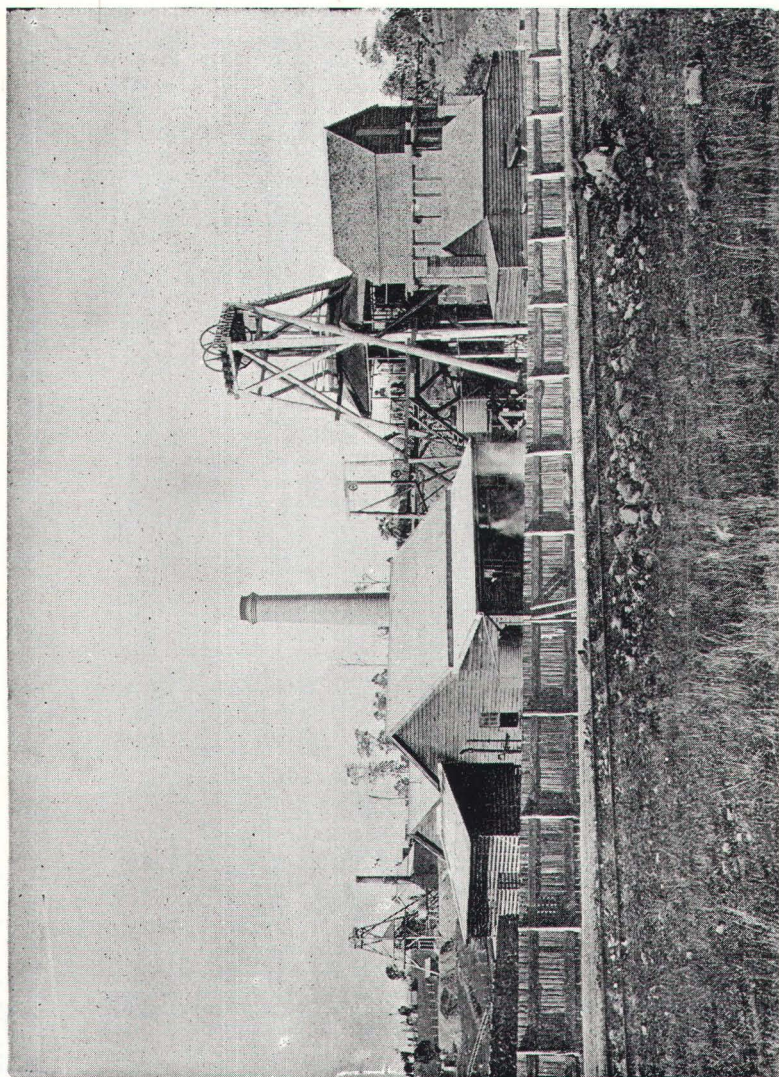
	Ounces.		Ounces.
To end of 1877 ...	599,000	During 1890 ...	164,022
During 1878 ...	72,189	" 1891 ...	223,403
" 1879 ...	83,275	" 1892 ...	262,969
" 1880 ...	85,298	" 1893 ...	259,243
" 1881 ...	82,324	" 1894 ...	268,874
" 1882 ...	79,595	" 1895 ...	256,577
" 1883 ...	69,555	" 1896 ...	234,139
" 1884 ...	109,335	" 1897 ...	360,489
" 1885 ...	135,650	" 1898 ...	457,850
" 1886 ...	144,379	" 1899 ...	511,021
" 1887 ...	151,377	" 1900 ...	454,679
" 1888 ...	137,522		
" 1889 ...	165,552	Total	5,368,317

During the year 1900 the field produced, in addition to 913 oz. of alluvial gold, 214,118 oz. extracted by crushing and amalgamation, 237,935 oz. from mill residues, tailings, and concentrates, and 1,713 oz. from particularly refractory ores dealt with at metallurgical works; in all 454,679 oz. crude, equivalent to 283,237 oz. of fine gold.

THE MOUNT MORGAN GOLD FIELD has but the one productive mine, although around the golden mount the long-sustained attempts to hit upon some continuation, underground, of its pyritic ore bodies are still continued. The yield of this extraordinary mine, since in 1886 it was taken in hand by a Limited Liability Company has been 2,271,380 oz. of very pure gold, worth over £4 per oz., which was obtained from 1,421,655 tons of ore. The dividends paid to shareholders have aggregated £5,633,333. The mode of the occurrence of the ore, and its character, in this mine, had at the time of its discovery no precedent, and presented so many novel problems, that had not it been of prodigious richness near the surface, and also unmistakably present in immense quantities, it must have discontinued and, perhaps, foiled the owners. Battery treatment was at once ascertained to be ruinously wasteful. Chlorination was resorted to with success, and gradually, as variations in the shutes of ore were met with, recourse was had to additional processes, till at present a side and base of the mount is crowded with extensive work buildings, the most recent of which covers a complete plant for dealing with pyritic (mundic) stone.

During the year 1900, 229,810 tons of ore were treated and yielded 195,810 oz. of gold, worth £789,903, being an increase, compared with the preceding twelve months, of 13,427 tons ore, 22,649 oz. gold, and £86,454 money value. This, despite a stoppage at the works for some weeks owing to exhaustion of water in the dams. The management report that large bodies of ore have been exposed in the lower levels at 512 and 574 feet respectively.

THE GYMPIE GOLD FIELD has, since it fairly emerged from being an alluvial rush to the more permanent status of a reefing field, been subject to constant fluctuations, while always maintaining its rank as one of the most productive fields in Australia. While it was in the very heyday of its first reefing boom, consternation was diffused over the field by the fact that, one after another, its reefs became barren as a moderate depth—about 200 feet—was sunk to. The lodes had been found occurring in a limestone formation, followed by shales. At or about the depth mentioned they passed into a stratum of a different rock—a greenstone—and although the quartz veins were not cut off, on entering this rock they ceased to contain gold. The scare was intensified when the best geological authority available at the time pronounced that the limit of the auriferous zone had indeed been reached. One after another, as fast as the quartz remaining to be worked above the greenstone was extracted, mines which had yielded gold in plenty were shut down, and the leases forfeited by non-payment of rent to the Government. Fortunately there were some people who, disregarding the opinions of the geologists, determined to risk money in attempts to ascertain whether, at greater depths, there might be a renewal of the conditions which had been so profitable. Several companies combined their resources, and procuring some co-operation from other speculators, proceeded to deepen shafts in the greenstone. Success crowned the enterprise. The greenstone was found to be merely a stratum. A second bed of shale was reached below it, and in that shale the reefs renewed their prolific character. Confidence was restored. Abandoned reefs were again taken possession of, and although the abhorred greenstone again presented itself as further depths were reached, it was tackled with some cheerfulness, and again the black shale underlay it. A third and a fourth of such alternations have since been encountered, and now the greenstone no longer appals. The majority of the principal reefs have a general north or north-north-west bearing, and underlie to the west with an inclination that is nearly at right angles to the dip of the strata. The auriferous zones, according to a report by Mr. Rands, Government Geologist, published some years ago, are continually getting deeper and deeper to the eastward. The most important cross reefs are the Monkland, which bears north-west and underlies south-west, and the Inglewood, which bears north-north-west and underlies north-north-east. The geological formation being now ascertained by the collation of facts furnished by the workings of quarter of a century, it is towards the eastern part of the field that new enterprises are directed. The western—the older portion—has already yielded great store of gold. To cut the continuation of its reefs deep down under the eastern ground is an enterprise exacting both courage and capital. The quality was forthcoming among local people who undertook to sink a shaft to cut at a depth the Inglewood line of reef in the eastern ground. The second, however, was more easily provided by some Scottish people, who bought out the local men and continued their shaft, achieving a success even transcending their best expectations. This success has encouraged fresh departures. In his report for the year 1900, the Under Secretary for Mines states that, “at Gympie, the feature of the year had been the sustained activity displayed in deepening the shafts in the eastern ground. . . . The current



VIEW OF POPPET-HEAD, ETC.—ORIENTAL AND GLANNIRE.

year will be devoted to exploring this land of promise. . . . . Encouraged by the success of the Scottish Gympie Mine, its Glasgow owners have formed a company for the purpose of working the property known as Hall's Freehold, situated on the south-east boundary of the goldfield, and containing an area of 257 acres. The erection of machinery capable of sinking a shaft to a depth of 5,000 feet is contemplated." It may here be mentioned that the Scottish Gympie shaft was sunk just about 1,500 feet before a profitable ore body was reached.

From the time of its discovery up to the present the gold production of Gympie has been as follows:—

Ounces.				Ounces			
To end of	1877	...	625,000	During	1890	...	78,366
During	1878	...	41,564		1891	...	60,714
"	1879	...	38,453	"	1892	...	82,939
"	1880	...	43,072	"	1893	...	78,978
"	1881	...	67,861	"	1894	...	111,168
"	1882	...	50,312	"	1895	...	78,026
"	1883	...	64,818	"	1896	...	73,729
"	1884	...	112,051	"	1897	...	96,251
"	1885	...	89,600	"	1898	...	106,302
"	1886	...	88,600	"	1899	...	89,772
"	1887	...	102,149	"	1900	...	93,522
"	1888	...	107,119				
"	1889	...	115,590				
				Total			2,495,956

During the year 1900 the field produced 93,522 oz. of gold of an estimated value of £324,154, being an increase on 1899 of 3,750 oz. and of £13,430 in value, although the yield per ton fell 2 dwt. 1 gr. below the average of the earlier year. The dividends, £104,713, exceeded those distributed in 1899 by £11,796; the calls, £110,614, were less by £15,655. In setting off calls against dividends, it must in all cases be borne in mind that while calls represent instalments of capital required for development of mines not at a productive stage, dividends represent interest on capital expended. During the year three mines have each produced more than 10,000 oz. of gold, the Scottish Gympie leading with 25,683 oz., of the proceeds of which £36,730 were profit. No. 2 South Great Eastern followed with 16,894 oz. and £32,942 in dividends.

THE CROYDON GOLD FIELD does not, like Charters Towers and Gympie, derive its importance from one group of reefs congregated within a small area of country. The general name covers a baker's dozen of outlying places, each with its particular designation and scattered to the north-west as far as  $6\frac{1}{2}$  miles, to the north 3 miles, to the north-east at intervals to  $15\frac{1}{2}$  miles, and a similar string to 9 miles south-easterly. The town itself is situated in a granite area, which but a short distance northerly gives place to felsite country, but extends well to the south-east. Within the granite formation, where most of the reefs first opened lie, nearly all run in a N.N.W. direction and underlie very flatly to the north-east. As a rule the fissures are large and the gold alloyed with silver to an extent which greatly reduces its value per oz., the average worth from these reefs not exceeding £2 4s. In the felsite country the reefs are not so large, as a rule, striking

generally north and south, and are, with exceptions, nearly vertical, are somewhat patchy, but yield gold of better value, averaging about £3 5s. per oz. Each of these localities has in turn appeared about to surpass every other. The attention and the industry of the mining population has been distracted consequently, although not sufficient men are on the whole field to properly develop even one of the groups, if concentrated thereon, while the capital available locally, or that could be procured from outside sources, has been dissipated among the redundancy of scattered reefs. Still with so many irons in the fire some have always been hot. If the reefs in one locality within this field have at times been too readily abandoned on the first check occurring, those in some other have almost invariably offered inducements and rewards for a transfer of enterprise and exertion. The whole auriferous area, although trifling when contrasted with such vast expanses as are comprised within the Etheridge, Palmer, or Hodgkinson, immensely exceeds those included in the Charters Towers or Gympie fields, being estimated at 600 square miles. The reefs number about 250. A couple of years ago none of the reefs which were earliest discovered were being worked. That these had been too lightly abandoned was demonstrated last year, when, a notion having taken some working miners to give a fresh trial to a long neglected mine on the Golden Gate line of reef, which on being first opened had yielded large quantities of very rich ore, but had been sunk and driven on to a poor belt of stone, exceedingly rich ore was reached again. Adjoining claims on the same line were thereupon reoccupied, and almost, if not quite equal reward ensuing, the fortunes and prospects of every part of the field were illuminated, and continue to shine to-day with great effulgence, despite the dulling influence of a protracted drought, which deprived all but a few localities of water for milling purposes. Notwithstanding the continual variation of the particular locality when the supply of gold has been forthcoming, the field as a whole has been a fairly consistent producer. No considerable quantity of alluvial gold has ever been mined in the Croydon field, the returns from which, since its discovery have been as follows:—

		Ounces.			Ounces.
During 1886	...	2,144	During 1895	...	69,742
„ 1887	...	31,788	„ 1896	...	85,955
„ 1888	...	44,862	„ 1897	...	75,477
„ 1889	...	52,541	„ 1898	...	55,276
„ 1890	...	60,368	„ 1899	...	62,915
„ 1891	...	65,892	„ 1900	...	97,740
„ 1892	...	64,316			
„ 1893	...	71,121	Total	...	921,345
„ 1894	...	81,208			

The year 1900 has been the best in its history. From 29,394 tons of quartz 66,330 oz. of gold, worth £173,562, were produced, the average yield being 2 oz. 5 dwt. 3 gr. per ton. This was the batteries' return, but in addition 31,399 oz. of bullion, value £30,483, were recovered from tailings, and six tons treated at metallurgical works returned 11 oz., valued at £44, so that the total value of the year's output was £204,092, surpassing that of the previous year by £69,135. Of this aggregate, seventeen mines on the Golden Gate line of reef contributed 21,380 tons of stone, yielding 58,457 oz. of gold.

The RAVENSWOOD GOLD FIELD has since its discovery in 1868 had perhaps more remarkable experiences than any other Queensland field. Although it appears to include a tract of country which seems to be a continuation of the geologic formation in which Charters Towers exists—its reefs occurring in a syenitic granite—it exhibits some distinctive features. In its neighbourhood are lodes in which silver, copper, and other metals are the chief contents, and these and other baser constituents invade its auriferous reefs to an injurious degree. On penetrating below the oxidized zone, the gold in the quartz is no longer “free,” but is associated so intimately with the sulphides of iron, zinc, and other minerals that its separation by battery processes, such as alone were familiar to miners or actually available at that time and for a field so inaccessible as it then was, was impracticable. Hence, when the surface stone had been worked out in the reefs, and, below the “water-level,” mundic stone occupied the ore-channels, the miners found themselves dealing with a product, rich in gold indeed, often richer in fact than the free-milling stone nearer the surface, but which no methods known to them were capable of separating so as to secure the auriferous contents in marketable form. Some of the mundic stone was, in a multitude of instances, proved by assays to be exceedingly auriferous. There existed metallurgical works in Germany where such complex ores could be treated. But only the very richest of the ore could return a profit after defraying the expenses, charges, deductions, commissions connected with repeated handlings, packing, conveyance from mine to port, transshipments, and carriage by rail to the centre of Europe. It was not till 1884 that a railway connecting Ravenswood with Townsville, the nearest seaport, was opened. It was plainly impossible for working miners, the class of men who have the merit of almost invariably carrying out through the first stages, unassisted by outside capital, to keep on developing mines when they had to throw aside nine-tenths of the ore with gold enough in it to pay handsomely had the stone been “freemilling,” and to rely for subsistence and profit upon the proceeds of the other one-tenth part of the ore after carriers, shippers, commission agents, railways, and smelters had first been paid. Especially it was out of the question for most miners to keep going during the first six, eight, or even ten months which elapsed before the money realised by their product reached them. If they were able to secure advances on ore shipped, they had to pay heavily for that accommodation also. In five only the high gold contents of special “shutes” of ore in the Ravenswood mines have kept the field alive in a sort of suspended animation during the past thirty years or so. As in the case of Croydon, Ravenswood is the name covering a number of outlying groups of reefs and lodes, situated miles away from the main township in various directions, and each of which has at some period taken the lead in productiveness and helped to keep the field going. More remote, but generally associated with Ravenswood, although really separate fields, are the Fanning on the north side of and close to the trunk railway from Townsville to Charters Towers, Rochford (25 miles west of Ravenswood), and the Kirk diggings in the same line of country, but 5 miles nearer. Of late years the existence of the railway and the establishment in Australia of several metallurgical works where complex ores are treated, have made conditions of mining at Ravenswood considerably easier. Still, however, the essential difficulty

remains. Local treatment of the bulk ores has not been accomplished. During 1900, Mr. Maclaren, Assistant Government Geologist, inspected the field, and in reporting remarks:—"The main hindrance to the development and progress of the Ravenswood Gold Field is the extremely refractory nature of the ore. Nor does it appear to me that any one of the well-known and widely used metallurgical processes, with the single exception of smelting, is applicable. Smelting *in situ* is, however, out of the question owing to the prohibitive freight rates on fuel and fluxes, and to the high cost of the former. . . . Hence the present methods of treatment prevailing in Ravenswood appear to me to be perfectly sound metallurgical practice—viz., to concentrate the ore to as clean a product as is consistent with economy and to send the concentrates to the smelting works promising the best return. It is of course possible, and indeed probable, judging from a study of metallurgical history, that a future process, or a modification of a present process, may treat these ores efficiently and economically, and on the spot."

The gold production from the Ravenswood reef, from the first discovery in 1869 to the end of the century, are given below. It will be observed that the past four years show improvement on any preceding since 1877:—

Ounces.			Ounces.		
To end of	1877	... 201,400	During	1890	... 16,053
During	1878	... 13,252	"	1891	... 13,427
"	1879	... 15,744	"	1892	... 11,893
"	1880	... 13,445	"	1893	... 9,288
"	1881	... 10,195	"	1894	... 16,631
"	1882	... 8,711	"	1895	... 14,019
"	1883	... 13,000	"	1896	... 14,965
"	1884	... 14,192	"	1897	... 20,176
"	1885	... 17,641	"	1898	... 27,673
"	1886	... 9,245	"	1899	... 25,697
"	1887	... 10,390	"	1900	... 33,275
"	1888	... 10,666			
"	1889	... 15,719	Total	...	556,697

During the year 1900 a revival affected the field generally. The principal centres of activity were in the immediate vicinity of the town of Ravenswood, at Hillsborough, eight miles out, and notably at Donnybrook or Brookville, ten miles distant. Indeed, to the richness of two reefs at Donnybrook—the Donnybrook and Erin's Hope reefs—the awakened interest that has been exhibited in the field is, says the Under Secretary for Mines in his annual report, mainly due. The Donnybrook reef is small but of high quality, with an average width of from 6 to 8 inches, and an average yield of from 5 to 6 oz. per ton. The Erin's Hope, which strikes nearly at right angles to the Donnybrook, is from 6 inches to 1 foot wide, and the gold contents of parcels of picked stone treated at the Southern smelting works have averaged 20 oz. per ton. The ground surrounding the productive mines has all been applied for, and the town of Brookville has now a population of between 400 and 500 persons. The principal mine at Hillsborough is the Premier, which has lately been sold for £6,000. Mr. Maclaren, in his report, describes this reef as occurring in waves and lentiles, and varying in width from 1 inch to 1 foot. The picked



UNDERGROUND MINING.—DRILLING IN DRIVE FROM GROUND.

ore treated at the Dapto works in New South Wales has given an average of 17 oz. per ton, the return from the last parcel being  $27\frac{1}{2}$  oz. The lode seems to improve in depth. Near the town of Ravenswood the mines are being worked more vigorously than for years past, and both the mills in that locality have been kept constantly employed. No developments of special importance have occurred at any of the other numerous camps of the Ravenswood field.

Respecting the output during the last twelvemonth (1900), the same authority remarks:—The year's operations strengthen the belief that the improvement in the fortunes of this old field is genuine and will be lasting. The gold returns—the largest on record—show 13,789 tons of quartz to have yielded 20,839 oz. of gold, an average per ton of 1 oz. 10 dwt. 5 gr. Compared with the preceding year these figures show a decrease of 5,909 tons treated, but an increase of 6,447 oz. of gold recovered, and also an increase in the yield per ton of 15 dwt. 15 gr. From 16,786 tons of mill residue 5,718 oz. of bullion were obtained, a yield per ton of 6 dwt. 19 gr., showing, when compared with the preceding year, decreases in tonnage of 2,478 tons, and in bullion of 1,624 oz., and a decrease of 21 gr. in the average yield per ton. Treated at metallurgical works, 1,512 tons of concentrates yielded 5,820 oz. of gold, an average per ton of 3 oz. 16 dwt. 23 gr., being increases of 995 tons concentrates, and of 2,932 oz. of gold, but a decrease in the average yield per ton of 1 oz. 14 dwt. 18 gr. Alluvial gold won during the year is set down as 898 oz. The year's yield from all sources is thus 33,275 oz., of a value of £105,486, being an increase in quantity of 7,578 oz. and in value of £28,954.

The fact that "no developments of special importance have occurred at any of the other numerous camps of the Ravenswood field" may be read in connection with reports in past years relating to the Donnybrook, now so prolific. In the year 1887 a report by the then local Gold Commissioner mentioned that near Trieste lies "the Donnybrook mine, abandoned some years ago, after yielding some thousands of ounces to different owners at small cost." Again, in 1890, the Warden remarked that "the Trieste and Dreghorn require no special report: they are just the same as in 1889—neither better nor worse, and it is marvellous how well the fossickers succeed in keeping things alive in their respective localities. . . ."

THE GILBERT, ETHERIDGE, AND WOOLGAR GOLD FIELDS have for many years generally been associated together in official reports, and entrusted to the supervision of one Warden. The tract of auriferous and otherwise mineralized country covered by these fields extends north and south over about two and a-half degrees of latitude, by a width ranging from 20 to 30 miles. Warden Haldane, in 1893, allowed even larger dimensions, estimating the area at 10,000 square miles—about one-fourth larger than Wales. The number of known auriferous reefs is about 1,000. Of late years not more than 400 miners have been scattered over the fields. There are, or have been, perhaps a score of townships or hamlets at various places, as this or that group of reefs excelled in richness of yield. These fields are, with the exception of Cloncurry, the most distant from the coast, and consequently, in the absence of railways, the most inaccessible of any in Queensland. To attempt to describe so vast a tract, or to specify the character of

its 1,000 auriferous reefs within the compass of a paragraph or two would be ridiculous. There are probably a dozen groups of reefs, each group underlying as much ground as is occupied by the Gympie or Charters Towers Gold Fields, scattered over this immense area. The reefs are of all sorts, some as free-milling as those of Gympie, some resembling the ordinary quality at Charters Towers, and some carrying ore as refractory as the most aggravating reefs at Ravenswood. Of late years the Woolgar and the Etheridge have been comparatively more accessible. When the railway, penetrating toward the westerly interior from Townsville, reached Hughenden, 236 miles from the port, the southern—the nearest—boundary of the Woolgar was only about 100 miles away. So, likewise, the construction of the railway from Normanton to Croydon, 94 miles, brought the nearest north-western corner of the Etheridge field within about 100 miles of that terminal station. The extension, by the Chillagoe Company, of the Government railway from Cairns to their mines at Mungana has provided an outlet about equally distant from the extreme northern boundary of the same field. The history of these fields is just what might be inferred from their circumstances and population. At first eagerly rushed for alluvial gold, next worked by reefing, subjected to every fluctuation which it is usual for any goldfield to undergo; now this part abandoned, now repeopled; outside capital attracted by rich and substantial reefs, partially disclosed; then exhaustion after heavy dividends, re-workings, blanks, prizes, activity, and langour. The mining population is preposterously inadequate to do more than prospect these enormous areas. The whole mining population of Queensland might be transported thither, and be difficult to find afterwards. These fields, to sum up, are among the mineral reserves of the State, and their development on a reasonable scale belongs to the future. It seems to be a magnificent reserve. Successive Government wardens, whose opportunities for forming opinions were better than those of any other persons, expressed their convictions that the three districts are perfect storehouses of most varied mineral wealth. Thus, for example, with special reference to the Gilbert, Mr. Warden Samwell some years ago expressed officially his conviction that "Taking the Gilbert proper, . . . I do not believe there is another portion of the surface of the globe much richer in gold, gems, and minerals other than gold."

The total output of gold, alluvial and reef, from the three districts since their first beginnings is estimated as under—

		Ounces.			Ounces.
To end of 1877	...	143,000	During 1890	...	24,580
During 1878	...	7,396	" 1891	...	17,908
" 1879	...	15,498	" 1892	...	22,111
" 1880	...	20,368	" 1893	...	29,385
" 1881	...	23,020	" 1894	...	25,105
" 1882	...	18,431	" 1895	...	25,460
" 1883	...	18,967	" 1896	...	26,865
" 1884	...	19,886	" 1897	...	23,430
" 1885	...	28,348	" 1898	...	21,679
" 1886	...	25,629	" 1899	...	19,443
" 1887	...	21,036	" 1900	...	20,072
" 1888	...	24,647			
" 1889	...	18,285	Total	...	640,549

These fields are latterly not progressive. Summing up with regard to the year 1899, the Under Secretary for Mines remarked:—"The Etheridge has made no real progress for years. Rather has it slowly, but surely, been declining. . . . The disclosure of the riches of the Etheridge will probably be reserved for a new and more vigorous generation." During the past year, 1900, nearly 100 different mines scattered over the Etheridge have furnished 9,802 tons of quartz, yielding 9,694 oz. of gold—an average of 19 dwt. 19 gr. per ton. By the cyanide process, 11,843 tons of mill residues yielded 9,969 oz. of bullion. These amounts, with 409 oz. of alluvial gold, made the year's total 20,072 oz., valued at £42,678. At Gilberton, about fifty miners were following the small rich reefs which there exist, with instances of success.

THE ROCKHAMPTON GOLD FIELDS have not, apart from the Mount Morgan Mine, particulars of which are given in a preceding page, been worked with special activity during the past year. Hitherto, of late years, in recording the production of gold in this neighbourhood, the output of Mount Morgan has been included in the general return, which are besides very imperfect, no record of the Canoona output or other gold won during the years preceding 1883 being included. The estimated total from all sources from 1883 to 1900, both years inclusive, is 2,420,831 oz. of gold.

During the year 1900 only a few mines at Cawarral, Morinish, Crocodile, and Rosewood have been producers.

The most notable circumstance connected with these operations is that in nearly every instance the mines so worked are properties whose original discovery dates very far back, which have lain abandoned at intervals during years at a time, after giving good yields, and the re-working of which has been rendered possible only by the improved methods of extracting gold from mundic stone which have become available. The Hector, for instance, which is being operated with the help of a cyanide plant, was discovered not very long after the Canoona rush. The mine at Cawarral is likewise an old mine.

The various outfields contributed during the past year 6,457 tons of quartz, yielding 3,738 oz. of gold. Mill residues furnished 7,212 oz. from 15,103 tons—the excess in weight of residues over the quartz crushed showing that large quantities of old tailings had been put through. Forty-one tons of stuff were treated at metallurgical works, and 132 oz. of gold extracted therefrom. About 412 oz. of alluvial gold was also dug up during the year. The total gold yield was thus 11,494 oz., valued at £26,685, being an increase on the previous twelve months' yield of 3,973 oz., and in value of £8,183.

			Ounces.				Ounces.
During 1883	...	4,194		During 1893	...	122,181	
" 1884	...	22,158		" 1894	...	123,497	
" 1885	...	14,396		" 1895	...	135,908	
" 1886	...	49,086		" 1896	...	157,306	
" 1887	...	85,305		" 1897	...	177,819	
" 1888	...	117,800		" 1898	...	176,551	
" 1889	...	325,683		" 1899	...	191,331	
" 1890	...	226,240		" 1900	...	218,175	
" 1891	...	147,691					
" 1892	...	125,510					
				Total		2,420,831	

THE GLADSTONE GOLD FIELD comprises perhaps a score of places where in some instances quite handsome quantities of gold have been won by alluvial mining, and where quartz reefs have been successfully worked for a while, generally in a hand-to-mouth fashion by parties of a few miners with no financial resources to speak of. The trouble of mundic stone is somewhat acute in these reefs, and has militated against the persistent development of the goldmines. Among the localities where gold-mining has at one time or another been carried on in this district are Barmundoo, Bompa, Calliope, Eastern Boyne, Monal, Mount Rainbow, Mount Jacob, Norton, and Sneaker's Creek. About 150 distinct auriferous quartz reefs have been located among these groups. Unless the contents of a reef appear to be extra rich miners do not care to tackle one, and when they cease to be of exceptional value work is generally ceased. To this cause, probably, is due the fact that the average yield from ore mined in the Gladstone groups is very much higher than that from Charters Towers, and even a little higher than Mount Morgan.

During the year 1900 there was little doing at any of the above places. Only at Mount Jacob, Mount Rainbow, Eastern Boyne, Barmundoo, and Calliope have there been any returns at all. The total production during the year was: Mill gold, 2,007 oz.; cyanide bullion, 802 oz.; treated at metallurgical works, 189 oz. When compared with the preceding year, these figures show a decrease of 1,029 oz. of mill gold, 1,687 oz. of cyanide bullion, and 19 oz. of gold treated at metallurgical works, but an increase of 200 oz. of alluvial gold, being a total decrease of 2,535 oz., and a decrease in value of £6,776. A couple of dredges have been constructed to work the deeper wet ground on the old Cania alluvial field, but results are not yet ascertainable.

THE CLERMONT GOLD FIELD has furnished a living to an intermittently varying number of diggers in the widespread auriferous alluvial for nearly forty years now, and is very far from being exhausted. Quartz reefs also have been found in that field and worked to some extent, but it cannot be said to have established any claim to be a promising reefing district. The shallow alluvial deposits having been worked very extensively, the local people are turning with interest to what are believed to be deep leads, and, with the help of the Government, borings with a view to locate auriferous places in deep ground were being effected during 1900. The persistent drought during that year imposed a heavy handicap upon this field, hampering the alluvial diggers and prospectors' operations very seriously. The production of gold for the year 1900 has been 7,671 oz. of alluvial, 460 oz. of mill gold, and 30 oz. treated at metallurgical works. The total yield for the year thus amounts to 8,234 oz., valued at £32,742, being a decrease of 3,701 oz., or £14,998. At the Clermont, as in the Gladstone Gold Field, a dredge has been constructed and about to get to work.

THE PALMER GOLD FIELD has had, as regards alluvial mining, a past more splendid than any other in Queensland. For several years it supported a population of diggers, European and Chinese, which at its greatest must have about doubled that which rushed to Canoona or to Gympie. Its record year was 1875, two years after its discovery. The produce for that twelve months was 250,000 oz. of alluvial gold

alone. But even so early a commencement had been made on quartz reefs, chiefly in the vicinity of Maytown, from which 400 oz. of gold additional had been won. Although the area through which the auriferous tracts lie scattered, extends over about 2,300 square miles, the exhaustion of the more readily worked alluvial ground proceeded apace, with so great a number of diggers at work. Bitter complaint was made by the European diggers relative to the presence of the crowds of Chinese, who at one time are said to have numbered no less than 18,000. The invariable habit of Australian white miners of leaving half-worked claims of fair productiveness in order to rush to the spot where fresh discoveries promised superior immediate returns, and, if disappointed, of returning to resume operations on the ground they had quitted, was, in consequence of the swarms of Chinese, not possible here. The Mongolians, generally threatened with violence when they attempted to join in a new rush, adopted the practice of settling in swarms upon any half-worked claims which had been relinquished in that fashion, and generally of possessing themselves of second-class patches. Thus, when European diggers hied back to repossess themselves of claims they had abandoned, and when the richest ground being exhausted, they would in the ordinary course of things on earlier fields have been content to tackle places less productive, found the Chinese in possession of the former, and to have been busy taking all that was to be got from the latter. One consequence of this novel condition of affairs was the enactment of a law which absolutely prohibits coloured aliens from working on any goldfield until three years subsequent to its first proclamation. The approach of exhaustion of the rich alluvial ground, in this as on other fields, led to a search for quartz reefs, of which about 200 have been located in the Maytown subdistrict alone. At the outset the reefing operations were profitable, even in spite of the great cost of everything connected therewith. The field was, at that period, midway in the seventies, accessible only by a terrible track from Cooktown, and freights were high accordingly. Carriage of provisions, machinery, &c., from that port cost as much as £40 per ton. Wages had to be paid at corresponding rates. Timber for fuel for steam-engines is less plentiful on the Palmer than on most other fields. Still the reefs were rich. So long as men could pick and choose, those were first worked which showed on being broken into stone temptingly permeated with gold. The usual preliminary "dollying" of picked parcels yielded at the rate of 10 or even 15 oz. to the ton, and when by the year 1877 stamper batteries had been erected, 4,949 tons of stone from no great depth yielded on the average 2 oz. 7 dwt. 17 gr. per ton. Up to 1881 the average all through kept as high as 2 oz. 5 dwt. Thereafter there was a falling off in every respect. The cream had been skimmed. As the surface stone was hewn out, and sinking to greater depths became necessary, troubles accumulated on the miners. The horse "whips" which had sufficed till then were not suitable for hauling from greater depths, especially as these reefs were found to make a good deal of water. Steam appliances for hauling and pumping were required, and, as usual, the profits of the earlier operations had been distributed as fast as they were realised. The Palmer field, from which during its best year—1876—15,000 oz. of gold had been won from 4,766 tons of quartz in addition to 185,000 oz. washed out of the alluvial, and from

which, from first discovery to the present time, 1,361,918 oz. of gold of the highest quality have been got, was almost utterly abandoned. For years it remained a neglected field, and the construction in 1888 of a railway from Cooktown to Laura, only about 40 miles from Maytown, the chief reefing centre, came too late to avert its decadence, or at once to requicken the field into vigorous life. During the past year or two, however, symptoms of renewed interest have begun to manifest themselves. Up to 1893 many mines with excellent records, and some mill equipment, were held practically unworked by banks which had foreclosed on them. But in that year the financial crash which forced so many of these institutions to reconstruct, compelled their relinquishment of their hold and sale of machinery. In several reports relating to inspections of the field Mr. Jack and other of the Queensland Government Geologists stated their conviction that the neglect into which the place had fallen was unjustified by lack of strong inducements for the employment of capital to resume reefing operations. Very little actual resumption of work has, however, yet taken place. But several of the reefs formerly worked with excellent results down to a certain level have of late been acquired by new proprietories, and there appears a possibility that the Croydon, Golden Gate, and the Ravenswood, Donnybrook, may find rivals among the long abandoned reefs of the Palmer.

During the year 1900, a period of drought on the Palmer, as in most other parts of Queensland, very little was achieved on that field. The alluvial gold, and the produce of various odd lots of stone put through batteries, amounted only to 2,569 oz. all told, a less quantity than ever before won on the field during an equal period, except during one previous year, 1897. The total output of the Palmer is recorded as follows:—

		Ounces.			Ounces.
To end of 1877	...	839,000	During 1890	...	10,689
During 1878	...	120,233	„ 1891	...	12,721
„ 1879	...	90,000	„ 1892	...	8,082
„ 1880	...	65,433	„ 1893	...	3,280
„ 1881	...	51,960	„ 1894	...	3,425
„ 1882	...	37,339	„ 1895	...	2,650
„ 1883	...	24,089	„ 1896	...	4,381
„ 1884	...	15,637	„ 1897	...	2,497
„ 1885	...	12,913	„ 1898	...	3,183
„ 1886	...	8,587	„ 1899	...	2,984
„ 1887	...	6,981	„ 1900	...	2,569
„ 1888	...	16,424			
„ 1889	...	16,861	Total		1,361,918

THE HODGKINSON GOLD FIELD has had a history in many essentials similar to that of the Palmer, of which it is a southerly neighbour, and is geologically a continuation. Although it originally offered the inducement of rich alluvial diggings, it never approached in that respect within even a distant rivalry of the Palmer. But as a reefing field it has, for various reasons, up to the present surpassed the great alluvial area. Its known auriferous reefs number about 400, and although its period of depression and semi-abandonment has been so gloomy, revival on the Hodgkinson commenced sooner and has progressed further. Mr. Jack in his report earnestly protested against the neglect into which this field had sunk. He drew up a table

showing that from eighty-seven different mines on the field the average yield of gold had been 1 oz. 15 dwt. 17 gr. to the ton of stone. He demonstrated that below the water level the reefs had not even been prospected. He showed that the costly and difficult conditions which hampered and intimidated the early reefers no longer existed. The Cairns-Chillagoe Railway now passes within 15 miles of Thornborough, the business *entrepôt* of the southern portion of the field. Since 1891, when gold-mining on the field was all but extinct—only 655 oz. having been produced during that year—up to the present time there has been a slow but genuine increase of activity, albeit the output during 1900—the drought year—fell some 426 oz. below that of 1899. British capital has found its way on to the field, and appears likely to return ample reward to investors. The reduced output during 1900, although nominally that for the year, was actually, as the Under Secretary for Mines has pointed out, for nine months only, as early in August the water supply failed and all the mills on the field had to cease crushing, “and there is little doubt that could the stone have been treated the production of gold would have been doubled.”

The figures for 1900 are :—Mill gold, 3,684 oz. from 3,864 tons; mill residues, 50 oz. from 80 tons; alluvial, 120 oz.; total, 4,034 oz. Being a decrease, compared with 1899, of 426 oz., but an increase of average yield per ton of mill gold of 1 dwt. 9 gr.

In his report for the year 1900, the Under Secretary for Mines states that:—“The Cecil Syndicate have sunk the shaft of the General Grant to a vertical depth of 434 feet, and are opening up the mine in a thorough manner, the year’s record being 1,631 oz. from 1,580 tons. From their Reconstruction Mine they have obtained 456 oz. from 296 tons. During the year they have completed the construction of a large dam, and have made preparation for the erection of a complete crushing plant. The Great Dyke Company, from 96 tons of stone, crushed at the Reconstruction Mill, have obtained 242 oz. of gold; they have deepened their shaft, extended their drive, have completed the building of their concrete dam, and are now erecting their recently purchased battery. The Hodgkinson United, a lately formed company, whose mines adjoin those of the Cecil Syndicate, have sunk their shaft 190 feet, and have already been rewarded by cutting the reef, which shows gold freely. The St George Extended Company, at Woodville, have erected a winding plant, have enlarged and timbered their shaft, and are now engaged in carrying it down to a further depth of 100 feet.”

The produce of the Hodgkinson Gold Field has been :—

	Ounces.		Ounces.
To end of 1877 ...	59,516	During 1890 ...	1,082
During 1878 ...	44,435	“ 1891 ...	655
“ 1879 ...	33,675	“ 1892 ...	1,294
“ 1880 ...	25,096	“ 1893 ...	1,831
“ 1881 ...	15,308	“ 1894 ...	2,264
“ 1882 ...	12,495	“ 1895 ...	2,243
“ 1883 ...	7,505	“ 1896 ...	2,991
“ 1884 ...	7,245	“ 1897 ...	3,206
“ 1885 ...	5,828	“ 1898 ...	4,169
“ 1886 ...	4,550	“ 1899 ...	4,460
“ 1887 ...	2,400	“ 1900 ...	4,034
“ 1888 ...	2,325		
“ 1889 ...	1,960	Total	250,567

THE COEN GOLD FIELD, with its offshoots the Rocky River and the Nisbet, have provided fair attractions since discovery. Some exceedingly handsome returns have been realised from reefs at these localities, so far from the main centres of population. As happens on other fields, the township of Coen is nearly the original centre of operations, and other groups of reefs lie around at places miles distant. Thus, 7 miles south, the Great Northern Mine, in 1896, extracted 1,968 oz. of gold from 520 tons of stone. At the Nisbet River, 26 miles north-east of Coen, 85 tons yielded 283 oz. The gold, however, is not of the purest, the average value being stated at £2 7s. 6d. per oz. The situation of these fields, although in fact, as compared with the Etheridge, the Cloncurry, and others of the older fields close to the seaboard, is, owing to their remoteness from the southern parts where population is chiefly concentrated, very inconvenient as regards access. A couple of small craft, plying from Cooktown to an undeveloped harbour named Port Stewart, supply the most regular means of access by water; from Port Stewart the land journey has to be accomplished by special hired vehicle or horses. Despite these drawbacks the fields have made progress—somewhat slowly it is true—since they were opened. Batteries have been conveyed thither, and at the Coen cyanide works have been established. The produce of the groups has been as under:—

During 1893	...	3,853	During 1898	...	5,338
„ 1894	...	5,688	„ 1899	...	3,785
„ 1895	...	4,913	„ 1900	...	2,084
„ 1896	...	4,853			
„ 1897	...	5,386	Total		35,900

It will be observed that a distinct and heavy drop occurred during last year, 1900. This, however, is not attributable to any falling off in the productiveness of the reefs or the quality of the ore, but to the all-pervading drought, an infliction always extra-severely felt on a new reefing field where the expenditure of capital or profits on water-storage in dams has not proceeded far. The Coen batteries, in default of sufficient water, worked only four months during 1900. The figures consequently are the reverse of discouraging, seeing that the 712 tons crushed yielded 2,084 oz. of gold, thus averaging 2 oz. 18 dwt. 6 gr. to the ton. The progress of the field was further, to some extent, retarded by the discovery during the year about 35 miles to the southward—that is to say, in the direction of the Palmer—of payable gold at a spot which was at once rushed, and has justified its proclamation in July last as a separate goldfield by the name of the Hamilton Gold Field.

THE HAMILTON GOLD FIELD, embracing an area of 900 square miles. Here, impeded by the drought, prospectors have during the year been unable to do much exploratory work. Yet some very rich pockets of gold must have been unearthed, as one man is known to have left the field with 1,100 oz. of gold in his possession, and the warden estimates the total amount of alluvial gold won to have been about 12,000 oz. A battery has been transferred to the field from the Starcke Gold Field, and 224 tons of quartz crushed for a yield of 806 oz. of gold—an average of 3 oz. 11 dwt. 23 gr. Much country around these fields of the Cape York Peninsula is believed to be auriferous, and copious rains having lately fallen, prospectors are sure to scatter,

mills will resume crushing, and it is expected that the year 1901 will be a notable one as regards this region.

THE RUSSELL, JORDAN, MULGRAVE, JOHNSTONE, TULLY, AND TOWALLA.—From a lofty mountain chain facing the Pacific, and extending in an irregular arc from about the 19th to the 17th degree of south latitude, a number of streams, uniting into small rivers, flow to the ocean. The seaward face of this range is steep, and clad with dense forest and jungle. But the prospector has invaded its most hidden recesses, and has found gold in the beds of streams, in the alluvial benches bordering the creeks, and on the successive terraces of the mountain side. The places named above, although separated from each other by considerable distances and sometimes by spurs and ravines which interpose barriers practically impassable, all have a family resemblance. Gold-mining on these is conducted to a considerable extent by methods not available in any other part of Queensland. The streams in this region, fed by the condensation of ocean moisture on the mountain sides, there occasioning a rainfall of much greater quantity and frequency than in other localities, carry a considerable body of rapidly flowing water in all ordinary seasons. This is utilised for hydraulic mining, *i.e.*, water is conducted in races to the golden alluvium, which is torn away wholesale by jets projected from giant nozzles. Reefs also exist in some of these places, and one or two crushing batteries are driven by water-power. Records of the gold won in these scattered and very isolated places, buried as they are in the heart of dense jungle amidst a maze of spurs and gullies, scarcely exist. Successive Government goldfields wardens, who have from time to time visited one or another of these hidden spots, have, however, reported in a uniform sense. Exploration has as yet discovered no limitation to the extent of the auriferous area which there invites enterprise. The wide diffusion of gold through expanses of soil on the terraces, forming, as it were, steps up the face of the great ranges, impressed them all. This style of mining is only in its infancy. Yet, on the Russell alone, over 50 miles of water-races have been cut and constructed. The scale on which operations are conducted may be conceived by studying the following table, showing the work done and results on a few claims in the Russell field, from which it will be seen that on one claim alone 111,511 cubic yards of soil were shifted, and that, in six, the amount of stuff sluiced was over 284,000 cubic yards, the gold contents varying from 12 gr. down to  $1\frac{1}{2}$  gr. per cubic yard.

Name of Claim.	Area of Claim.			Contents in Cubic Yards.	Yield per Load of 1 Cubic Yard.
	A.	R.	P.		
Galtee More	0	2	0	15,231	6 gr.
Astronomer	0	0	8	1,662	2 $\frac{1}{4}$ "
Union	2	3	18	111,511	12 "
Union Extended	1	0	16	26,738	1 $\frac{1}{2}$ "
Slieve-na-mon	1	0	0	32,266	7 "
Sampson	2	0	0	97,120	5 "

THE EIDSVOLD GOLD FIELD AND OTHER BURNETT DISTRICT GOLD MINES have been worked since 1888, and rank as the only places in the Burnett district which have been worthy to be reckoned as reefing fields for any length of time. The reefs here are not numerous, and only a few have been profitably worked. For the last three years

there has been a falling off in the output. The record of the field is as follows:—

#### FIDSVOLD GOLD FIELD.

	Ounces.		Ounces.
During 1888 ..	7,007	During 1896 ...	5,835
„ 1889 ...	15,596	„ 1897 ...	4,851
„ 1890 ...	15,933	„ 1898 ...	13,442
„ 1891 ...	10,732	„ 1899 ...	7,909
„ 1892 ...	14,317	„ 1900 ...	4,661
„ 1893 ...	7,352		
„ 1894 ...	4,925	Total	117,279
„ 1895 ...	4,719		

During 1900, 845 tons of mill stone yielded 1,330 oz. gold, 4,738 tons of accumulated tailings surrendered 3,231 oz. bullion to cyanide treatment, and 4 tons of concentrates sent to smelting works returned 13 oz. gold; 87 tons of alluvial helped to make up a total of 4,661 oz., valued at £8,915—a decrease as compared with the previous year of 3,248 oz., and in value of £10,675. Outlying mining localities in the same (Burnett) district—St. John's Creek, Dykehead, Brovinia, and McKonkey's Creek—are practically deserted. At Tennifering, also in the Burnett, a little reefing and alluvial fossicking continues, as for years past. Here, during 1900, 177 oz. reef gold and 57 oz. alluvial were got. At the Paradise, another retrograding field, the output has been falling as the surface stone became exhausted, no disposition to test the reefs at greater depths having been shown. The production for 1900 has here been 199 oz. milled from 123 tons of quartz; 6 oz. bullion from 58 tons tailings; 13 oz. fine gold from 2 tons of concentrates, and 46 oz. alluvial. Value of total, £948—a decrease of £1,193 as compared with the output in 1899.

**MINOR GOLD MINING LOCALITIES.**—On the Warwick fields there has been little activity, 106 oz. of reef gold and 82 oz. of alluvial constituted the whole production during 1900. Inland from Mackay exists the Nebo Gold Field, once the scene of a small rush and a milling field, but now deserted. Other localities in this region—Grasstree, Eungella, and Eton, are nearly all in like case. In 1899 only some £50 worth of gold was raised in the whole district; in 1900 148 oz. of gold and bullion was secured, valued at £456. Behind the port of Bowen, the Normanby Gold Field—another of the has-beens—lies neglected. A few mines were, however, at work on a small scale during 1900; 80 tons of quartz milled for 55 oz. gold; 12 tons concentrates yielded 50 oz.; and 341 oz. of alluvial were panned out, the total showing a slight increase on the output of the previous year. Far west from Cairns, on the rivers flowing to the Gulf of Carpentaria, one quartz mine—the Jubilee—has been at work at Mareeba, where the Cairns-Chillagoe Railway strikes the Walsh River; 578 tons of stone yielded 205 oz. of gold, valued at £711 2s. 10d. On the Tate River, further out, 300 oz. of alluvial gold were won, mostly by dry-blowing, the drought preventing any other treatment and limiting prospecting and work generally. With rain, a considerable amount of activity may be expected hereabouts. Cooktown is the port for two auriferous areas known as the Starcke Gold Field No. 1 and No. 2. On the latter only was work of any moment done during 1900.

From 644 tons of quartz 903 oz. of gold were milled, and 6 tons of concentrates sent to smelting works yielded 66 oz. additional.

The Cloncurry Gold Field deserves a paragraph to itself, notwithstanding the fact that during 1900 the whole produce of the field was limited to 86 oz. of alluvial gold. The troubles have been that outside the township of Cloncurry itself there is no place in the whole of this extensive district where the prospector can count upon renewing his supplies when they run out. There have been, indeed, several copper-mining camps at various widely separated places, and the pastoral head stations exist. But the droughts so scourged the country that stores cost nearly their weight in silver for conveyance up country from Norman-ton or Burketown, and it was besides little use for men to go gold seeking where the soil was baked brick-hard, and water was nearly as difficult to find as gold. Although there have been quartz mines in the Cloncurry equipped and in full swing, and these lie abandoned, the machinery removed or rusting, the Cloncurry district cannot be reckoned as one which has been fairly tried and found wanting. It is really an undeveloped and almost unprospected tract as large as the whole principality of Wales. The auriferous area lies widely distributed over this expanse. Mines have been worked and abandoned which in more accessible situations would have enriched their owners. One—the Gilded Piére—100 miles from Cloncurry township, crushed 3,000 tons for an average of  $1\frac{1}{2}$  oz. per ton, and on reaching “mundic stone” below the water level had to stop. From another 811 oz. from 915 tons failed to prevent failure. Respecting a different part of the district, Mr. Jack, then Government Geologist, years ago, from the top of Mount Eurie, “obtained an extensive view to the south over a tumbled wilderness of slaty mountains intersected by great dykes of quartzite and reefs of white quartz. The features of the country strongly remind me,” he wrote, “of the Hodgkinson Gold Field. Very few, I think, even among Northern miners, have any idea of the extent of this tract of auriferous country.”

ON HORN ISLAND AND POSSESSION ISLAND, at the apex of Cape York Peninsula, reefs have been found and worked. Operations on the first named, at first highly promising, during 1900 have been checked by some complexity in the ore latest mined, and battery treatment saved only 720 oz. of gold from 9,819 tons of stone. On the latter island 363 tons yielded 751 oz. during the year.

ESTIMATED YIELDS OF THE CLONCURRY, CALLIOPE, CLERMONT, PARADISE, NORMANBY, and other small Gold Fields—

		Ounces.			Ounces.
To end of 1877	...	180,000	During 1890	...	13,254
During 1878	...	11,178	„ 1891	...	23,296
„ 1879	...	11,911	„ 1892	...	22,127
„ 1880	...	14,424	„ 1893	...	30,429
„ 1881	...	20,277	„ 1894	...	36,726
„ 1882	...	18,010	„ 1895	...	37,425
„ 1883	...	10,655	„ 1896	...	29,366
„ 1884	...	7,300	„ 1897	...	38,346
„ 1885	...	6,565	„ 1898	...	48,585
„ 1886	...	8,778	„ 1899	...	27,577
„ 1887	...	14,497	„ 1900	...	19,572
„ 1888	...	13,271			
„ 1889	...	11,316	Total		654,884

The total production of gold from the mines of Queensland has been, up to the end of the year 1900, approximately to the value of £50,000,000 sterling. It will be observed, on perusing the following table—

ESTIMATED YIELD OF GOLD IN QUEENSLAND TO THE END OF 1900.

	Oz.	£
Total yield and value thereof to the end of 1877	2,646,916	9,264,206
For the year 1878 ... ..	310,247	1,085,865
„ 1879 ... ..	288,556	1,009,946
„ 1880 ... ..	267,136	934,976
„ 1881 ... ..	270,945	948,308
„ 1882 ... ..	224,893	787,126
„ 1883 ... ..	212,783	744,741
„ 1884 ... ..	307,804	1,077,314
„ 1885 ... ..	310,941	1,088,294
„ 1886 ... ..	340,998	1,193,493
„ 1887 ... ..	425,923	1,490,731
„ 1888 ... ..	481,643	1,635,750
„ 1889 ... ..	739,103	2,586,860
„ 1890 ... ..	610,587	2,137,054
„ 1891 ... ..	576,439	2,017,536
„ 1892 ... ..	615,558	2,154,453
„ 1893 ... ..	616,940	2,159,290
„ 1894 ... ..	679,511	2,378,288
„ 1895 ... ..	631,682	2,210,887
„ 1896 ... ..	640,385	2,241,347
„ 1897 ... ..	807,928	2,553,141
„ 1898 ... ..	920,048	2,750,349
„ 1899 ... ..	946,894	2,838,119
„ 1900 ... ..	963,189	2,871,709
	14,837,049	50,209,783

that, although increase in the production has not been regular, it has been decisive and significant.

Although surpassed by its latest Australian competitor in the West, Queensland has overtaken and exceeded in gold production every other State in the Commonwealth, and has given the go-bye also to New Zealand.

APPROXIMATE ESTIMATE of the PRODUCTION of GOLD in AUSTRALIA, NEW ZEALAND, and TASMANIA during the Year 1900 (from RETURNS kindly furnished by the DEPUTY MASTER of the ROYAL MINT, MELBOURNE).

Colony.	Gold.
	Oz.
New South Wales ... ..	345,650
New Zealand ... ..	371,993
Queensland ... ..	963,189
South Australia ... ..	29,397
Tasmania ... ..	81,175
Victoria ... ..	807,407
Western Australia ... ..	1,580,950

The gold-mining industry has provided occupation for the number of men, during the years 1899-1900, set forth in the table hereunder:—

1899.				1900.			
European Quartz Miners.	European Alluvial Diggers.	Chinese Alluvial Diggers.	Gross Total.	European Quartz Miners.	European Alluvial Diggers.	Chinese Alluvial Diggers.	Gross Total.
7,144	1,904	710	9,758	7,528	2,163	472	10,163

The winnings of the alluvial miner, or rather digger, during the year 1900, have but slightly exceeded  $10\frac{1}{2}$  oz per man, equivalent to a wage of less than £40 per annum. The year, however, was one of extreme drought. The ground was baked hard; water for drinking was lacking, and prospectors were unable to push out in many districts, while they were hampered also by inability to treat washdirt even when they came upon good patches.

The quartz-miners, although even in their case production was kept down by lack of water for milling operations, turned out an average of slightly over 124 oz. 4 dwt. of gold per man. They had the help of machinery. The next table shows the—

TOTAL PRODUCT FOR THE YEAR 1900 OF QUARTZ AND ALLUVIAL GOLD MINING.

Goldfield.	1900.							COMPARED WITH 1899.		Value.
	Reef Gold	Mill Residues, Tailings, and Concentrates.	Treated at Metallurgical Works.	Alluvial.	Total Crude.	Total Standard Gold.	Total Fine Gold.	Increase, 1900, Crude.	Decrease, 1900, Crude.	
	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	Oz.	£
Charters Towers	214,118	237,935	1,713	913	454,679	308,999	283,237	...	56,312	1,203,166
Clermont	460	73	30	7,671	8,234	8,409	7,708	...	3,701	32,742
Cloncurry Fields	...	...	5	86	91	94	86	...	78	365
Coen	2,084	...	...	...	2,084	1,242	1,139	...	1,701	4,837
Cooktown Fields (Starcke)	903	...	66	...	969	949	869	...	1,675	3,695
Croydon	66,330	31,399	11	...	97,740	52,415	48,045	34,825	...	204,092
Eidsvold	1,330	3,231	13	87	4,661	2,289	2,099	...	3,248	8,915
Etheridge and Woolgar	9,694	9,969	...	409	20,072	10,961	10,047	629	...	42,678
Gladstone Fields	2,007	802	189	880	3,878	3,226	2,958	...	2,535	12,563
Gympie, Kilkivan, Glastonbury, &c.	90,555	2,489	392	86	93,522	83,249	76,309	3,750	...	324,154
Hamilton	806	...	...	12,000	12,806	9,055	8,300	12,806	...	35,258
Hodgkinson	3,864	50	...	120	4,034	3,600	3,300	...	426	14,019
Horn and Possession Island	1,471	...	30	...	1,501	1,129	1,035	636	...	4,396
Jordan	34	...	...	869	903	870	797	...	634	3,386
Mareeba	205	...	9	...	214	204	187	...	8	795
Mackay Fields	97	42	9	...	148	117	107	134	...	456
Mount Morgan	199,817	4,691	2,114	59	206,681	210,533	192,930	22,871	...	819,762
Normanby (Bowen)	55	...	50	341	446	413	379	62	...	1,608
Palmer	834	26	...	1,709	2,569	2,636	2,415	...	415	10,264
Paradise	199	6	13	46	264	243	223	...	331	948
Pikedale, Talgai, Tennenger, Mount Shamrock, and other small Fields	477	...	524	213	1,214	1,204	1,104	445	...	4,688
Ravenswood	20,839	5,718	5,820	898	33,275	27,091	24,832	7,578	...	105,486
Rockhampton	3,738	7,212	132	412	11,494	6,853	6,282	3,973	...	26,685
Russell	...	...	...	790	790	812	744	...	712	3,160
Russell Extended	...	...	...	...	...	...	...	...	47	...
Tate and Tully	...	...	...	354	354	319	292	315	...	1,243
Other Sources	...	...	566	...	566	603	553	124	...	2,348
Total	619,917	303,643	11,686	27,943	963,189	737,515	676,029	88,148	71,853	2,871,709
								Less decrease		...
										71,853
								Increase for 1900		16,295

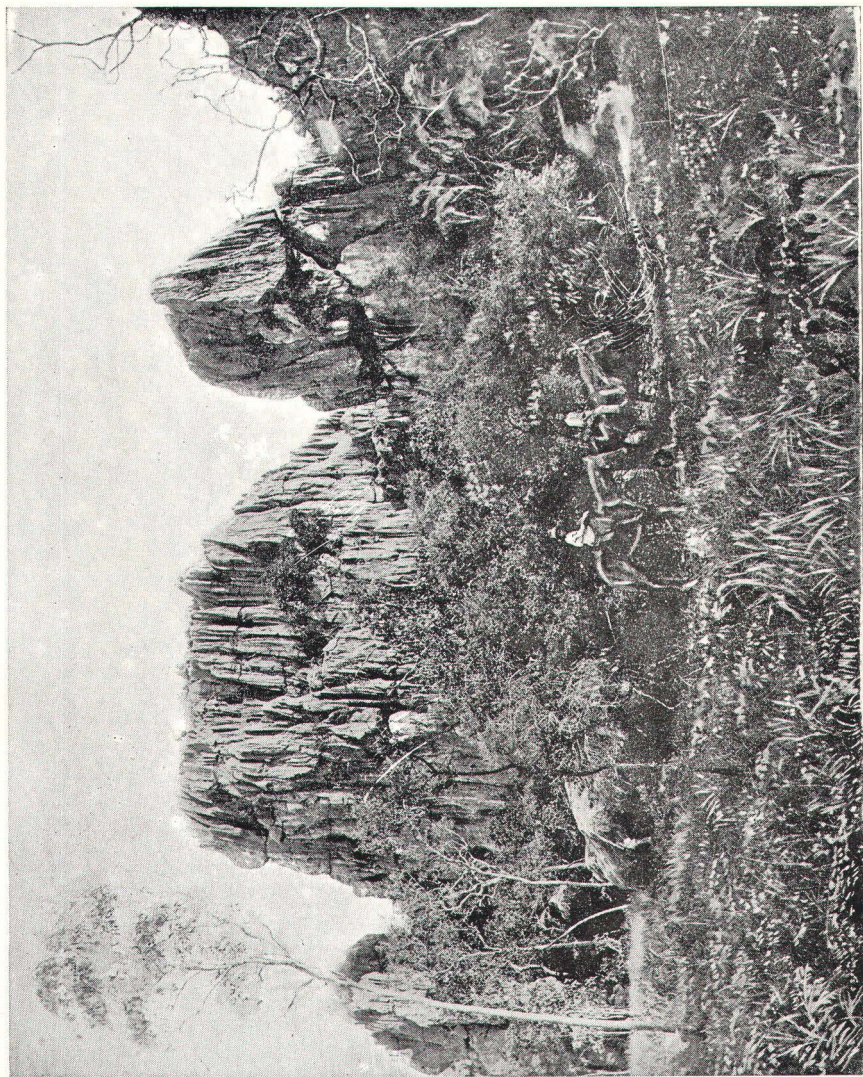
## MINERALS OTHER THAN GOLD.

An impression is gaining ground in Queensland that, during the next half-century, the production of metals other than gold may overtake and exceed that of the royal metal. During the forty-two years that have elapsed since first the existence of gold in concentrated deposits was ascertained in this part of the Australian continent there have been frequent discoveries of other metals, and considerable quantities have been mined and exported. But during that period the value of the gold produced has exceeded that of all other minerals, coal included, by four to one. Of late, however, in consequence of the increasing accessibility of some districts and places by reason of railway construction and extensions, and of advances in metallurgical science, which have substituted for costly and wasteful methods of separating ores from their valueless constituents and extracting the metals in marketable purity, there has been an increasing disposition to invest capital in mining the baser metals. One reason, no doubt, why this sort of mining has lagged thus far behind gold-mining has been that, ordinarily, the prospector is impotent, without securing assistance from capitalists, to convert to his own enrichment any—even the richest—discovery of lodes of the useful metals. He could dolly enough gold from a reef very rich near the surface to equip a mine with sufficient machinery to carry operations a stage further. But it would be a most extraordinary silver-mine which would enable him to do anything of the sort, and as for lodes of tin and copper such a feat would be out of the question.

## TIN.

STANTHORPE.—The first discovery of tin ore was made at Stanthorpe, as already mentioned, and whatever could be obtained by simple methods has long ago been gathered up. Stanthorpe, consequently, may be regarded as an exhausted field, and no longer figures prominently in returns as a producer. Only 64 tons were won during 1900.

HERBERTON, WALSH, AND TINAROO.—In the year 1879, when the approaching exhaustion of the stores of stream tin at Stanthorpe was apparent from the falling output, the same class of ore was discovered by gold-seekers in a gully near the head of the Wild River, which, having its sources on the western slopes of the lofty plateau inland from Cairns, joins the Herbert River on its course to the Pacific. The deposit at this particular spot was not particularly plentiful, and endeavours, which, at Stanthorpe, have failed, to trace the stream tin to a lode origin were here at once successful. Very rich and large bodies of tin stone were found in the hillsides overlooking the gullies, where the stream tin had been carried to. The search was continued, and lodes were laid bare in every direction, and as prospecting was extended it was ascertained that the stanniferous formations passed over the crest separating the heads of the Walsh and Tate Rivers, flowing into the Gulf of Carpentaria, from those of the Herbert, discharging into the Pacific. Not only were the lodes numerous, but they carried near the surface ores of great richness and in large bunches. An era of great prosperity ensued, checked in a few years by heavy falls in the price of tin, and by the discovery that in most instances the occurrence of the ore bodies underground



FORTRESS ROCK, CHILLAGOE.

was irregular, and its quality generally deteriorated. The industry languished, numerous mines were abandoned, and it is only within the last couple of years that, consequent upon an enhancement of the price of the metal, distinct signs of renewed activity have shown themselves, and preparations for the resumption of work with modern equipments on many mines have begun. During the year 1900 the yield from these fields has been 121 tons of stream tin, an output limited by the severe drought of that year. Down the Tate River some 20,000 loads of washdirt were stacked, and the same condition existed at every alluvial centre. The lode tin amounted to 665 tons, of which 471 came from the Irvinebank sub-district, where large works for crushing the ore and smelting the separated black tin exist, and by the convenience of a huge dam throwing back a great body of water, were able to keep going despite the drought.

The revival of active tin-mining in these districts is, however, in evidence at a number of other places therein. At Herberton itself, at Coolgarra, at Watsonville, and at Stannary Hills dams are built and works in course of erection, while lines of tramway to connect with the Cairns-Chillagoe Railway have been surveyed, and are likely soon to be constructed from some of these places.

The tinfields south of Cooktown, with a somewhat similar history of successful beginnings and subsequent languor, produced 159 tons of ore during the year, and signs of expansion are there likewise observable.

On the Palmer, from the neighbourhood of Cannibal Creek, also, 27 tons of alluvial tin were produced, and the lodes there had attracted renewed attention.

From Kangaroo Hills, on a head of the Burdekin, inland over a formidable range from Ingham, encouraging accounts come. This locality ranks next to the Herberton, Walsh, and Tinaroo in the number and quality of its known tin deposits, in alluvial and lode. Here, too, drought compelled the cessation of active milling during many months of last year, but at the Waverley Mine, where a mill costing £10,000 had been erected, a dam to store ten million gallons of water has now been constructed, in case of a like incident; and while the previous supply of water lasted, 220 tons of lode ore were crushed for a yield of 11 tons of black tin. At another mine—the Planet—ore estimated to be worth from £6,000 to £8,000 was at grass at the end of 1900; the Freehold Company had stacked about 60 tons of 50 per cent. and 120 tons of 25 per cent. ore; the Douglas and Southern Cross had raised about 200 and 100 tons of ore respectively, and about 47 tons of stream tin had been won from alluvial workings.

From the ranges behind Port Douglas a few men produced about 8 tons of stream tin, and an equal quantity was contributed by the Star River field on Running River, in the Ravenswood district. Croydon, in addition to its treasures of gold, now claims to have a tinfield about 30 miles south-east from the town, where a number of lodes were discovered in the early part of the year. No substantial work had up to its close, however, been effected to develop these deposits.

The whole quantity and value of the tin produced during the year 1900 was as under:—

Mineral Field.	Quantity.	Value.
	Tons.	£
Cooktown ... ..	159	12,417
Croydon ... ..	7	421
Herberton (Walsh and Tinaroo) ... ..	789	49,199
Kangaroo Hills ... ..	61	4,555
Palmer .. ..	27	2,060
Port Douglas ... ..	8	520
Star (Ravenswood) ... ..	8	520
Stanthorpe ... ..	64	4,349
Total ... ..	1,123	£74,041

#### COPPER, SILVER, AND LEAD.

It would be confusing to treat of the above metals, each under a distinct heading. In so many instances all three metals, or two of them, are intermixed in the ore in one lode, and again lodes in which copper predominates so often lie within musket shot of lodes in which silver-lead is the principal or almost the exclusive ore, that to describe the mines of each separately would involve going repeatedly over the same ground. The first important discovery of copper in Queensland was in the year 1862, when a strong lode of fairly rich ore was found near Clermont, on the Peak Downs, and being taken in hand by Sydney capitalists was actively developed and equipped with furnaces and refinery, as, at the time, to send anything of less value than the actual metal to the seaboard would have been unprofitable. Up to the time of its closing in 1877, this Peak Downs Copper Mine passed through its smelters about 100,000 tons of ore, averaging about 15 per cent. of copper, and paid in dividends £215,250, besides distributing among the shareholders £63,000 on the company going into liquidation, an event which appears to have been due to a freak of mismanagement rather than to any serious falling off in the productiveness of the mine. During 1899 the water was pumped out of the old workings, and an examination of the ore bodies led to an attempt during last year to procure capital to recommence operations, but apparently the enterprise remains in suspense. The next discovery of copper was at Mount Perry, where one mine produced, from 1872 up to about 1884, copper to the value of £86,000, and a number of other lodes were slightly worked, while copper was saleable at high prices. When the value of the metal fell, the small very rich lodes of the district, averaging for dressed ore about 25 per cent. of copper, could not be profitably worked, and years of desertion followed. During the past couple of years, however, copper having again risen in price,



ENTRANCE TO DILLON'S CAVE, CHILLAGOE.

a little mining has been effected there, and it has been stated that the original mine had been acquired by foreign capitalists, albeit beyond pumping out for inspection no work has yet been undertaken on it. During the year 1900 the whole output of the two or three lodes which were being mined has been no more than 62 tons of copper, worth about £4,500.

The enhancement in the value of copper and tin during the past couple of years has awakened a disposition to reopen the mines which in the seventies were prospected and more or less opened. But in a multitude of instances the properties were then secured as freeholds, often by unregistered companies, and, as individuals have died or scattered, deeds have been lost or mislaid, and even when they are preserved it has become most difficult to convey a clear title. To this among other causes may be attributed the fewness of the instances in which mining for copper, tin, and silver has been revived even on fields which present most attractive tokens of mineral wealth.

At present the Herberton, Walsh, and Tinaroo fields are most prominent in connection with copper-mining, and dispute the premiership as regards silver with the Lawn Hills group, in the Burke district. At Chillagoe huge mineralised outcroppings, some of which were a few years ago successfully mined for copper and silver, have been acquired by a powerful company, the Chillagoe Mines and Railway Company, which has connected several groups by short lines with their railway, 100 miles long, in continuation of the State railway from Cairns to Mareeba. This company suspended productive operations on the working mines among those acquired by it, having decided to secure greater economy by treating all the ores at central smelting works, now advancing towards completion, at Chillagoe. Consequently, although thousands of tons of ores are stacked at their mines, these have contributed nothing at all to the metal output of the past year. At Mount Albion, in the same immense district, where, previous to the great drops in the price of silver, large quantities of that metal were produced, renewed activity prevails. Works for treating the ore have been erected by one proprietary. At Lappa Lappa, in the same fields, also, the same metal is being mined. These are only recomencements, but during the year the output of silver from the places named was about 5,240 oz., with the usual accompaniment of lead to the amount of 47 tons.

The Lilydale group of mines in the Burketown district, which have only recently received attention, produced 1,556 oz. of silver and 47 tons of lead. The numerous argentiferous localities outlying from Ravenswood have scarcely felt the revival, a single lode—the Sunbeam—in the Sellheim field, a small but very rich vein, having produced nearly all the silver credited to this district during the year, amounting to 7,214 oz. of silver and 15 tons of lead.

The search for tin lodes around the Stanthorpe district resulted in the discovery of several deposits of silver-lead, and one mine, the Silver Spur, which has been a good producer for some years past, and has its own furnaces, turned out, during 1900, 65,914 oz. of silver, 63 tons of lead, together with 31 tons of copper, and some gold as a bye-product. Another mine in the same locality, the Sundown, also produced, at its own works, 3,000 oz. of silver during the year. The remaining

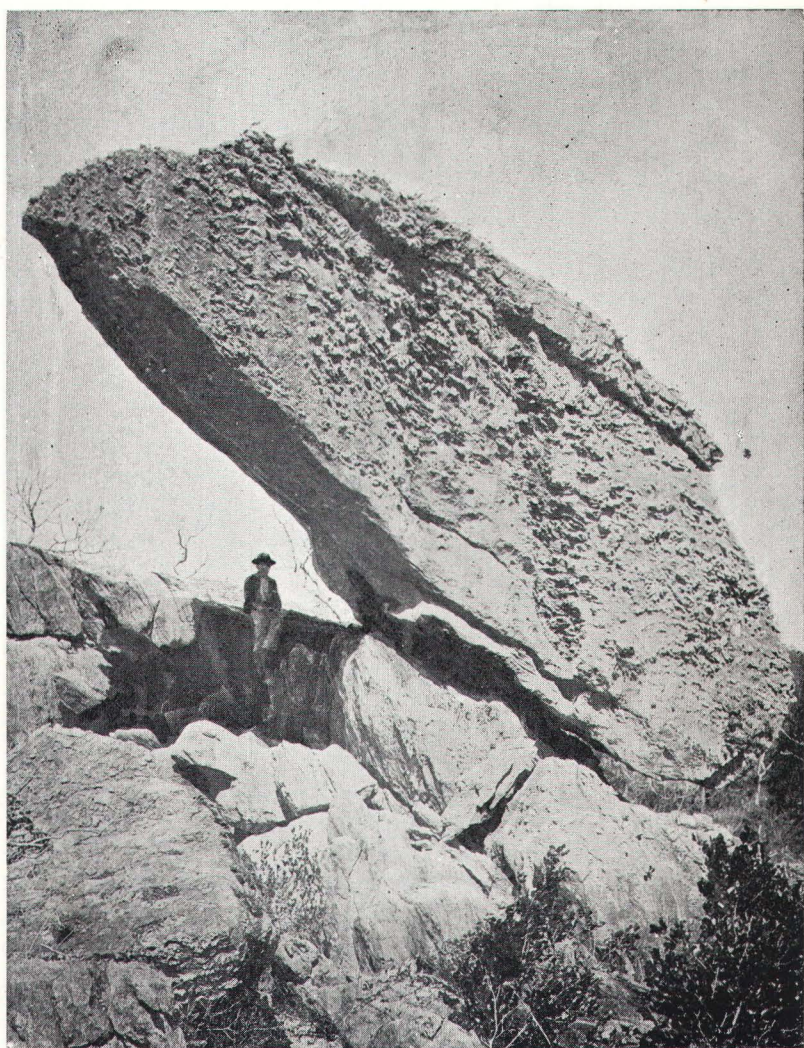
silver produced in the colony during 1900 has been chiefly a by-product from copper and gold mines.

At Kangaroo Hills, the Mount Theckla mine raised 350 tons of ore assaying from 7 per cent. to 23 per cent., and a few other mines in this neighbourhood are being developed, their ores being chiefly of a complex kind, as illustrated by a bulk assay showing a composition of 16·75 per cent. copper, 208 oz. silver, and 13·84 per cent. of lead.

In the Rockhampton district, the Mount Chalmers mine, owned and financed by a British company, commenced smelting in October last, when 300 tons of ore yielded a matte of 25 tons, containing 10 tons copper and 875 oz. of silver, of a total value of £1,000. First smeltings often disclose metallurgical difficulties to be overcome, which was the case in this instance. A later smelting produced from 250 tons gave a matte of 23 tons valued at £800. These results appear to have been achieved somewhat tardily, after the company's capital had been heavily taxed by preliminary operations, unexpectedly protracted. Financial complications ensued, and will have to be overcome before work can be continued in earnest.

The total output of copper during 1900 was inconsiderable, but is by no means a just indication of the condition of the industry. The year has been spent in extensive developments. The instance of Mount Chalmers, already mentioned, is a case in point. Still more notable have been the proceedings in the Chillagoe mines, and of others at Arbouin, 23 miles further west. With respect to Chillagoe, the resources of the company had been mainly devoted to the construction of its railway, now carried to its terminus at Mungana, but exploratory work underground in its mines had disclosed the existence of—according to the general manager—500,000 tons of ore, estimated to average 10 per cent. of copper, besides large values in silver and lead and appreciable gold. From a few of these mines, worked previous to their acquisition by this company, there had been mined and smelted 9,403 tons of ores of higher value, only the best being at that time dealt with. Again, at Mount Garnet, underground work had proved the existence of an immense body—stated by the directors at over 200,000 tons of copper ore equal to 6 per cent. Lack of water prevented the smelters, erected during the year, from being put in blast. Not until January, 1901, was a start made possible, by a sharp rainfall filling the dam, so that this mine produced no copper last year. Another copper-mine, over 100 miles west from Chillagoe, on the Einasleigh River, had also during the year been explored with encouraging results, and its smelter also was towards Christmas approaching completion. Tramways to connect with the Chillagoe-Cairns railway were about to be constructed from Mount Garnet and from the Einasleigh mines.

Hardly worth mentioning has been the amount of copper produced from all the remarkable lodes of that metal scattered over the Cloncurry district—lodes which, in some instances, have been demonstrated to contain larger bodies of high-grade ore than any others in Australasia. Situated remote from ocean or railways, in the heart of a drought-stricken district, the best that could be attempted last year was effected by the Hampden Company, which raised and stacked at the shaft mouth 543 tons firsts, 2,316 tons seconds, and 1,762 tons thirds, assaying, respectively, 40 per cent., 13 per cent., and 6 per cent. of



THE LIZARD'S HEAD, CHILLAGOE.

copper, and yet were unable to despatch to smelting works in the South more than a dozen tons of the highest grade, although offering £9 12s. 6d. per ton for carriage to port alone.

Preparatory work has also been proceeding at promising lodes at Arbouin, 23 miles beyond the Mungana terminus of the Chillagoe Railway; at Kielbottom Creek, in the Ravenswood district, where the source of slugs of almost pure copper has been sought for years; at Hillgrove, 70 miles west from Charters Towers, where large bodies of low-grade ore are said to exist; at Rosewood and Moonmerr, in the Rockhampton district; at the back of Mackay; at the Many Peaks mine, and Glassford Creek among the ranges inland from Gladstone; and even away on the Percy River, near Gilberton, whence sundry parcels of 40 per cent. copper ore were laboriously carted to the Townsville-Winton railway line.

Hence it may be perceived that although the product of copper from all sources in Queensland, during 1900, was no more than 384 tons of metal, valued at £23,040, that was no criterion by which to judge the actual condition of that branch of mining.

#### DREDGING.

Something of the same sort may be said with regard to the industry of dredging for minerals. During 1900 there have been no proceeds at all therefrom. But in that year the first steps have been taken towards testing the applicability of that style of mining to conditions existing in the State. Dredging areas, extending for scores of miles, in the aggregate, have been applied for, following the course of rivers such as the Gilbert and the Palmer, and occupying alluvial flats on various old goldfields where, at moderate depths, the digger in past times found himself unable to prosecute his researches owing to the presence of water. Towards the close of the year one or two of these dredges were just getting to work, and generally encountering the difficulties inseparable from starting new methods and unfamiliar machinery. Steam dredges have been constructed or were in course of construction at Stanthorpe, the Annan River (Cooktown), and the Dry River (Herberton) to scoop for tin; and at Cania (Gladstone), Clermont (Peak Downs), Rockhampton, and the Burdekin River, to seek for gold. From some of these operations there is reasonable expectation that additions may be made to the output of

#### GEMSTONES

which have, with the exception of opal, as yet scarcely figured in the mineral productions of Queensland, although indications of their existence among the auriferous and stanniferous alluvial drift have not been lacking.

OPALS.—Hitherto, in the western interior of the colony, where the watercourses lead with scarcely perceptible fall southward and discharge through the Darling River into the Great Australian Bight, none of the metallic minerals have been found. But in those regions, at detached localities in a north and south line from Eromanga or Opalopolis on the Bulloo, in the extreme south-west corner of the State, to Fermoy or Opaltown, near Winton, almost in the centre of the territory, the first recorded discovery of opal was in the year 1890,

when gemstone to the value of £3,000 was raised. Since then an output estimated at £124,445 has been recorded, but this is a loose estimate, as the miners either dispose of their winnings to buyers who visit the fields or bring their opal to the towns and there dispose of it, so that the transactions escape official notice. The long-continued drought has particularly affected this industry of late years. The warden at Cunnamulla, who visited the Yowah Opal Field in November, 1903, reported: "The state of the country prevents Southern buyers from visiting the opal-fields. The miners are living under conditions of great hardship, and cannot prospect for want of water, high price of stores, and difficulty in keeping horses alive"; and no doubt similar difficulties have been experienced in other fields.

**SAPPHIRES, RUBIES, HYACINTHS, &C.**—At a place about equidistant from Withersfield and Anakie, two stations on the Rockhampton-Winton Railway, and 192 and 204 miles respectively from the first-named town, sapphires are sought and found in quantities amidst the gravels of creek beds. The gems are very fine, as to fire and lustre; their tint, however, is somewhat a darker blue than Oriental sapphires. The Withersfield Sapphire Company, registered in London, has acquired here a freehold of 80 acres, and holds also 160 acres under lease. It is anticipated that the excellences of these gems will prevail over prejudice due to their exceptional tint.

Associated with them in the "wash" are very fine hyacinths.

Rubies not of special merit have been picked by diggers from the auriferous wash on the Jordan Gold Field.

As long ago as the year 1883, the warden of the Etheridge-Gilbert and Woolgar Gold Fields reported that "rubies are to be obtained, the sapphire and the diamond," but no notable production of any of these gems has been recorded. Wholesale treatment of the alluvial drifts on these and other fields may accomplish more than the occasional saving of a specimen crystal. The output of Anakie or Withersfield sapphires during 1900 was valued at only £900—a very paltry sum, considering that a single really fine stone might be worth as much.

#### WOLFRAM, MOLYBDENUM, BISMUTH, MANGANESE, ANTIMONY, QUICKSILVER.

**WOLFRAM**, with which is associated **MOLYBDENUM**, is found in patchy deposits at Wolfram Camp, a wide extent of country situated on the extreme southern verge of the Hodgkinson Gold Field, and within convenient access to the Cairns-Chillagoe Railway. Some quantities of Wolfram ore have been found also in the Herberton mines; at Kangaroo Hills; and inland from Port Douglas; but of 189½ tons produced in 1900, 188 came from Wolfram Camp. The total production of wolfram since 1894, the year of its first exportation, has been 672½ tons, valued at £20,712.

**BISMUTH** is also found at the above place, associated with the wolfram, occurring in clean bunches, either as oxide or carbonate. There are lodes of bismuth ores, reputed to be of quite exceptional prolificness at Ukalunda, on the Sellheim, in the Ravenswood district, but owing, it is said, to financial complications among the proprietors,

work has been for a considerable time suspended there, and on the principal mine expensive machinery has been neglected and going to ruin. In the Burnett district also this metal occurs, and at one mine—the Biggenden—after long suspension of operations, the extensive plant was towards the close of last year set in motion for a few days, when the available water was used up. During the twelve days' run, however, 3 tons of concentrates, containing 31 per cent. of bismuth, were secured. Since bismuth was first mined in Queensland, in 1889, the output has been 546½ tons, valued at £60,728.

MANGANESE, although abundant in places, has so low a value that it will not repay the cost of carriage for any distance, and the only mines worked have been, one in the town of Gladstone and another a little way inland therefrom. The former deposit lies within a few hundred yards of a wharf, and what little ore has been thence extracted has been chiefly shipped to Rockhampton for the use of the Mount Morgan works. The total output since 1894 has been 2,069 tons, valued at £7,196, of which but 75 tons were produced during the year 1900.

ANTIMONY, another metal for which the demand is limited and the price liable to great variation, was early discovered at Neerdie, in the Wide Bay district, and on lodes there work was done off and on for many years from 1872 forward. At Northcote also, a southern portion of the Hodgkinson Gold Field close to Wolfram Camp, lodes of this metal exist, and during the periods of its deepest depression as a gold-mining locality served as an outlet for the energies of some parties of miners. But, as in the instance of the Neerdie lodes, fluctuations in the price of the metal involved alternations of work and neglect. Antimony also occurs on the Palmer, but there and at other places where transit to a seaport is expensive, miners do not judge it to their advantage to trouble with the deposits. In the Ravenswood district the metal is found in combination with the silver and copper, and its presence is not welcome.

Since 1873 the produce of the antimony ores in the Colony has totalled 3,064 tons, valued at £35,458.

QUICKSILVER.—Lodes containing cinnabar exist in the neighbourhood of Kilkivan and Blacksnake, in the Wide Bay district, and were worked for some years subsequent to their discovery in 1873. But for a long time they have lain neglected. The output, as nearly as is ascertainable, has been as follows:—

*Quantity of Quicksilver.*

1874 to 1876—Hester Bros ...	...	68 bottles or 2·3 tons.
1887—Kilkivan Cinnabar Co.	9	„ 0·3 „
1891—Mactaggart Bros.	... 47	„ 1·5 „
Total ...	... 124	4·1

Cinnabar also has been found in the alluvial drift of the Percy River, a branch of the Gilbert, but has not been mined there.

The total quantity of metals other than gold produced from the Queensland mines during 1899 and 1900 was not great, and is set forth together with values in the following table, which also includes precious stones:—

Mineral.	Oz.	Tons.	Value.
<b>1899.</b>			
<b>£</b>			
Total quantity of tin won ... ..	...	1,308	77,302
" silver ... ..	145,325	...	15,671
" lead ... ..	...	56	730
" copper ... ..	...	161½	9,498
" opal ... ..	...	...	9,000
" wolfram ... ..	...	259	10,060
" manganese ... ..	...	735	2,831
" bismuth ... ..	...	2	494
" antimony ... ..	...	40	200
Grand total ... ..	145,325	2,561½	£125,786
<b>1900.</b>			
Total quantity of tin won ... ..	...	1,123	74,041
" silver ... ..	112,990	...	12,712
" lead ... ..	...	205	3,359
" copper ... ..	...	384	23,040
" opal ... ..	...	...	7,500
" wolfram ... ..	...	189½	6,605
" manganese ... ..	...	75	205
" bismuth ... ..	...	8	1,865
" molybdenite ... ..	...	11	561
" gems ... ..	...	...	900
Grand total ... ..	112,990	1,995½	£130,788

During 1900 the production of these metals and gems occupied about 2,100 men, who averaged each only about £60 5s. worth of products during the year. Nearly all these men were working for wages—all, that is to say, except the wolfram-miners, the opal-miners, and some diggers on alluvial tin ore. Miners' wages average about £2 15s. per week—about £140 per annum, allowing for holidays and lost time. It is evident from these figures—and, indeed, the fact is well ascertained—that during the year a considerable number of mineral miners have been kept employed at mine-owners' expense in what is termed prospecting and developing the deposits, or in raising ore which has been left at the shaft mouth to be hereafter conveyed to furnaces and converted into marketable metal. Such was the case during the year at the mines of Chillagoe; at Mount Garnet; at the Einasleigh mine; and at others.

The next table shows at a glance how the men were distributed, and the localities where each metallic substance or gem has been worked.

TABLE showing approximately the NUMBER of MINERS, other than Gold-miners, Coal-miners, and Quarrymen working during the Year 1900.

Mineral Field.	CLASS OF MINER AND NUMBER.					
	Silver and Lead.	Tin.	Copper.	Opal.	Bismuth and Wolfram.	Total.
Biggenden ... ..	...	...	...	...	4	4
Burketown ... ..	30	...	16	...	...	46
Charters Towers ... ..	8	6	6	...	...	20
Clermont ... ..	...	...	10	...	...	10
Cloncurry ... ..	...	...	40	...	...	40
Cooktown ... ..	...	120	...	...	4	124
Croydon ... ..	...	15	...	...	...	15
Cunnamulla ... ..	...	...	...	50	...	50
Etheridge ... ..	2	...	4	...	1	8
Fermoy (Opalton) ... ..	...	...	...	50	...	50
Gladstone ... ..	...	...	51	...	...	59
Gympie, Kilkivan, &c. ... ..	...	...	15	...	...	15
Herberton ... ..	65	628	218	...	10	921
Hodgkinson ... ..	...	...	...	...	100	100
Ipswich and Darling Downs	...	...	30	...	...	30
Jundah ... ..	...	...	...	30	...	30
Kangaroo Hills ... ..	...	83	2	...	...	85
Mount Morgan ... ..	...	...	2	...	...	2
Palmer ... ..	...	83	...	...	...	83
Paradise ... ..	...	...	...	...	4	4
Port Douglas ... ..	...	13	...	...	...	13
Ravenswood and Star ... ..	6	12	21	...	9	48
Rockhampton ... ..	...	...	160	...	...	160
Stanthorpe ... ..	...	100	15	...	...	115
Tenninger ... ..	...	...	40	...	...	40
Thargomindah ... ..	...	...	...	50	...	50
Total ... ..	111	1,060	630	180	132	2,104

## COAL.

The coal measures of Queensland are of vast extent, and are widely distributed. They exist under the greater portion of the south-eastern districts, within 200 miles of the ocean, occur as far north as Cooktown, and even invade the rolling downs country of the far western interior. Of the Moreton and Darling Downs coal-beds—which are regarded as geologically identical, the main range, which interrupts their continuity, being considered merely as an intrusion of igneous rocks—Mr. Jack, lately Queensland Government Geologist, observes:—An area of about 12,000 square miles is occupied by the Ipswich coal-beds. Even this is trifling compared with other carboniferous tracts within the Colony. The Burrum Coal Field extends, according to the same authority, from the mouth of the Kolan River to Noosa Head, and appears to have been traced far up the valleys of the Mary and Burnett Rivers. About 50 miles west from Gladstone, again, on Callide Creek, a seam 30 feet thick of coal free from bands has been penetrated in a shaft only 60 feet deep, and as this seam is everywhere overlaid with superficial deposits, the extent of the bed has not been ascertained beyond the fact that borings and shafts a couple of miles away in one direction, and half-a-mile in another, show a continuity of the strata, and no indications of disturbance.

A vast field appears to occupy the whole of the basins drained by the Fitzroy River, abundance of coal having been found outcropping

alike on the head waters of its southern feeder, the Dawson, and of its northern heads, the Isaacs and Suttor. The Broudsound country has coal of magnificent quality. The Bowen River beds on Burdekin waters are perhaps connected with the last mentioned. There is coal at Clermont, coal inland from Townsville; even on the Palmer coal has been found. At Bungeworgorai Creek; at Tambo; at Winton in the western country, and on the Flinders River, which flows to the Gulf of Carpentaria, the occurrence of coal has at least been noticed.

Coal mines near Ipswich, on the banks of the Bremer Creek and Brisbane River, have been continuously worked in a progressive scale almost since the first settlement at Moreton Bay. The Wide Bay seams have been operated on chiefly at the Burrum River since about 1870, and at Clermont coal-mining has been carried on since the copper company there opened a seam to supply the furnaces at the Peak Downs Copper Mine in the sixties. Most of the other localities have been judged too distant from an outlet to coal-consuming centres for profitable mining. But the seam at Callide appears likely to be turned to account ere long, a company having been granted by Parliament the right to construct a railway to connect with the port of Gladstone, whence it is hoped a considerable export trade may be launched.

The total output of coal in Queensland from the year 1860 to the end of 1900 is recorded at 6,156,051 tons, valued at £2,632,112.

During the year 1900 the output from all sources was as stated in the table underneath, which shows also the number of miners in the pits on each field.

Coalfield.	Tons.	Value.	Miners Engaged.
		£	
Ipswich and Darling Downs ... ..	379,504	126,425	938
Wide Bay (Burrum, &c.) ... ..	110,849	41,148	255
Clermont ... ..	6,774	6,126	43
Rockhampton ... ..	5	6	10
Total ... ..	497,132	173,705	1,246

The output as above was 3,121 tons over that of 1899, yet the value was £2,010 less. The increase of production would have been greater but for a strike at some of the Ipswich collieries. At Goodna and at Bundamba in that district two new collieries were being opened at the former place, and at the latter one new mine reached the productive stage, and two others are less advanced. From the Ipswich measures exclusively have been derived the coal shipped from the port of Brisbane, which during the year 1899 showed a considerable increase. The following table shows the quantity so shipped for the past ten years to the close of 1900:—

Year.	Tons.	Year.	Tons.
1891 ... ..	138,506	1896 ... ..	155,114
1892 ... ..	121,809	1897 ... ..	134,718
1893 ... ..	132,787	1898 ... ..	154,916
1894 ... ..	122,370	1899 ... ..	203,264
1895 ... ..	122,910	1900 ... ..	181,543

It is necessary to observe that but little of the above has been actual exportation to foreign markets. The Ipswich coal, although excellent for most purposes, has been too friable for exportation by shiploads. The quantities shown were simply for coastal steamers' consumption. The Ipswich seams yield a bituminous coal. Further west, on the Darling Downs, the beds yield cannel coal, of compact texture; but expense of freight per rail to a shipping port prohibits exportation. The Dawson seams, which during the year have been sought by boring at a locality not too distant from port, are of anthracite coal of unsurpassed quality; but the beds had not yet been penetrated at the close of the year. Considerable expectations are based upon the exploratory work there, and also upon the outcome of steps which are being taken to connect the tremendous 30-foot seam of clean coal at Callide by train with the port of Gladstone.

The growth of the coal-mining industry during the past 30 years will be seen by reference to the following table :—

Year.	Number of Miners.	Coal Raised.	Coal per Miner.	Coal Raised. Value.	Value per Miner.
		Tons.	Tons.	£	£
*1871 ... ..	122	17,000	139	9,407	77
*1876 ... ..	194	50,627	261	26,470	136
*1881 ... ..	339	65,612	194	29,033	86
*1886 ... ..	651	228,656	351	95,243	146
†1891 ... ..	879	271,603	309	128,198	146
†1896 ... ..	1,275	371,390	291	154,987	122
†1897 ... ..	1,179	358,407	304	139,889	119
†1898 ... ..	1,278	407,934	319	150,493	118
†1899 ... ..	1,142	494,009	432	175,715	154
†1900 ... ..	1,246	497,132	399	173,705	139

\* As per Census Population.

† As per Population supplied by Mines Department.

It will, however, be proper to bear in mind that with the new century a very powerful additional impulse appears to be in preparation, which may propel the industry forward at a greatly accelerated rate. If the Callide and the Dawson-Mackenzie, or either of them develop, as may be reasonably hoped; to coal-mining for State and coastal consumption—a narrowly limited consumption—there will be adjoined foreign exportation, the extent of which can scarcely be conjectured.

## Part XI.

# FISHERIES.

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### THE FISHERIES OF QUEENSLAND.

For a young and undeveloped country, situated practically in the tropics, the fish supply of Queensland is distinctly good. In the Moreton Bay district alone fishing is prosecuted by a fleet of 100 boats, and although the supply is not excessive, the industry only wants time to develop into one of first-class magnitude. Edible fishes of many kinds abound on the coast, including Grey Mullet (*Mugil dobula*), Whiting (*Sillago ciliata*), Flathead (*Platycephalus fuscus*), Snapper (*Pagrus unicolor*), Silver Bream (*Chrysophrys australis*), Tailor fish (*Temnodon saltator*), Garfish (*Hemiramphus intermedius*), Groper (*Oligorus terre-reginæ*), Long Tom (*Belone depressa*), Jew fish (*Corvina axillaris*), White Trevally (*Caranx nobilis*), and the Flounder (*Pseudorhombus multimaculatus*). The best known are the first two species, which migrate up the coast yearly in immense shoals. They come very close in, and this has determined the style of fishing commonly in vogue, viz.—by seine or drag nets.

The climate is against the development of the fish trade, until the advent of a good railway system has insured quick and cool transport. Already the use of fast collecting steamers fitted with refrigerating apparatus is contemplated, and all things point to increased attention to and consequent speedy development of the industry.

Prawning is being well worked, and crabbing is a branch of the industry that will boom in the immediate future. Experiments are on foot with a view to improve the means of capturing crabs, and also to introduce the use of trammel and trawl nets as a regular style of fishing. Long lines are also being tried.

Freshwater fishes are receiving attention at the hands of the Acclimatisation Society of Southern Queensland. For some years this society has undertaken amongst other things the artificial hatching of the American Rainbow trout (*Salmo irideus*) at their hatchery on Spring Creek, Killarney, and from their rearing ponds fry have been distributed to many rivers in the district. This species is deemed the most suitable for these waters, and the introductions have had satisfactory results so far. The society is doing good work.

The celebrated Queensland lung-fish (*Ceratodus Forsteri*)—formerly known in only two rivers—has been successfully transplanted to several other streams. The work was carried out by Mr. D. O'Connor, of Oxley, who is an enthusiast on matters piscatorial.

Oystering is flourishing in Southern Queensland. Altogether something like 21,500 acres of oyster ground in Moreton Bay and near Maryborough are leased for cultivation. The waters in and about Moreton Bay produce a very fine class of oyster, that is eagerly

sought for throughout Australia. Right from the start oystering seems to have been a triumphant success—until the worm came, a present from New South Wales. Now this worm is a well-known marine form of almost world-wide distribution (*Polydora ciliata*), and is, in most parts, quite a respectable beast, that contents itself with drilling a hole in here and there a shell. Arrived in Queensland however, in some quantity, it evidently resolved to suit itself to the large style in which Queenslanders have their misfortunes—as in drought, tick, loan, &c. Accordingly it changed the manner of its attack, and cunningly knocked the Moreton Bay oyster out in two rounds—pardon, years. Great was the consternation amongst those in the trade. The exports fell away by nearly one-half, and the oystermen bade no more rejoice. However, Time and the Inspector of Fisheries have done wonders in the way of improvement, and now clean oyster-beds is the word. The worm is retiring gracefully from the conflict, and the oystermen smile again. In addition to the quantity consumed in the State, 11,041 packages of oysters, worth £13,845, were exported last year.

Improved methods are being introduced, and oystering is at the present moment the most hopeful of all the fisheries. In Rodd's Bay (Gladstone) are several thousand acres of undeveloped oyster country, and further up the coast there are many districts that wait the cultivator. In addition to the common oyster, rock oysters abound throughout the length of the coast, and mangrove oysters are not without their devotees in Northern Queensland.

Dugong fishing was formerly prosecuted with great success, but lately the supply has fallen away. This year an attempt was made to revive the fishery, but without much result. Dugong bacon is esteemed a great delicacy, while the oil and hide are also valuable.

Turtling is worked chiefly in the North. The green or edible turtle (*Chelonia viridis*) is not much in demand, though there is a prospect of a steady market becoming available. The hawk's-bill, turtle (*Caretta imbricata*) is pursued for its horny covering, which is the tortoise-shell of commerce. The shell of the Queensland variety is worth from 20s. to 30s. per lb. It is fished chiefly from Thursday Island, from which port 4,867 lb. were exported last year.

Bêche-de-mer fishing is carried on at Thursday Island and Cooktown. The bêche-de-mer is a sluggish, sausage-like beast of the star-fish family, which is caught on the coral reefs, boiled, opened, disembowelled, smoked, packed, and exported to China, where one species—the teat-fish (*Holothuria mammifera*)—fetches as much as £240 per ton. The whole process of curing is often carried out on board the boats engaged in the fishery, and, as these are usually small cutters, the smoking is attended with disastrous results to the eyes. During last year 25 tons 11 cwt. 2 qr., worth £2,616, were exported. Bêche-de-mer is used by the Chinese for the manufacture of a soup. The preparing of this soup is something of a mystery, but the finished article is exceeding good.

Pearl-shelling is the most valuable of our fisheries. The headquarters of the industry is at Thursday Island, where 354 boats, employing over 2,000 men, are engaged in this exciting business.

It is often supposed that the pearlers fish for pearls alone, but it is not so. Pearls are quite a secondary consideration. What the pearler is after is the mother-o'-pearl shell. If he finds a pearl in a shell, so much the better; but the pearl is not there by any design on the part of the pearl-oyster. It is a pathological product, and a misfortune to the oyster, whatever the pearler may think of the matter. The sheller frequently opens as many as 3,000 or 4,000 shells running without finding a pearl worth £1.

The old style of raising shell by naked diving and its romantic associations are rapidly disappearing before the introduction of diving apparatus. Modern pearling is conducted on lines that leave no room for poetry. Of late years the pearler has become practically a deep-sea fisherman, as the shelling area has been worked further and further from land, and now his life resembles that of a French cod-fisher. A schooner, with her fleet of 16 or 17 luggers, goes to sea, and stops there, while the weather permits. The shell is collected daily from the luggers and taken to the schooner, where it is opened by the white men in charge. Then it is chipped, cleaned, and packed against the coming of the tender to take it to Thursday Island for export. Incidentally, most of the pearls fall into the hands of the owners of the fleet, though some filter through by devious paths.

Only two species of pearl-shell are worked. The large white shell (*Meleagrina margaritifera*) is usually got in water up to 20 fathoms. Some adventurous souls persist in diving in deeper waters, up to 35 fathoms, where a plentiful supply of shell rewards their daring. Amongst these, unfortunately, fatal accidents are not uncommon. Meantime the pearlers await the coming of the inventor of an improved diving dress to enable them to explore the deeper waters with safety. Already there have been several false starts in this direction. Some day he will arrive, perhaps.

The other species (*M. radiata*) is a small black-edged shell, much harder than the other. It is found chiefly on coral reefs. Nearly all the shell is sent to London, where it is sold by auction to the manufacturers. Last year 1,250 tons 13 cwt. 3 qr. 17 lb., worth at a local valuation £128,451, were exported.

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## Part XII.

# SECONDARY PRODUCTION.

### MANUFACTURES.

Although essentially a country of primary production—the number and extent of industries having for their object the conversion of raw material into commercial articles being limited—yet a considerable amount of secondary production exists; fresh industries are continually springing up, and those already in operation are ever expanding in number and importance.

During 1900 there were 2,078 manufactories of all kinds in existence employing 25,953 hands, possessing machinery and plant to the value of £4,504,535, and with an output valued at £7,916,364. The following are the particulars:—

Nature or Description of Industry.	FACTORIES.			Value of Land and Premises.	Value of Machinery and Plant.	Value of Output.
	No.	Hands.	Horse-power.			
Connected with products of pastoral pursuits	79	681	772	78,464	66,691	402,183
Connected with food or drink	617	8,661	19,296	1,432,457	2,981,587	4,143,970
Connected with clothing or textile fabrics	81	3,567	181	176,106	66,948	559,489
Connected with building ...	308	3,379	4,588	241,050	354,921	735,177
Metal work and machinery	332	4,095	1,188	330,310	246,717	815,910
Ship building and repairing	30	213	83	133,911	14,796	47,098
Furniture, bedding, &c. ...	79	604	82	102,042	10,573	96,899
Books, paper, printing ...	152	2,131	641	403,781	191,703	425,489
Vehicles, saddlery, and harness	261	1,324	47	176,022	21,603	205,309
Light, heat, fuel ...	25	347	1,784	79,663	473,740	115,413
Miscellaneous ...	114	951	318	131,042	75,256	369,427
	2,078	25,953	28,980	3,284,848	4,504,535	7,916,364

**BOILING-DOWN ESTABLISHMENTS.**—There were 8 of these in operation during 1900, exclusive, of course, of those who extracted tallow incidentally in connection with the preservation of meat or with butchers' slaughter-yards. The number of hands employed was 39, and the value of the output £20,752.

**BONE MANURE.**—There were 4 of these working last year, employing 26 hands, and returning an output of £13,160 in value.

**TANNERIES** numbered 40, and employed 318 hands. The capital invested amounted to £61,100, and gave a return for the year of £219,965. More than one-half (24) of the tanneries were returned from the metropolitan district, whilst 4 were at Toowoomba. The leather manufactured during 1900 was 36,483 cwt., valued at £206,824, in addition to which there were 94,646 skins put through the pits valued at £13,141. The corresponding figures for 1899 were—leather, 29,241 cwt., £178,592; skins, 262,966, £37,896.

**FELLMONGERIES AND WOOL SCOURING.**—These numbered 26, and employed 289 hands; the capital invested was £60,265.

**AERATED WATERS.**—One hundred and sixty-three in number with 660 hands employed, a capital of £140,951, the value of the output being £164,845. A most satisfactory return, seeing that the raw material is comparatively of little cost.

**BREAD AND BISCUITS.**—There were 9 of these establishments in operation during 1900. Brisbane, 5; Ipswich, 1; Maryborough, 1; Rockhampton, 2. The hands employed numbered 274, and the products were as follow:—Biscuits, 7,480,222 lb., valued at £78,976; cakes, &c., 102,588 lb., valued at £4,217; and machine bread, 5,568,560 lb., valued at £34,933. The figures for 1899 were: Factories, 9; hands, 251; biscuits, 1,813,496 lb., £39,279; cakes, &c., 366,523 lb.; £13,265; machine bread, 2,979,120 lb., £15,515.

**BREWERIES.**—There were 2 fewer breweries in operation in 1900 than in 1899—namely, 22. More beer was, however, brewed, but of a less value. In 1899 the output was 5,422,194 gallons, £401,542; and in 1900 it was 5,738,190 gallons, £376,018. The hands employed in the latter year numbered 444, or 8 more than in 1899. The capital invested amounted to £219,776.

**BUTTER, CHEESE, &C.**—There were 199 establishments classed under the head as factories in 1900, inclusive of all creameries turning out a certain quantity of cream, but not, of course, counting persons making butter in small quantities and without the aid of machinery. The hands employed numbered 595, and the capital invested was £132,235.

In dealing with the output of these commodities it will be readily apparent that the turn-out of all makers must be included, as from the nature of the industry a large proportion of the return is at the hands of the small producer. Information respecting the dairying industry for the past three years is given in the following table:—

Year.	ESTABLISHMENTS HANDLING		BUTTER.						CHEESE.		
	Cream Only.	Cream and Butter.	*Milk Dealt with.	*Cream Produced.	Central Factories.	Made by Persons having Separators making under 7,000 lb. each.	Made from Hand-skimmed Cream.	Total.	Producers.	Milk.	Cheese.
			Gallons.	Lb.	Lb.	Lb.	Lb.	Lb.		Gallons.	Lb.
1898	450	4,742	19,236,973	7,351,726	3,795,315	*212,668	1,634,654	6,437,256	234	1,772,089	1,843,803
1899	930	4,740	22,934,432	16,373,635	5,796,131	1,194,181	1,472,283	8,462,595	221	1,911,214	1,910,300
1900	1,263	3,630	21,884,407	15,621,512	6,917,117	835,718	927,554	8,680,389	115	1,940,672	1,984,705

\* Making under 2,000 lb. each.

From this it will be seen that notwithstanding the drought of the past two years, and which became so accentuated during 1900, steady progress has attended this pursuit. The number of creameries have multiplied nearly three times, whilst the reduction in the number of

establishments handling cream and butter points to the expansion of the central factory system, which makes for quantity, quality, and economy of production. The large quantity of milk returned compared with the cream and butter obtained in 1898 is probably due to the fact that in the first year of the collection of this information a number of the proprietors included in their return milk used for domestic consumption. The quantity of butter made increased by 2,025,339 lb., or 31 per cent., in 1899, and by 217,794 lb., or 2·6 per cent., in 1900. The increase in the use of the separator is well illustrated in the reduced quantity year by year of the butter made from hand-skimmed milk. The butter made from each pound of cream was 0·52 in 1899, and 0·56 in 1900.

There has also been steady progress exhibited with respect to the production of cheese during the past three years, and here also the large factory is evidently proving the more profitable; the number of establishments having declined from 234 in 1898 to 115 in 1900, whilst the lesser number in the latter year turned out 140,902 lb. more cheese than was made in 1898. The quantity of cheese in pounds made from each gallon of milk for each of the three years was as follows:—1898, 1·04; 1899, 1·00; and 1900, 1·02.

COFFEE, SPICE, AND CONDIMENTS.—Mills engaged in grinding these commodities numbered 16, employed 73 hands, and gave an output of £19,153, whilst the capital invested was returned at £14,388.

CONFECTIONERY.—This industry gave employment to 305 hands engaged at 25 factories. The capital employed was £44,801, and the return obtained was valued at £84,272.

DISTILLERIES.—There were 5 distilleries in operation during 1900—2 at Bundaberg, and 1 each in the districts of Brisbane, Ipswich, and Logan. There were 150,763 gallons of proof spirit made, which was the largest quantity produced in any year since 1893. These establishments gave employment to 19 hands, and the value of the output was returned at £9,285. In addition to the foregoing, 15 vigneron held licenses, under Act of Parliament 30 Vic. No. 23, to distil brandy to fortify their own wine. Under this authority 1,055 gallons of brandy were distilled during the year.

FLOUR AND GRAIN MILLS.—At present Queensland not only imports large quantities of flour, but also wheat in considerable bulk for conversion into flour. This is a state of things that must soon pass away in view of the proved capacity of vast areas of the State for wheat production. At the present time the milling industry is one of some importance, but when the tide turns and the importation of bread-stuffs shall have ceased and this State has assumed a place among the countries which produce these commodities for foreign markets, the industry which deals with the preparation of grain for food will stand in the front rank of secondary production. In the tabulation of mills for grinding and dressing grain, two classes of factories are dealt with—those treating wheat only or flourmills proper, and subsidiary establishments treating other grain and even some other products such as coffee. Of flourmills there were 16 working last year, employing 196 hands. These for the most part are constructed on the most improved designs for economy of working, and contain the most

modern machinery. The apparatus for grinding consisted of 6 pairs of stones and 132 sets of rollers. 1,169,228 bushels of wheat were treated, from which there were obtained 23,347 tons of flour of a value of £182,240, 154 tons of meal worth £1,387, and 1,099,793 bushels of bran and pollard of a value of £55,345. Of the 16 mills 5 were in Brisbane, 4 in Allora and Warwick, and 3 in Toowoomba.

ICE.—This very necessary industry for a hot climate is represented by 21 factories, employing 94 hands, and with a capital invested of £142,640 gave a return last year of £22,638.

JAM, FRUIT-CANNING, AND PICKLES.—In 1900 there were 31 factories, of which 23 were in the metropolitan district. The total number of hands was 350, whilst the output of jam was 5,268,666 lb. of a value of £76,525, and the value of the other products, pickles, &c., £8,532; sauces, vinegar, &c., £9,397; and baking powder and oilmen's stores, £15,098.

MEAT PRESERVING, &c.—This may be considered the premier of the secondary industries of the Colony, estimated on the basis of the value of the output. Including 2 boiling-down establishments which also made extract, these factories were 27 in number and employed 2,523 hands; they also represented a capital investment of £696,208, and the output for 1900 was valued at £1,591,861. Including the 6 works engaged exclusively in boiling down, and which—although not employed in the preservation of meat for food—may be considered as factories of a similar character, the factories in 1900 dealt with no less than 280,054 head of cattle, 151,655 sheep, and 90,608 hogs, the latter, however, including those killed by farmers, were dealt with during 1900. Of these 150,057 cattle and 50,719 sheep were frozen, 108,975 cattle and 75,887 sheep were preserved, whilst 21,022 cattle and 25,049 sheep were passed through the 8 establishments engaged in boiling down for tallow, although, as already referred to, 2 of these also made extract. In addition to this, from the animals slaughtered the quantity of meat frozen and preserved was as follows:—

	BEEF. lb.	MUTTON. lb.	BACON, &c. lb
Frozen ... ..	91,006,191	2,285,758	—
Preserved ... ..	34,264,575	1,379,785	7,685,446

In addition to the foregoing, the following products were also obtained:—Extract, 759,193 lb.; tallow, 9,657 tons; lard, 381,695 lb.; manure, 9,519 tons, of a value of £31,518; edible fats, 1,362,786 lb., of a value of £19,792; hides, 265,051, of a value of £235,239; skins, 191,445, of a value of £28,850; bones, 655 tons, of a value of £3,739; horns and hoofs, of a value of £12,900; hair, 39,089 lb., of a value of £2,001; oils, &c., 17,590 gallons, of a value of £2,022.

The foregoing figures only relate to cattle and sheep slaughtered at factories chiefly for export, and take no account of beef and mutton used for home consumption. Although full information under this head is not available, statistics respecting the meat consumed within the areas under the jurisdiction of the various inspectors of slaughter-houses are collated, and these areas embrace nine-tenths of the population.



HAULING SAWN TIMBER, BLACKALL RANGE.

The number of each kind of live stock killed during 1900, under the supervision of the inspectors, to supply the 451,741 persons estimated as living within their districts, were:—Cattle, 177,394; sheep, 474,538; calves, 17,737; lambs, 8,032; and pigs, 38,851. These animals were returned as of an average dead weight of cattle, 579 lb.; sheep, 44 lb.; calves, 59 lb.; lambs, 30 lb.; and pigs, 83 lb.; figures which give the average consumption per capita of population at 228 lb. of beef, 46 lb. of mutton, 2 lb. of veal, 1 lb. of lamb, and 7 lb. of pork, or a total of all meat of 284 lb.

**SUGAR MILLS AND REFINERIES.**—Of the 66 mills of all kinds employed during 1900 in the production of sugar, 7 were juice mills only, and 1 was also engaged in refining. There was also 1 refinery which did not make sugar. A capital of £2,815,076 was invested in the manufacturing industry, exclusive of the value of agricultural land under sugar-cane, and the value of the output was returned at £1,188,693, and direct employment being given to 3,105 hands. The quantity of sugar-cane operated upon was 848,328 tons, from which 92,554 tons of sugar were obtained. There was also returned as a bye-product, 3,534,832 gallons of molasses. This forms chiefly the raw material from which the distilleries manufactured the bulk, if not all, of the spirit produced in the Colony. This does not nearly represent the whole of the molasses which resulted, as in many instances no efforts are made to conserve it, as the demand is limited either for distilling or for conversion into syrup as an article of diet. It took 9·17 tons of cane to make each ton of sugar, or conversely from each ton of cane 2 cwt. 0 qr. 20 lb. of sugar were obtained.

#### CLOTHING AND TEXTILE FABRICS.

**BOOTS AND SHOES.**—There were 46 establishments, employing 1,565 hands, engaged in the manufacture of boots and shoes during 1900. The capital invested was £87,281, the total value of the goods made returned as £280,870, and the total number of pairs of boots, &c., produced 1,077,910. Of the total number of factories, 29 were in the metropolitan district.

**CLOTHING, UNDERCLOTHING, &c.**—These numbered 30, and gave employment to 1,806 persons; their aggregate capital amounted to £112,657, and the value of the product was £240,279.

**HATS, CAPS, &c.**—There were 4 employers engaged in the production of these articles of apparel; they employed 54 hands, and the value of their turnout for 1900 was 8,340.

#### BUILDING MATERIALS.

**BRICK AND POTTERY.**—These factories were 54 in number, and during 1900 found employment for 411 hands, had a capital of £83,545 invested in the various establishments, and turned out bricks and pottery of an aggregate value of £50,060; the number of bricks made being 18,541,979.

**SAWMILLS, JOINERY WORKS, &c.**—During 1900 there were 222 works of this nature in operation, of which 160 were lumber mills. The hands employed were 2,812, the capital invested £494,453, and the total value of the output 654,182. The 160 lumber mills gave work to

2,228 out of the 2,812 persons employed. Log timber to the value of £36,202 was purchased during 1900, and the following quantities of the various kinds of timber were turned out:—Soft woods, 58,024,523 feet; cedar, 2,166,735 feet; and hardwood, 39,652,638 feet; the average price obtained per 100 feet superficial being 8s. 10d., 25s. 4d., and 11s. 6d. respectively.

**METAL WORKERS** (all kinds).—There were 329 establishments returned under this head, and the hands employed numbered 3,931. The capital employed amounted to £510,769, and the value of the aggregate output was £716,395.

**SMELTING**.—There were 3 works engaged in smelting last year, employing 164 hands; the output was valued at £99,515, whilst the capital outlay amounted to £66,258.

**BOAT BUILDING, &c.**—In the 30 works engaged in connection with the construction or repair of ships and boats and their gear there were 213 hands employed. Premises, machinery, and plant to the value of £148,707 were engaged in the industry, the output for which for 1900 amounted to £47,098 in value.

**FURNITURE**.—In connection with the production of all kinds there were 79 factories engaged, possessing an aggregate capital of £112,615, turning out material of a value of £96,899, and giving employment to 604 persons. Furniture to the value of £51,493 was imported last year, so that the production met very nearly two-thirds of the demand.

**BOOKS, PAPER, PRINTING, &c.**—Comprised 152 establishments, employing 2,131 hands; the capital involved amounted to £595,484, and the output was valued at £425,489.

**VEHICLES, SADDLERY, &c.**—This industry embraced 261 workshops, and found employment for 1,324 hands; the capital invested in it amounted to £197,625, and the value of the goods made was returned at £205,309.

**GAS**.—There were 14 works engaged in 1900 in the production of gas, all being the undertakings of public companies. The hands employed numbered 251, and a capital of £476,515 was invested in the enterprise. The aggregate length of pipe mains was 210·75 miles. There were 26 gasometers of a combined capacity of 2,901,000 cubic feet. The coal put through the retorts during the year amounted to 34,664 tons, from which 329,960,500 cubic feet of gas were made and 19,721 tons of coke.

**ROPE, &c.**—There were 3 ropeworks carrying on operations in the Colony during 1900, employing 36 hands, and turning out £21,700 worth of material, with a capital outlay of £9,210. The output was 9,256 cwt. of cordage. As the imports for the year amounted to 2,343 cwt., valued at £6,679, and 1,628 cwt. of a value of £4,610 were exported, it follows that the Colony produced nearly 93 per cent. in quantity and nearly 92 per cent. in value of her requirements.

**SOAP AND CANDLES, &c.**—There were 24 factories, employing 147 hands, engaged during 1900 in the production of these necessities, and also incidentally turning out other commodities, chiefly

soda crystals, oils, and glycerine. The capital invested amounted to £56,680. The quantity and value of some of the products were: Soap, 70,274 cwt., of a value of £65,622; soda crystals, 1,184 tons, of a value of £6,968; and other products valued at £9,504.

No information is available as to either quantity or value of candles made, as only one firm was engaged in their production, and consequently objected to furnish the particulars.

**TOBACCO.**—As raw leaf is produced in the State, its manufacture into tobacco of commerce is an industry of much interest. At present foreign leaf is imported for manufacture here, the home-grown leaf not being equal to the demand. There were, during 1900, 6 factories making tobacco and cigars, giving employment to 243 persons; the capital employed amounted to £36,990. Five of these establishments were situated in the metropolitan district, and 1 at Ipswich. The quantity and value of the production for the year was as follows:—Tobacco, 612,350 lb., of a value of £58,325; cigars, 1,463 lb., valued at £669; cigarettes, 28,857 lb., valued at £8,624; and snuff, 176 lb., of a value of £23. Of manufactured tobacco, cigars, and cigarettes, 834,877 lb. were imported last year, and 68,410 lb. exported, so that the consumption was 1,409,313 lb., whilst the home-manufactured article comprised 46 per cent. of the total consumption. The raw material required to produce the 642,846 lb. of tobacco manufactured in the Colony was partly produced in Queensland and partly imported. The quantity of dried leaf obtained by the farmers last year was 451,584 lb., and unmanufactured article imported amounted to 62,020 lb., and that exported to 1,161 lb. Assuming the results thus obtained to represent the demand of dried leaf for the year, the home production equalled 88 per cent. of such demand.

**MISCELLANEOUS.**—There were, in 1900, 149 factories employing 1,156 hands engaged in a variety of industrial pursuits in addition to those which have been already particularised. These involved the employment of £174,063 for land and premises, £125,522 for machinery and plant, and returned in the aggregate an output of various products to a value of £423,244.

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## Part XIII.

# EDUCATION.

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## SCHOOLS AND SCHOOL WORK.

[Contributed by JOHN SHIRLEY, B. Sc., District Inspector of Schools  
Department of Public Instruction.]

### ORIGIN AND GROWTH.

The Queensland Department of Public Instruction dates from 1st January, 1876, when the control of the public schools was taken over from the Board of Education, a body which had been charged with their supervision since 1860. This change was brought about by the State Education Act of 1875, by which the Department of Public Instruction was constituted under a responsible Minister of the Crown having a seat in the Legislative Council or Legislative Assembly. The Minister at present holding office is the Hon. John Murray, M.L.C. Under the Minister the principal officers are the Under Secretary, General Inspector, and thirteen district inspectors.

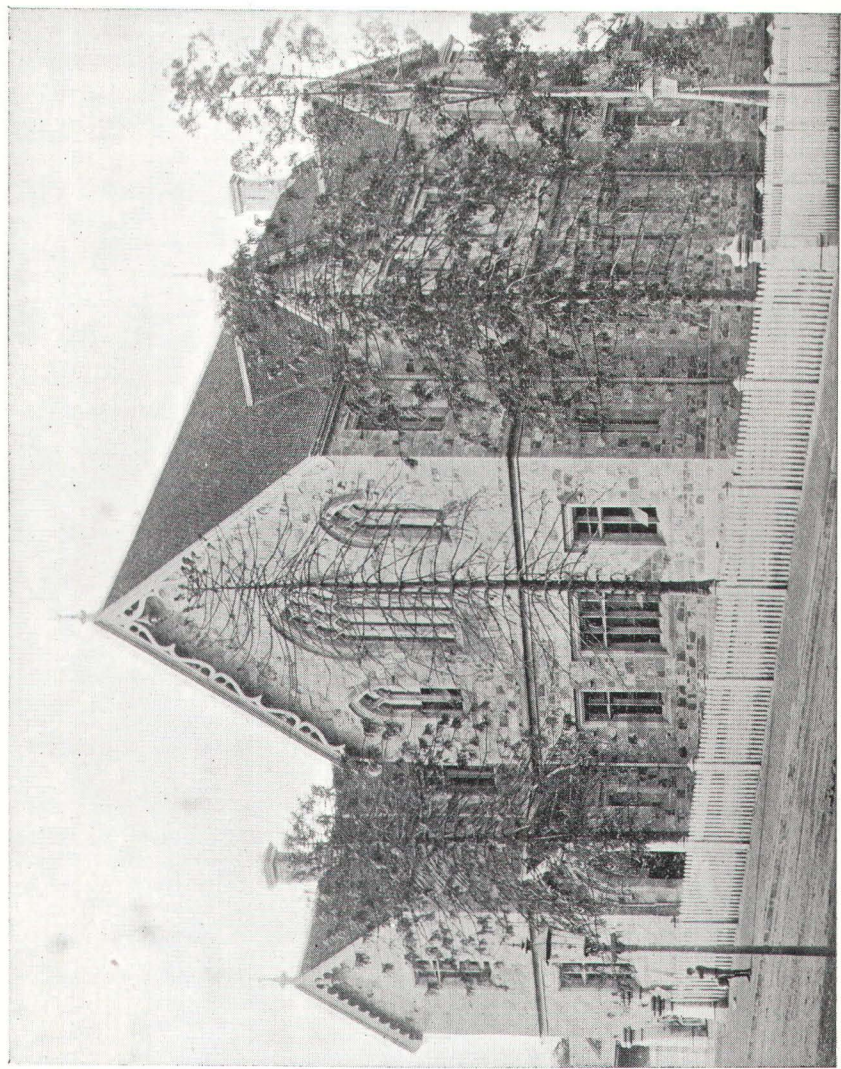
In 1860, when the Board of General Education was first formed, there were four national schools in operation, with an average attendance of 495; ten teachers were employed; and the total expenditure in that year was £1,615 2s. 3d. On the 31st December, 1875, when a separate department was created, there were 230 schools in operation, the aggregate attendance being 33,645, and the average daily attendance 16,887. At that time the total number of teachers employed was 595, and the total expenditure for all purposes for the year was £83,219 14s. 9d.

At the end of 1900 there were 911 schools in operation, with an aggregate attendance of 108,070, and an average daily attendance of 69,285; 2,217 teachers were in employment; and the total expenditure for the year was £280,359 12s. 3d.

### SCHOOLS—KINDS, ESTABLISHMENT.

Public schools in Queensland are of three kinds—State, provisional, and special provisional schools. To obtain the establishment of a public school, residents elect a building committee, supply information as to sites and number of prospective pupils, and collect one-fifth of the total estimated cost of buildings and equipment. On application from the building committee, an inspector visits the locality, and reports to the Minister.

If the report be favourable, permission to establish a new school is given. A locality which can maintain an average attendance of not less than thirty pupils between the ages of five and fourteen may apply for a State school. If the estimated daily average is between twelve and twenty-nine, a provisional school may be granted; in isolated settlements (on islands or on mountains) special provisional schools



BRISBANE CENTRAL (BOYS') SCHOOL.



PROVISIONAL SCHOOL BUILDING OF THE EARLY TYPE.

are granted for average attendances less than twelve. When two of these special schools are linked under one teacher, who devotes equal and alternate periods to each, they are known as half-time provisional schools.

The accompanying illustrations show—The Brisbane Central Boys' School, the oldest school of this class in Queensland; an example of the bush provisional school of early Queensland settlement; views of large State schools, illustrating the styles of construction now generally adopted; and a small bush school of modern type.

#### ITINERANT ORGANIZER.

In the far West an itinerant organizer is employed, who travels from farm to farm, and makes arrangements for supplying families with school material and text books, nominates some member of the family or employee as teacher, and advises as to methods and organization.

#### DISTRIBUTION OF SCHOOLS.

Notwithstanding the vast area of Queensland, comprising a territory equal in extent to France, Austria, and Germany combined, there is no difficulty in supplying school accommodation for the scattered population; and schools have been established at the extremity of Cape York Peninsula, and on the borders of South Australia and New South Wales. A school map shows the sites to be thickly scattered along the Eastern coast line and the three main railway lines, and more sparingly over the intermediate areas.

#### TEACHERS AND SALARIES.

Teachers are classified, unclassified, or pupil teachers. Classified teachers are employed in State schools. They are of three classes, each class divided into three grades. Head teachers are paid according to the class of school to which they are appointed, and the class of school held depends upon the rank of the teacher, and his proved efficiency in the service. The following table shows the rates of payment for head teachers, and for assistants, male and female, in each of the nine grades:—

##### HEAD TEACHERS.

	*Class of School.							
	1	2	3	4	5	6	7	8
Males ... ..	£ 450	£ 400	£ 360	£ 320	£ 280	£ 240	£ 200	£ 160
Females ... ..	£ 360	£ 320	£ 280	£ 240	£ 200	£ 160	£ 130	£ 110

\* Class 1, with an average attendance of over 800 pupils.

Class 2, with an average attendance of 601 to 800 pupils inclusive.

Class 3, with an average attendance of 401 to 600 pupils inclusive.

Class 4, with an average attendance of 281 to 400 pupils inclusive.

Class 5, with an average attendance of 161 to 280 pupils inclusive.

Class 6, with an average attendance of 81 to 160 pupils inclusive.

Class 7, with an average attendance of 41 to 80 pupils inclusive.

Class 8, with an average attendance of 30 to 40 pupils inclusive.

								ASSISTANTS.		Males.	Females.
										£	£
Class I.—											
Division 1										262	216
" 2										242	198
" 3										222	180
Class II.—											
Division 1										202	162
" 2										182	144
" 3										162	126
Class III.—											
Division 1										142	108
" 2										122	90
" 3										102	72

Class rank can be gained by examination only, but divisional promotions are granted for successful work in school. In addition to salaries, head teachers of State schools are provided with residences, rent free; and sums of from £10 to £60 are paid annually to adult teachers in the North and West on account of extra cost of living.

Unclassified teachers are employed in provisional schools. They are appointed, if over eighteen years of age, after six weeks' probation in a State school, on passing an examination in elementary subjects. Their salaries range from £90 to £110 for males, and from £70 to £80 for females.

Pupil teachers must not be less than fourteen years of age at the end of the year when they are appointed on probation. They serve for four years. If they pass the examination at the end of the pupil teachers' course, and receive satisfactory reports, they are gazetted as classified teachers of the third or lowest class, and become public servants.

The following are the salaries of pupil teachers:—

				Males.	Females.
				£30 per annum	£12 per annum
On Probation	...	...	...	£40	£20
1st Class	...	...	...	£45	£25
2nd "	...	...	...	£55	£35
3rd "	...	...	...	£70	£50
4th "	...	...	...		

At the end of 1900 teachers were classified as follow:—

Status of Teachers.	IN STATE SCHOOLS, 76·8 PER CENT.			IN PROVISIONAL SCHOOLS, 23·2 PER CENT.		
	Males.	Females.	Total.	Males.	Females.	Total.
Classified ...	518	440	958	...	...	...
Unclassified ...	*38	*27	*65	194	300	494
Pupil teachers ...	295	394	689	...	...	...
†Totals ...	851	861	1,712	194	300	494

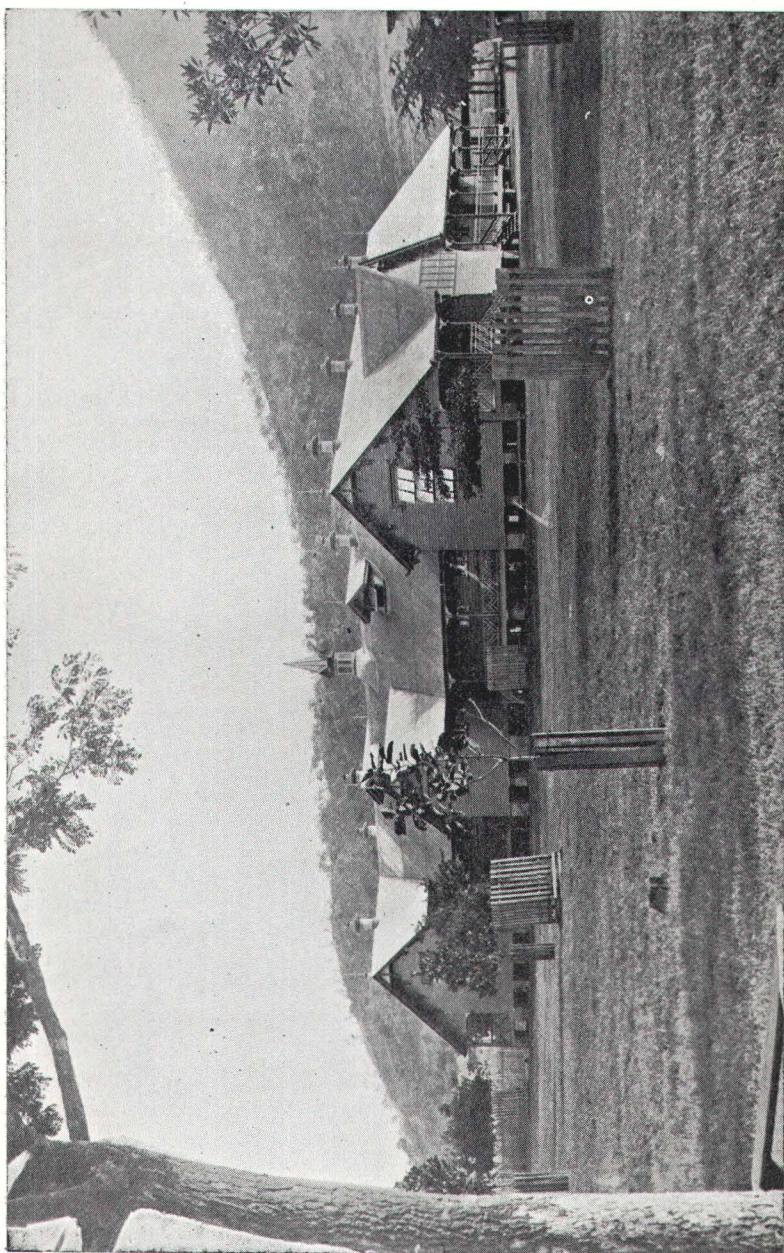
\* Sewing mistresses, wives of teachers, teachers of reduced State schools, and assistant teachers on probation.

† If from these totals 5 male teachers on long leave be deducted, and if 16 female teachers whose resignations were accepted during December be added, the grand total will be increased to 2,217.

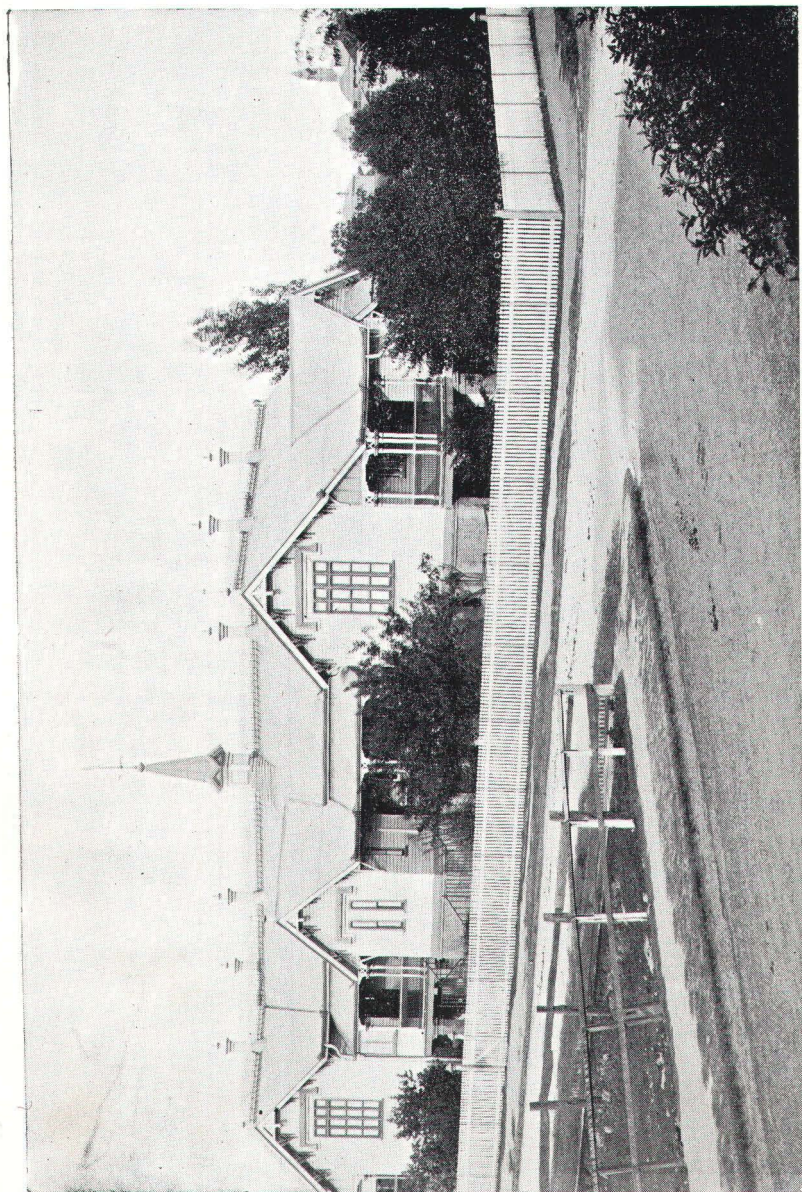
#### EDUCATION FREE AND COMPULSORY.

Education in Queensland is free, unsectarian, and compulsory. School age commences on completion of the fifth year, and continues until the child is fourteen years of age. The compulsory clause, No. 28, in "The State Education Act of 1875" enacted that—

"The parent of every child of not less than six nor more than twelve years of age shall, unless there be some valid excuse, cause



TOWNVILLE WEST STATE SCHOOL.



SOUTH BRISBANE (BOYS') STATE SCHOOL.



NORTH ROCKHAMPTON (BOYS') STATE SCHOOL.

such child to attend a State school for sixty days at the least in each half-year.

"Any of the following reasons shall be deemed a valid excuse—that is to say:

*Definition of Valid Excuse.*

- (1) That the child is under efficient instruction in some other manner;
- (2) That the child has been prevented from attending school by sickness, fear of infection, temporary or permanent infirmity, or any unavoidable cause;
- (3) That there is no State school which the child can attend within a distance of 2 miles measured according to the nearest road ordinarily used in travelling from the residence of such child;
- (4) That the child has been educated up to the standard of education."

By proclamation the provisions of clause 28 were declared to be in force throughout Queensland on and after the 1st of May, 1900.

#### ATTENDANCE OFFICERS.

Attendance officers visit the schools regularly, receive reports on attendance, visit the parents, and under instructions prosecute in cases where carelessness or neglect is the cause of irregular attendance.

#### CLASSES AND SUBJECTS.

Pupils are taught in six classes, the sixth being the highest. The reading books in use are Nelson's Royal Readers and Collins' Century Readers. Writing on one system is not enforced; teachers may select one of many authorised series of copy-books. In arithmetic the subject generally is covered by children who pass through all the classes. The study of the English language and of English grammar receives much attention, as must necessarily be the case in young countries where a considerable percentage of children of foreign parentage pass through the public schools. Geography is naturally interesting to children whose parents travelled half round the world in emigrating to Queensland; and to Australians who travel so freely over their vast continent. A special feature is made of the geography of the British Empire, and many opportunities for the cultivation of a love for the Empire, and a pride in its extension, are given in these lessons. British and Australian history are taught, the course in the sixth class ending with the reign of the present Sovereign. Music and drawing are subjects of instruction in all classes. In music, either the old notation or the tonic sol-fa methods may be used. Drawing comprises first grade freehand, model, and geometry. Euclid, Books I. and II., and algebra to the end of simple equations are requirements in the fifth and sixth classes for both sexes. Object lessons are given in the four junior classes, but in the fifth and sixth classes they are replaced by science lessons. There is a wide choice of science subjects, in order to bring into play the special scientific knowledge or tastes of head teachers. In the sixth or highest class, the study of an English classic is prescribed, the work dealt with during 1900 being "The Merchant of Venice." The sewing schedule is extensive in scope, and very practical in bearing. The

subject is a favourite one with teachers and pupils; and the garments worked by the children, and shown to the inspectors, are usually very meritorious.

#### EXAMINATION AND INSPECTION.

The State is divided into thirteen districts for purposes of inspection, each district being in charge of a district inspector. At the head of the inspecting staff is the General Inspector, and a district inspector is employed in the office as examiner, and in making general examination arrangements.

In the inspection of a school, oral examination is the rule wherever possible. Written work, as slate arithmetic, mapping, dictation, composition, and the like, is corrected in the presence of the head teacher, or class teacher, and in very few instances are papers taken away for correction. A work-book is kept by each head teacher, in which the course of work for each division of the school is shown from month to month in detail; and from this book the inspector can ascertain the stage of the half-yearly programme at which any class has arrived, and so limit his examination to work actually covered. Both examination and inspection are without notice.

Some of the inspectoral districts have an area of over 100,000 square miles, and the distances which the inspector must travel by horse, buggy, coach, or boat, often amount to from 5,000 to 9,000 miles a year. In the North and West a school inspector leads a most enterprising life, and many of the seniors can tell tales of adventure and of privation that would bear comparison with those of modern explorers. These experiences include constant travel on horseback for months at a time, with a tent as home; dependence on the rifle for a supply of food; difficulties with flooded rivers, alternating with troubles in drought-stricken districts: a life which required an all-round experience in pathfinding, and in the management of horses. Coach, railway, and coastal steamboat extensions have modified these conditions to some extent in recent years.

#### EXAMINATION OF PRIVATE SCHOOLS.

On application to the Minister for Public Instruction, schools belonging to religious denominations, and private schools, are examined by Government inspectors, and schools so examined may send their teachers and pupil-teachers to the annual examinations in December.

#### ANNUAL EXAMINATION OF TEACHERS AND OTHERS.

Annual examinations for the promotion of teachers and pupil-teachers are held each year during the third week of December. These examinations were held simultaneously at forty-three centres, 18th December to 22nd December, 1900. One thousand two hundred and seventy candidates notified their intention to sit, of whom about 300 were adults, 750 pupil-teachers, and the remainder candidates for Grammar School scholarships or bursaries.

#### SECONDARY EDUCATION, SCHOLARSHIPS, BURSARIES.

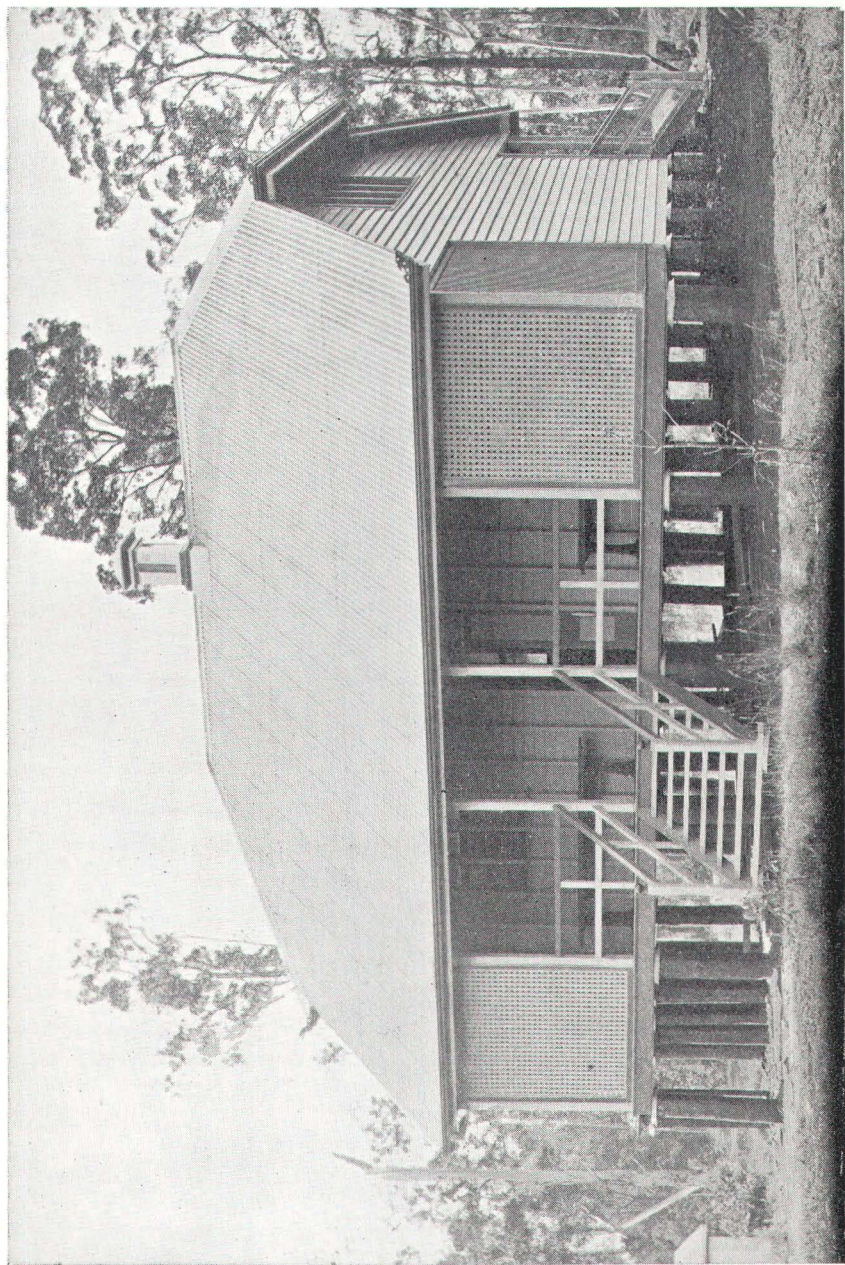
Secondary education is provided for in ten State Grammar Schools, subsidised by the State, and towards the expenses of which the State contribution to 31st December, 1900, is £261,535 9s. 11d. Each year thirty-six grammar school scholarships and eight grammar school



ALBERT STATE SCHOOL, MARYBOROUGH.



GYMPIE CENTRAL STATE SCHOOL (BOYS').



A BUSH SCHOOL OF MODERN TYPE.

bursaries are offered for competition by pupils of elementary schools. The scholarship entitles its holder to free education at an approved secondary school for three years; the bursary gives free board as well as free education for three years at an approved school.

#### ARBOR DAY, AND ARBOR DAY PRIZES.

To imbue the pupils with a love for their school, and a desire for its embellishment, and to interest them in the growth and cultivation of trees, it has been directed that the first Friday in May shall be celebrated as Arbor Day. On this day, in addition to tree-planting and other horticultural work, teachers are required to give a conversational lesson to the children on the nature and habits of trees and flowering plants, their uses in the arts or for ornament and shade, their variety of form, their beauty, and the like. In 1900 the Minister presented to one State school and to one provisional school in each district a prize for the best Arbor Day work; the prize in each case consisted of a set of Arnold's Geographical Diagrams.

#### SCHOOL FLAGS.

In a British colony, where there are children of many races, one of the functions of a public school is to train the pupils, while passing them through their school course, so as to insure that they leave school British in sentiment. Among other means to inculcate a love of the land of their adoption, a Union Jack, 12 feet by 6 feet, or 6 feet by 3 feet, is presented free of cost to each school whose committee erect a suitable flagstaff. Teachers are instructed to explain the historic meaning of the crosses on the flag, to show that the flag is the symbol of races happily blended, to give examples of bravery and devotion in its defence, and to point out that all over whom it floats enjoy liberty, justice, and equal rights. The hoisting of the flag is made an important feature in the day's programme, and pupils are taught to regard their selection for this duty as a reward of merit.

#### COMMONWEALTH MEDALS.

To celebrate the completion of Australian Union, "Commonwealth Celebration Medals" were distributed, on 1st January, 1901, to all pupils of Queensland public schools. Committees and teachers united in making the day a memorable one, and the Union Jack was hoisted on school flagstaffs throughout the length and breadth of Queensland.

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## Part XIV.

# SCHOOLS OF ARTS AND TECHNICAL COLLEGES.

### TECHNICAL INSTRUCTION.

Probably in no country in the world of the same relative importance is a more liberal provision made for education than in Queensland. As is fully shown elsewhere, the State provides for the primary instruction of the young without any charge to the parents, and also liberally endows by exhibitions, scholarships, and by annual grants for the secondary and technical education both of children and of adults.

In addition to the outlay thus accepted by the State for the direct instruction of the people, the public funds are generously expended in the direction of affording opportunities for the indirect mental improvement of the community, by the endowment of institutions, for the most part designated Schools of Art, in all towns possessing the slightest claim to importance. These institutions generally partake of the nature of reading rooms and libraries, the former frequently free to the public and the latter open to subscribers only.

### LIBRARIES.

The want of a national library of a quality and magnitude worthy of the State has for many years been realised. The need has now been met by the establishment in Brisbane of a Free Public Library, which is shortly to be opened. The whole of the expenditure in connection with this library has been provided out of public funds, it having been initiated in 1896 by an endowment of £500, and since then by an annual grant of £1,000, recently reduced to £800. It is managed by a board of trustees appointed by the Governor in Council consisting of twelve members, the office being honorary. It at the present time comprises about 18,000 volumes.

Reference has been made to institutions called Schools of Art which are to be found in nearly all centres of population, and which are usually managed by committees elected by the subscribers. Of these there were 140 in operation during 1900. The sources and extent of their revenue and the amount and nature of their expenditure for that year were as follow:—

			£	s.	d.	£	s.	d.
Government aid	...	...	3,335	18	5			
Private subscription, &c.	...	...	8,182	6	1			
Other receipts	...	...	4,072	15	2			
Total revenue						£15,590	19	8
Expended on books, newspapers, and periodicals	...	..	4,957	11	6			
Salaries, &c.	...	...	4,510	6	5			
Other expenses	...	...	6,382	1	3			
						£15,849	19	2

The Government endowment is thus seen to have been equal to 8s. 2d. in the £ on the amount of private subscription and 4s. 3½d. in the £ on the total revenue. "Other receipts" consist chiefly of rents received for the use of buildings the property of the institutes. "Other expenses" include the purchase and construction of premises for the purposes of the institutes; fully two-thirds of this item was thus expended last year.

The subscribers numbered 10,516 last year, and paid subscriptions ranging from 2s. 6d. to £1 1s. per annum, £1 being by far the most frequent amount. The smaller subscriptions are mostly in connection with libraries attached to shearing sheds, and which in practice are really only operating for a few weeks of the year.

At the end of 1900 there were 166,589 volumes available for the use of the subscribers, of which 13,838 had been purchased and 2,092 presented during the year, the withdrawals of worn-out books numbering 4,215.

#### TECHNICAL COLLEGES.

Most of these colleges are worked in conjunction with the Schools of Art Libraries, and are managed by the same committees, but the funds are kept distinct, and are separately and more liberally endowed by the State than is the case with the library revenues.

A School of Mines, however, a distinctly Government institution, has just been established at Charters Towers. The technical college for North Brisbane is established under a special statute (62 Vic. No. 20), whereby provision was made for the appointment of a council to undertake its control, and which was created "a body corporate," this council consists of twelve members, six appointed by the Governor, three elected by the subscribers and three by the associates and certificated students of the college, the elections to be by ballot.

The total number of all technical colleges established at the end of 1900 was twenty-three, and the following statement contains information respecting their revenue and expenditure:—

			£	s.	d.	£	s.	d.
Government subsidy	...	...	9,542	5	1			
Students' fees	...	...	9,899	18	5			
Donations	...	...	94	4	9			
Other	...	...	600	0	7			
Total revenue						£20,136	8	10
Salaries, teaching	...	...	11,330	17	4			
„ clerical	...	...	1,590	1	10			
Buildings, furniture, and apparatus			2,226	13	8			
Other expenditure	...	...	3,682	1	11			
Total expenditure						£18,829	14	9

The total number of individual students receiving the benefits of these colleges in 1900 was 4,850, and their occupations were as follow :—

	Males.	Females.	Persons.
Artisans ... ..	759	194	953
Clerks ... ..	458	115	573
Professionals ... ..	301	323	624
At school ... ..	535	812	1,347
Employment not given, chiefly domestic duties ... ..	142	1,211	1,353
<hr/>			
Total individual students ... ..	2,195	2,655	4,850

The annual course or session usually consists of four terms, and the subjects taught are, for the purposes of classification, brought under seven heads, and these, with the numbers of entries made in each class last year, were as follow :—

	Number of Entries in all four terms.
Art, fine and applied ... ..	1,701
Science ... ..	167
Technology and trades ... ..	1,299
Commercial ... ..	2,213
Domestic ... ..	730
Ambulance and medical... ..	121
Music and elocution ... ..	1,795

8,026

This gives the total number of entries for the season as 8,026. It is impossible to give the entries for each term or the average number of entries per term, because whilst in the majority of instances four terms were provided for by the curriculum, with respect to some colleges this was not the case, neither was it in others with respect to some of the subjects; moreover, the North Brisbane college was unable to furnish the number of entries for any one term but only for the whole session.

## Part XV.

# PUBLIC CHARITIES.

[Contributed by Dr. HARE, Inspector-General of Hospitals and Charitable Institutions.]

Excluding Hospitals for the Insane, which cannot be regarded as purely charitable, and Orphanages, which come under the Minister for Public Instruction, the public charities may be classified as under. The amounts expended by the State during the financial year ending 30th June, 1901, are appended to each class.

### CHARITIES MANAGED BY THE STATE AND SUPPORTED ENTIRELY BY STATE FUNDS.

1.—CHARITABLE INSTITUTIONS—		£	s.	d.
Dunwich, Stradbroke Island (salaries and maintenance) ... ..		28,887	9	4
Jubilee Sanatorium, Dalby; Diamantina Hospital for Chronic Diseases, at South Brisbane; Girls' Home (for aborigines), South Brisbane ... ..		2,417	6	1
2.—CHARITABLE ALLOWANCES—				
Outdoor indigence allowance of 5s. per week ... ..		10,624	11	4
Allowances for rations and relief ... ..		6,366	6	7

### CHARITIES MANAGED MAINLY BY LOCALLY ELECTED COMMITTEES AND SUPPORTED BY LOCALLY COLLECTED SUBSCRIPTIONS AS WELL AS BY STATE FUNDS.

#### 1.—HOSPITALS—

- (a) *General Hospitals*.—Adavale, Aramac, Barcardine, Beaudesert, Blackall, Boonah, Boulia, Bowen, Brisbane, Bundaberg, Burketown, Cairns, Charleville, Charters Towers, Childers, Clermont, Chillingoe, Cloncurry, Cooktown, Croydon, Cunnamulla, Dalby, Eidsvold, Gayndah, Georgetown, Geraldton, Gladstone, Goondiwindi, Gympie, Herberton, Hughenden, Ingham, Ipswich, Isisford, Longreach, Mackay, Mareeba, Maryborough, Montalbion, Mount Garnet, Mount Morgan, Mungindi, Muttaborra, Nanango, Normanton, Port Douglas, Ravenswood, Richmond, Rockhampton, Roma, St. George, Springsure, Stanthorpe, Tambo, Taroom, The Tate, Thargomindah, Thornborough, Torres Straits, Toowoomba, Townsville, Warwick, and Winton. (Sixty-three in all) ... .. 62,404 5 4
- (b) *Children's Hospital*.—Brisbane, Charters Towers, and Rockhampton ... .. 3,203 16 2
- (c) *Women's Hospitals*.—Lady Bowen, Lady Lamington, Lady Musgrave, and Lady Norman ... .. 4,165 14 8

#### 2.—BENEVOLENT ASYLUMS.—

Rockhampton and Toowoomba ... ..	750	0	0
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#### 3.—BLIND, DEAF, AND DUMB INSTITUTION.—

South Brisbane ... ..	2,546	15	8
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		£	s.	d.
4.—AMBULANCE BRIGADES.—				
Brisbane, Maryborough, Charters Towers, and Townsville	...	3,491	19	4
5.—REFUGES AND HOMES.—				
Female Refuge, Brisbane; the Industrial Home, Brisbane; Magdalen Asylum, Woolloowin; Salvation Army Maternity Home, Brisbane; Salvation Army Prison Gate Brigade, Brisbane; St. Mary's Home, Brisbane; Boys' Home, Woolloowin; Salvation Army Rescue Home, Townsville; and the Girls' Home, Nundah				
	...	1,450	0	0
6.—BENEVOLENT SOCIETIES.—				
Albion, Bundaberg, Cairns, Charters Towers, Clermont, Cooktown, Fortitude Valley, Gympie (St. Mary's and Ladies), at Ipswich, Mackay, Maryborough, Normanton, Ravenswood, Rockhampton, South Brisbane, Toowoomba, Townsville, Thursday Island, and Warwick. In this list may be also included the Charity Organisation Society, Brisbane. (Twenty-one in all)				
	...	2,453	15	6
Grand Total		128,762	0	0

The Dunwich Benevolent Asylum is at present the only indoor accommodation provided by the State for the destitute, aged, and infirm, who are not in need of constant medical treatment. The inmates come from all parts of Queensland, and the institution has for some time been much overcrowded. Three extra wards (two for males and one for females) are now in course of erection; but it is probable that, after their completion, no further additions to the institution will be made. Thereafter it is proposed to provide further accommodation by building a new institution on similar lines in the Northern district; inmates from the North will then be nearer to their friends, and the expenses and inconveniences of transport will be much reduced. Several sites for this proposed institution have been inspected and reported upon, but the final decision has not yet been made.

The Diamantina Hospital, which is now open, is intended for cases of disease which, in consequence of their serious nature, require, and may be expected to benefit by, constant medical treatment, but which, through their chronic character, have become ineligible for further maintenance in the general hospitals.

Owing to the deficit in the Treasury, it has been found impossible at present to open more than four of the eight existing wards. These together contain but thirty-two beds, and owing to the overcrowding at Dunwich, and to the fact that many of the inmates are affected with serious illness, it has been found necessary, in the first instance, to fill the available accommodation at the Diamantina Hospital with cases from that institution. It will not, consequently, be possible at present to relieve the general hospitals to any great extent of their more chronic cases. It is hoped that four additional wards will shortly be opened.

The Jubilee Sanatorium at Dalby is intended for the reception of cases of consumption which are still in the curable stage. Hitherto these objects have been carried out, and it has been found necessary to discharge cases on account of incurability only in a few instances.

The outdoor indigence allowance of 5s. per week has grown gradually out of the inadequacy of the Dunwich asylum to fully provide for the destitute of the State. The amount of the allowance was based upon the cost of the inmates of that institution to the State, and it was supposed that by granting this sum in suitable cases the pressure at Dunwich would be relieved. It is, however, an open question whether, indeed, this has been its real tendency, whether it has not in the main relieved a new class, who would not have sought admission to the asylum; at least Dunwich remains congested, and the annual cost of the outdoor allowance seems likely to attain large dimensions.

The subsidised hospitals (seventy in number) vary in size and importance, from the Brisbane General Hospital (containing 247 beds) to the smallest kind of cottage hospital in the country districts. They are managed by committees elected locally by the subscribers (except in case of the Brisbane General Hospital, where four of the seven members are nominated by the Government). The subscriptions collected locally are subsidised by the State at the rate of £2 for £1. To this, however, there is the following exception:—Subscriptions collected for new buildings carry subsidy at the rate of only £1 for £1. The medical management of these institutions varies widely in nature. In some (such as the Brisbane General Hospital, the Sick Children's Hospital, Brisbane, and a few others) the medical responsibility rests mainly upon an honorary visiting staff, the paid resident staff being subordinate; in others (such as the Charters Towers and Rockhampton hospitals) the resident medical officer is mainly responsible, but he is assisted by an honorary consulting staff. In one large institution (the Townsville Hospital) the whole responsibility is thrown upon the shoulders of the one resident medical officer. In the smaller institutions, medical attendance is usually provided by appointing the medical practitioner of the district to the position of paid visiting medical officer to the hospital. In the nursing arrangements similar variations necessarily occur; in some of the larger hospitals there is a highly organised nursing staff classified into sisters, charge and ward nurses, nurses, assistant nurses, and probationers, with a training school, systematic lectures, and certificates granted after examination by a medical board. In the smallest hospitals, the nursing staff may consist of the matron and wardsmen only, who are frequently man and wife. And between these two extremes there are all gradations.

The State subsidy on voluntary charitable contributions was undoubtedly instituted to preserve the charitable principle of hospital relief in a new country where the unequal territorial distribution of wealth renders it impossible for many of the smaller communities to provide themselves with hospitals.

The benevolent asylums at Rockhampton and Toowoomba are comparatively small institutions, managed by local committees, and supported in part by Government grants.

The ambulance brigades are subsidised in the same way and to the same extent as the hospitals.

The benevolent societies are at present subsidised by the State to the extent of £2 for £1 on the first £75 collected; subscriptions beyond that amount carry subsidy at the rate of £1 for £1 only. The societies are managed by local committees, and are especially intended to deal with emergent cases of destitution and distress.

## ORPHANAGES.

[Contributed by WALTER SCOTT, Inspector of Orphanages.]

"*The Orphanages Act of 1879*" provides the means by which the care and protection of the State are extended to all destitute, deserted, and neglected children; and is administered by a sub-department of the Department of the Minister for Public Instruction.

By this Act the Governor in Council is empowered to establish Public Orphanages or Asylums for the reception and care of such children, and to similarly make use of institutions established by private benevolence; the former being denominated State orphanages, the latter licensed orphanages or institutions.

Three State orphanages were established in the Southern, Central, and Northern portions of the State—at Brisbane, Rockhampton, and Townsville respectively; but owing to the partial application of the system of boarding-out the children, the first and second of these institutions are now represented only by receiving depôts, where children on first admission are retained only until they can be equipped with a regulation outfit of clothing and be sent to a foster-home, or those returned from service are kept till they are again sent out to other situations. These three institutions are directly maintained and controlled by the State.

There are also five subsidised or licensed institutions—namely, the two Roman Catholic orphanages, at Nudgee, near Brisbane; and at Meteor Park, in the neighbourhood of Rockhampton; the Home of the Good Shepherd at Nundah; the infant department of the Magdalen Asylum at Woolloowin; and the Infants' Home in Brisbane. The first four of these are under the control of religious organisations, while the last-mentioned is under private management. All are visited monthly by the Inspector.

Children—who must be under the age of twelve years—are admitted on the authority of the Minister on the application of relatives or guardians, destitution being the recognised ground or reason for making the application and entitling it to favourable consideration. All claims for admission are subjected to careful scrutiny and examination before they are submitted for the Minister's approval, the services of the police being extensively utilised in making the necessary inquiries. In addition to these, children who are deserted or neglected by their parents, and as such are committed by benches of magistrates to reformatories, may, on the magistrates' recommendation, have their sentences remitted by the Governor in Council with a view to their admission to an orphanage.

At the time of admission the parents or natural guardians are required to enter into a guarantee to contribute according to their means towards the maintenance and support of their children while in the orphanage. Under the circumstances it is not to be expected that much will be derived from this source, and, as a matter of fact, the cost of maintenance is almost entirely borne by the State.

The destination of children when admitted is regulated by the form of religion professed by the parents, Protestants being sent to the State institutions, while Roman Catholics are admitted to the

orphanages established by that religious body and conducted by the Sisters of Mercy.

The boarding-out system has been applied only to the Protestant children of the State orphanages in the Southern and Central districts. At first tried tentatively in a few exceptional cases, the system was gradually extended till it had by the year 1885 obtained a firm and definite footing; but it was not till the floods of 1893 caused a demand for the use of the Diamantina State Orphanage buildings for other purposes that it became fully established as the recognised method of dealing with the Protestant children of the Southern and Central State Orphanages. The existence of generally unsuitable conditions and the conviction of the impracticability of securing a sufficient number of suitable homes have operated to prevent its application to the children of the Northern Orphanage; while the excellent and economical management of the Roman Catholic orphanages, in conjunction with other favourable conditions, has furnished arguments of sufficient cogency to demonstrate the inexpediency of applying it at present to the State children of this religious denomination.

Hitherto there has been no difficulty in securing an ample supply of suitable homes for the children, providing them with conditions of home life which are in most cases very decidedly superior to those to which they have been previously accustomed; and the boarding-out system, so far as it has been applied, has been a pronounced success. Four is the maximum number of children allowed to be boarded in any home.

The success of this system is largely due to the close supervision exercised by lady visitors in different districts. The periodical visits of these ladies are highly beneficial to both children and foster-parents. The children are also visited at irregular intervals by the Inspector and the two assistant inspectors.

All children between the ages of five and twelve years attend school regularly. Any irregularity is quickly brought under official notice by means of the records of attendance furnished monthly by the head teachers of the State schools to which the children are sent.

Medical officers in different parts of the State attend to the health of the children.

Whether boarded-out or remaining as inmates of institutions, all are alike State children, and share equally in the advantages proceeding from the administration of the Orphanages Act.

Children under the age of five years may, under certain necessary limitations, be adopted; but they still remain subject to the general supervision of the officers of the Department.

All the children leave school at the age of twelve; the boys then going to service—chiefly on farms in the agricultural districts, while the girls receive a year's training in the performance of ordinary domestic duties before being similarly sent out. The demand for the services of these children very largely exceeds the supply.

During their period of service the children are fed and clothed by their employers, and are paid according to a fixed scale of wages. A certain portion of the wage is paid weekly or monthly to each child as pocket-money, but the bulk of it is placed to their credit in the Government Savings Bank in the name of the Inspector of Orphanages as trustee.

The conduct of children in service is generally very satisfactory; but some (especially among the girls) cause a considerable amount of trouble through their misconduct. Children in service are periodically visited by the inspectors.

The Minister has the power to at any time cancel the contract of hiring under which the children are sent out, should he deem it desirable to do so.

After five years of service, lads at the age of seventeen and girls at eighteen are discharged from State control, and are then at full liberty to make their own arrangements as to the disposal of their services.

Children may be discharged from State control at any time under the authority of the Minister; but it is considered to be undesirable that such should be done if they have reached the service age, and have gone out under a contract of hiring. This is for the protection of the children against parents or friends who would be inclined to allow the State to keep them while they were young, and then claim the benefit of their services when of sufficient age to be useful.

Between the time of discharge from control and the attainment of their majority they can, if they so desire, draw upon their Savings Bank account to the amount of one-fourth of their accumulated savings; but in all cases at the age of twenty-one the Inspector's trusteeship terminates, and the accounts are transferred to their own names.

The following statistics serve to show the actual working of the Orphanages Act in the year 1900:—

Under control at the beginning of the year	Children.
Admitted during the year ... ..	1,644
Discharged during the year ... ..	359
Remaining at the end of the year ... ..	272
	1,730

Number of children at the end of the year who were—

	Boys.	Girls.	Children.
Inmates of institutions ... ..	335	354	689
Boarded-out ... ..	262	203	465
Adopted ... ..	5	18	23
Hired-out ... ..	301	252	553

Total number of State children			
at the end of the year 1900	903	827	1,730

#### SAVINGS BANK ACCOUNTS.

	£	s.	d.
Amount of wages deposited during the year to the credit of State children	3,246	17	10
Paid to discharged children during the year ... ..	3,063	4	10
Remaining to credit of State children on 31st December, 1900 ... ..	14,499	18	10

#### EXPENDITURE.

Total expenditure of the Department for year 1900 ... ..	22,190	13	7
Less maintenance collections received during the year ... ..	1,551	14	9
The net cost to the State being ...	20,638	18	10

## Part XVII.

# FRIENDLY SOCIETIES.

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[Contributed by R. RENDLE, Registrar of Friendly Societies.]

Friendly societies meet a great and growing need of the industrial classes.

They not only provide a means of mutual assurance against many of the inevitable ills and accidents of existence, but, being managed by their own members, they add to their other advantages a social and educational training in self-restraint and self-reliance.

These societies are established for the purpose of providing, by the voluntary subscriptions of members, for various methods of relief, but mainly for the purpose of assuring against periods of sickness when the wage-earner is disabled.

They enable members, by co-operation, to obtain medical attendance and medicines for themselves, their wives and families, and also provide donations at death of members and their wives and children.

There are several classes of these societies in other places, but in Queensland the only provident associations of this kind which exist to any extent are those known as the "Affiliated Friendly Societies."

These are associations of members in "branches," or small groups which are subject to a limited control by a central body, the members of which are elected from amongst the chosen representatives of the various branches, and who act as a general committee of management.

Within certain limits, laid down under the Friendly Societies Act, they arrange the details of their own management, and control and enforce rules and regulations of their own making.

The first law dealing with these societies in Queensland was passed in 1876, and this was based on, and was, to a great extent, a copy of the Act which had been passed in England in the preceding year. No steps were taken to enforce this Act until 1886, and it was, therefore, only natural that the societies should have drifted into the unsatisfactory state in which they were found to be in in that year.

"*The Friendly Societies Act of 1876*" was found to be weak in several respects, and in 1894 an amending Act was passed, which introduced many important additional provisions, mainly with a view to strengthening the official control, and also the control of the central bodies, especially in those cases where the branches were not properly managed, the intention being to protect the interests of members as far as possible without actual interference in their internal management excepting where absolutely necessary.

Under the original Act, registered societies were required to register all rules and amendments; to have a registered address; to appoint trustees and register their names; to submit their accounts to audit at least once a year; to send in annual and quinquennial returns; to allow members to inspect the books; and to supply members with copies of the returns if required.

The principal additional provisions of the Act of 1894 are—That all societies offering benefits are required to register; that an annual return of membership is required, as well as the financial statement; that societies showing assets worth at valuation less than 15s. in the £1 must reform, or may be compulsorily closed; and that branches having less than seven members must close, and must transfer any assets to the central body, and the central body thereupon becomes liable for the benefits.

Other important additional provisions are the right of the Registrar to order special audits where returns are unsatisfactory; the limitation of the investment of funds in property; the prohibition of loans to trustees; the retirement of one auditor each year; and the requirement of official sanction before any moneys may be transferred from one fund to another.

Societies are also entitled to certain privileges, the most important being exemption from stamp duty; special protection of trustees and of the funds of the societies; the power to settle disputes internally; the right to make deposits without limit in the Savings Bank; valuations free from cost; and other advantages.

The history of these societies in this State appears to have commenced with a "Court" or branch of the Foresters in 1855 and a small German Society in 1857, after which no new branches are traced until 1861, when the Oddfellows established a branch in Brisbane.

At present there are seven societies in Queensland having over 1,000 members each, these being in the order of their numerical strength:—The Manchester Unity Oddfellows, the Ancient Order of Foresters, the Protestant Alliance, the Hibernian Catholic Society, the Independent Order of Rechabites, the Grand United Oddfellows, and the Ancient Order of Druids.

In addition to these, there are the Independent Order of Oddfellows, the Australian Natives, and also five small societies which have less than one hundred members each. Of late years there has been a tendency towards the gradual absorption of these small societies by the more powerful affiliated societies.

The last completed statistics of Friendly Societies are up to the end of 1900, when there was a membership of 29,075 males and 1,651 females, the capital being returned at £245,938.

During the year the income amounted to £98,780 from members and £6,672 from investments. The payments for the year amounted to £21,248 for relief in sickness, £7,381 for claims at death, and £36,969 was paid for medical attendance and medicines, a total of £65,598 for actual benefits. Management cost £17,399, leaving a surplus of £22,454; over 21 per cent. of total income having been placed to reserve during the year.

The general progress of the societies may be made evident in stating that the membership and capital, at the beginning of 1882, was estimated at 5,900 members and £35,768 capital; at the commencement of 1887 there were 11,500 members, with £74,291 capital; five years later (1892) there were 16,308 members, with £124,984 capital; at the commencement of 1897, 21,954 members and £173,535 capital; and at the end of this year (1901) it may be now safely estimated that the membership will be about 32,000 and the capital £265,000.

To summarise these figures briefly, it may be assumed that the societies have increased in 20 years by five and a-half times in membership and nearly seven and a-half in capital, and they will have distributed during that period about £750,000 in actual benefits to their members.

At the present time it is probable that about one-fourth of the population of the State is directly interested in the welfare of the friendly societies, as it must be remembered that the benefits extend to the wives and families of members.

Under the law governing these associations, an actuarial investigation of the assets and liabilities must be made at least once in every five years, and the first of the valuations made at the end of 1886 exposed a most unsatisfactory state of affairs; the assets were found to be worth only 14s. in the £1, and only 14 out of 139 branches valued were found to be actuarially solvent.

No very great improvement took place during the following five years, and at the end of 1891, when the second general valuation was made, only 27 out of 201 branches and societies valued were found to be solvent.

The societies at last began to realise the seriousness of this state of affairs and recognised the necessity for reform, and vigorous efforts towards improvement have been made in many cases during the last few years. Graduated scales of contributions according to age at admission have been introduced in all but one of the larger societies, and in some cases considerable increases have been made in the rates of contributions, in one instance the proportion to be placed to the credit of the benefit funds being doubled.

The result of this action was soon made evident, for at the third valuation made at the end of 1896, out of 276 branches valued, 94 showed assets worth 20s. in the £1. Interim valuations have since been made in many cases, and a general improvement has been shown in most of the societies and branches so tested.

Other important reforms have been introduced during the last few years, and it is now evident that the societies generally have greatly improved their position financially, and it may be anticipated that the fourth quinquennial valuation to be made at the end of 1901 will show that a majority of the branches may be considered actuarially solvent.

The report for 1887, the first year of reliable statistics, showed that management cost nearly  $23\frac{7}{10}$  per cent. of total receipts, or about 17s. per member for the year. In 1900, the last completed year, the cost had fallen to  $16\frac{5}{10}$  per cent. of receipts, or 12s. per member, which on the income of that year represents a saving of over £7,000.

The benefits offered in Queensland are generally much higher than those offered by similar societies in England, and the contributions are consequently greater. This may be construed to mean that the conditions of life are more favourable here, and that the industrial classes generally are better able to provide for the contingencies of existence.

These benefits vary in different societies from £20 to £60 at the death of a member, and £10 to £15 at the death of a member's wife, the sick pay being as a rule 20s. per week for the first six months of sickness, 10s. a week for the second six months, and 5s. afterwards.

Medical attendance and medicines, not only to members, but to their wives and families, also are provided for, and in some cases special benefits are given.

The cost of management and of medical attendance varies greatly in different parts of the State, and the total contributions required from members to enable these benefits to be given vary roughly from 1s. 3d. to 2s. per member per week.

Another point to which attention may be drawn, and which should give satisfaction to those interested, is the fact that the statistics collected prove that Queensland may be considered to be particularly healthy when compared with other places.

The averages of sickness per member in this State are much lower than is the case in Victoria or New Zealand, the only two States which so far have given any details of value for comparative purposes.

Roughly, sickness in the Queensland Friendly Societies was found for the ten years, 1887-1896, to have been from 12 to 23 per cent. less than in England, from 7 to 38 per cent. less than in Victoria, and from 1 to 30 per cent. less than in New Zealand, according to age; and on comparing sickness in age groups from twenty to sixty years of age, in no group of five years did the Queensland rates exceed those of England, Victoria, or New Zealand.

The societies in Queensland are therefore progressing in the right direction under favourable conditions, and it seems probable that their general utility may be greatly extended in the near future, as schemes are being discussed in some of them with a view to provision of additional benefits.

There can be no doubt that the welfare of these societies is of great importance to the community generally, and their progress and prosperity may be taken as an index to the progress and prosperity of the State as a whole.

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## Part XVIII.

# COMMERCE.

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## SHIPPING.

The geographical position of Queensland places her outside most of the great lines of the world's communications, and with little exception she does not participate to any but slight extent in the traffic between British and foreign ports, and the rest of Australasia. These facts operate largely in reducing the nominal number and tonnage of this State's shipping. Most of the other States of Australia have their records of shipping swelled by entry both inwards and outwards of many ships simply calling in passing, and the extent of whose trade is not at all commensurate with their tonnage. The value of the trade of each Colony for 1900, or 1899 respectively, to each ton of shipping entered and cleared foreign was—Queensland (1900), £10 2s. 7d.; New South Wales (1900), £5 15s. 9d.; Victoria (1899), £6 16s. 9d.; South Australia (1899), £4 6s.; Western Australia (1900), £3 19s. 4d.; Tasmania (1900), £3 16s.; New Zealand (1900), £14 4s. 5d.

With the exception of New Zealand, none of the Colonies approach Queensland in the value of the trade to each ton of shipping; whilst, with respect to South Australia and Western Australia, the extent to which the number and tonnage of vessels entered and cleared are influenced by the touching at Port Adelaide and Albany of the boats of the large European lines is very manifest.

In a country which, notwithstanding its vast area, possesses a coast line extending for nearly 3,000 miles, communication by sea is naturally much availed of as a means of transport. The waterway, moreover, for a large portion of the coast is to a very considerable extent sheltered by the Barrier Reef; and although at one time this advantage was in some degree discounted by the fact that some of the channels and passages were narrow and intricate, there is now no difficulty experienced in navigation by either day or night, as the best of charts are available, and the whole coast line is admirably lighted and beacons.

During 1900, 713 vessels, aggregating 835,355 tons, and carrying crews numbering 30,311, were entered inwards from beyond the Colony, and 716 vessels of 819,662 tons, and 30,046 crews, were entered outwards for places beyond the Colony. Of the inwards vessels, 657 with a tonnage amounting to 708,629 were British, the foreign vessels numbering 56, with a tonnage of 126,726. The like figures outwards were:—British, 662 vessels, 696,734 tons; foreign, 54 vessels, 122,928 tons.

Of the total trade, both inwards and outwards, 99 vessels of 202,463 tons were from and to the United Kingdom, or 12 per cent. of the total tonnage; 890 vessels, 1,039,811 tons, with the rest of Australasia, or 63 per cent. of the total tonnage; 318 vessels of 226,102 tons, or 14 per cent. of the total tonnage, were with other British Possessions, and 122 vessels of 186,641 tons, or 11 per cent. of the total tonnage, were with foreign countries.

The foregoing foreign trade is arrived at by counting each vessel inwards once only—namely, at the first port of arrival, and in a similar manner each vessel outwards at the last port of departure. In addition to this these same vessels made 2,066 calls at the various ports of the Colony other than their first port of arrival and last port of departure.

Besides the ships engaged in the foreign trade already dealt with a large number of vessels, for the most part of a somewhat limited size, are engaged in a carrying trade of an entirely coastwise nature, the voyages both commencing and terminating within the Colony. No less than 5,065 entries and 5,056 departures were made into and from the various ports of Queensland during 1900 by vessels engaged in a purely coasting traffic. Taking the aggregate total number and tonnage of all vessels based on entrances and clearances at each port, both foreign and coastwise, the shipping trade of all ports for 1900 would have amounted to 15,691 vessels and 9,215,035 tons. Of this tonnage 2,220,233 tons, or 24 per cent., were contributed by Brisbane; 1,072,239 tons, or 12 per cent., were contributed by Rockhampton; and 1,492,167 tons, or 16 per cent., by Townsville.

The Customs records of shipping fail to discriminate between steamers and sailing vessels; the great bulk of the shipping, however, consists of steamers. There were 248 vessels on the shipping registers of the Colony at the end of 1900—namely, 93 steamers and 155 sailing vessels, their tonnage aggregating to 21,083 tons. Of these, 175 vessels, with a tonnage amounting to 17,457, were on the register at Brisbane, 17 vessels and 1,360 tons at Maryborough, 3 vessels and 546 tons at Bundaberg, 12 vessels and 555 tons at Rockhampton, and 41 vessels and 1,165 tons at Townsville. The fresh registrations for 1900 amounted to eight steamers and 14 sailing vessels of 1,328 and 490 tons respectively.

### CUSTOMS DUTIES AND EXCISE.

The Customs revenue in Queensland, using the term Customs in its broadest sense, consisted of general import duties which, whilst imposed for the purposes of revenue, were selected with the view of conferring a measure of protection. An export duty on cedar, excise on spirits, beer, and tobacco, harbour, river, and tonnage rates and dues, and certain licenses and rents. The import duties, or Customs proper, comprised fixed duties and *ad valorem*. The fixed duties returned about 76 per cent. of the total Customs proper. The *ad valorem* duties were charged at rates of £5, £15, and £25 upon each £100, and yielded respectively about 1·5, 5·0, and 17·5 per cent. of the Customs proper. But little revenue was derived from the export of cedar, which only related to log timber, and which was chiefly designed to preserve the forests of the Colony from being too heavily denuded of this valuable timber.

The excise duties payable on Queensland made spirits were, if potable, 12s. per gallon, and if methylated, 2s.; a sum of £41,414 was raised from this source in 1900. The excise on colonial beer was 3d. per gallon, and realised £66,345, 5,307,572 gallons paying duty last year. The duties payable by way of excise on different products of the tobacco leaf were tobacco, 1s. per lb.; cigars, 2s. per lb.; cigarettes, 2s. per lb.; and snuff, 1s. per lb.: an excise revenue was derived from them of £33,800.

### IMPORTS AND EXPORTS.

The total trade of the Colony approximated £17,000,000 annually, of which about ten-seventeenths were contributed by the exports. Queensland is essentially a country of exports; her population is small, and secondary manufactures are not at present greatly in evidence, consequently there is only a limited demand for manufactured articles of domestic consumption. Those manufactories which exist find most of their raw products available within the Colony, although considerable quantities of woollen, cotton, and linen piece goods are imported for the manufacture of clothing. The geographical position of the Colony militates against it as an emporium of exchange for countries outside its borders.

IMPORTS.—The value of the total imports for each of the last five years was—1896, £5,433,271; 1897, £5,429,191; 1898, £6,007,266; 1899, £6,764,097; and 1900, £7,184,112. Of the amount for 1900 £6,713,615 was ocean borne, the borderwise import trade, including live stock, being £470,497.

The values of goods landed at the three principal ports last year were Brisbane, £4,197,814; Rockhampton, £663,252; Townsville, £953,642.

Food stuffs of all kinds and articles of domestic use, together with metals and their manufactures, comprise nearly half the total imports. The following amounts represent the value of the chief groups of articles imported during 1900:—Food and food stuffs of all kinds and articles of direct domestic use, £1,845,539.

Clothing, and material for its manufacture, and articles of personal and domestic adornment, £1,757,531; metals and their manufacture, £1,375,231; chemicals of all kinds, products required for use in manufactures, and packages, £481,057; coin, including bullion, £361,467; furniture and furnishing and building material, £285,458; paper, books, stationery, and printing material, £221,431; live stock, £170,052, of which £103,439 was carried borderwise; arms and ammunition, &c., &c., £106,102.

Three-sevenths of the total import trade is with the United Kingdom, a somewhat larger quantity with other British Possessions, the total value of goods imported from foreign countries aggregating some three-quarters of a million sterling only. The value of some of the chief items of import from the United Kingdom were as follow:—Cotton, linen, silk, and woollen piece goods £525,731; iron and steel £275,362; millinery, drapery, and haberdashery, including buttons,

braids, &c., £213,249; apparel and boots, hats, &c., and hosiery, £250,291; spirits and beer, £171,369; hardware and ironmongery, £87,730; machinery, £94,909. The total of all imports for 1900 from the United Kingdom being £3,100,706, and consisted almost entirely of produce of the United Kingdom. The total value of all goods the product of the United Kingdom imported into Queensland from all countries being £3,830,572, showing that a large quantity of goods of British manufacture reaching Queensland do not arrive direct.

The Australian imports stand next in importance, and last year amounted to £3,101,086. Of this only £1,575,360 worth was the produce of the other Colonies of Australasia. Nearly £1,000 worth consisted of Queensland goods that had evidently been previously exported. The importations from and produce imported of each State of the group were as follows:—Queensland produce, £984; New South Wales, imports from £2,451,510, produce of £970,511; Victoria, imports from £442,161, produce of £304,841; South Australia, imports from £135,525, produce of £158,999; Western Australia, imports from £713, produce of £669; Tasmania, imports from £37,369, produce of £77,620; New Zealand, imports from £33,808, produce of £62,720. The principal articles of import from Australia and value in round numbers were flour £258,000, live stock £138,000, wheat £113,000, green fruit £77,000, goods almost entirely the produce of one or the other of the colonies. Other items probably to a greater or less extent originating elsewhere were machinery, £146,000; iron, £140,000; apparel, drapery, haberdashery, buttons, &c., boots and hats, &c., £125,000; tea, £98,000; cotton and woollen piece goods, £72,000; tobacco, £62,000; hardware and ironmongery, £53,000; books, newspapers, £40,000; spirits, £32,000; leather, £31,000. Other British Possessions the imports from which for 1900 were deserving of notice were:—Hong Kong £71,130; India, £58,361; British Columbia, £22,783; Canada, £13,844. The values of goods, however, imported into Queensland the produce or manufacture of some of these countries were—India, £219,845; and Canada, £47,175. Coming to imports from foreign countries, there were six in which the value for 1900 exceeded £20,000—namely, United States, £357,124; Germany, £270,783; France, £39,714; China, £35,741; Japan, £34,690; Belgium, £25,714. Again, a large quantity of the produce filters through other countries, as will be seen from the following *résumé* of goods of home manufacture exported from certain foreign countries and reaching Queensland:—United States, £654,101; Germany, £327,824; France, £124,380; China, £104,796; Japan, £41,641; Holland, £31,191; Sweden and Norway, £29,467; Greece, £26,318; Spain, £23,081; Switzerland, £21,392; Belgium, £20,645. The total imports amounted to £14 13s. 10d. per capita of the mean population.

EXPORTS.—Gold, products of the pastoral industry, and sugar, are the chief items of export; these three products or groups of products comprise between them 91 per cent. of all exports. The value of gold exported was £2,819,495; pastoral products, £5,248,785, consisting of wool, £2,199,370; meat, &c., £1,562,043; live stock, £597,474; hides and skins, £551,752; and tallow, £307,439. Sugar to the value of £669,389 was also exported last year.

The total value of all exports for 1900 was £9,581,562, which gives a per capita return of £19 10s. 10d., or £4 17s. per head in excess of the imports. Of the amount exported £8,765,063 went by sea, the borderwise trade being £816,499. The value of goods exported from the three principal ports were:—Brisbane, £2,412,250; Rockhampton, £2,105,793; and Townsville, £2,152,335. The exports to the United Kingdom last year amounted to £3,271,656, of which all but £13,889 were the produce of Queensland. This is equal to 34 per cent. of the total export. The exports to the six colonies of Australasia aggregated to £5,488,128, of which £5,352,782 represented the produce of the Colony, and £135,346 only were imports reshipped. The value of exports for 1900 to British Possessions other than the United Kingdom and Australasia was £453,598, of which £402,673 were home produce. The exports to foreign countries during 1900 amounted to £368,180, of which £341,467 were the produce of Queensland. The principal recipients were:—Philippine Islands, £106,014; Germany, £71,767; China, £54,530; France, £35,528; and Japan, £32,169.

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## Part XIX.

# FINANCE.

## PUBLIC FINANCE.

[Contributed by T. M. KING, Auditor-General.]

For the year ended the 30th June, 1901, the gross receipts amounted to £4,588,207, while the actual expenditure amounted to £4,540,417, the excess of revenue over expenditure being £47,790. This amount, being the cash surplus for the year, was handed over to the trustees of the public debt reduction fund to be by them applied to the purchase of debentures or Treasury bills, as prescribed by "*The Audit Act Amendment Act of 1895.*"

The chief heads of revenue and expenditure are shown in the following table:—

### REVENUE AND EXPENDITURE.\*

	£		£
Customs duties ... ..	1,461,690	Schedules ... ..	128,532
Excise, beer... ..	64,657	Interest on public debt ...	1,339,149
Excise, tobacco and cigars...	33,989	Executive and Legislative...	13,920
Excise, spirits ... ..	41,019	Chief Secretary ... ..	270,096
Excise, all others ... ..	8,758	Home Secretary ... ..	500,272
Stamp duties ... ..	245,426	Public Works Department	147,543
Dividend duty ... ..	66,477	Department of Justice ...	52,772
Licenses ... ..	62,698	The Treasurer ... ..	272,109
Territorial revenue ... ..	525,903	Department of Public Lands	96,123
Mining occupation ... ..	92,840	Department of Agriculture	67,116
Railways ... ..	1,422,852	Department of Public In-	
Post and Telegraph receipts	309,471	struction ... ..	286,220
Harbour rates and pilotage	22,452	Department of Mines ...	46,978
Fees of office ... ..	24,865	Department of Railways ...	947,191
Fines and forfeitures ...	4,483	Postmaster-General ...	362,908
Miscellaneous receipts ...	200,627	Auditor-General ... ..	9,488
Total revenue proper ...	£4,588,207	Total expenditure ...	£4,540,417

### REVENUE PROPER.

All heads of revenue show increases during the year excepting territorial, the collections under this head falling short of the previous year by £4,866. Stamp duties show a very large increase, the collections more than doubling those of the previous year. This abnormal increase was due to the large amount of succession duty paid in the estate of a wealthy resident who died during this year. Other noticeable increases fall under the head of Railways and Customs, the former accounting for £100,246, and the latter £93,764.

\* The establishment of Federation during 1900-1 caused considerable disturbance in the records, rendering it difficult to compare the items with those of previous years, consequently the figures for 1899-1900 have been adopted.

It will be observed that the population increased during the year by 1·94 per cent., whilst the revenue increased by 9·92 per cent.

Heads of Revenue.	REVENUE PROPER.				INCREASE.	
	1899-1900.	Per Cent. of Total.	1898-1899.	Per Cent. of Total.	Numerical.	Centesimal.
	£		£		£	
Customs Duties ... ..	1,461,690	31·86	1,367,926	32·77	93,764	6·85
Excise „ ... ..	148,423	3·24	143,905	3·45	4,518	2·74
Stamp „ ... ..	245,426	5·35	120,814	2·89	124,612	103·14
Dividend „ ... ..	66,477	1·45	60,487	1·45	5,990	9·90
Licenses „ ... ..	62,698	1·37	57,279	1·37	5,419	9·46
Territorial Revenue ...	525,903	11·46	530,769	12·72	- 4,866*	- 0·92*
Mining Occupation ...	92,840	2·02	44,337	1·06	48,502	109·39
Railways ... ..	1,422,852	31·01	1,322,606	31·69	100,246	7·58
Post and Telegraph Receipts	309,471	6·74	284,179	6·81	25,292	8·90
Harbour Rates and Pilotage	22,452	0·49	22,347	0·53	105	0·47
Fees of Office ... ..	24,865	0·54	21,937	0·53	2,928	13·35
Fines and Forfeitures ...	4,483	0·10	3,899	0·09	584	14·98
Miscellaneous ... ..	200,627	4·37	193,602	4·64	7,026	3·63
				Less	418,986	
					4,866	
Total ... ..	4,588,207	100·00	4,174,087	100·00	414,120	9·92

\* Decrease.

#### REVENUE.

The receipts under the head of Taxation amounted during the financial year ended the 30th June, 1900, to £1,984,713, of which Customs was responsible for £1,461,689. Territorial and Land Revenue accounts for £618,743, the chief item of income being £293,872, derived from rent of runs. Next in order is a collection of £139,478, derived from Leaseholders. Occupation Licenses contributed £29,394. Mining Occupation, a sub-heading under the head of Territorial Revenue, yielded £92,841; but it must be mentioned that there is included in this amount £33,389, the proceeds from the sale of gold specimens, purchased from revenue funds for exhibits at the Greater Britain Exhibition.

Railway Receipts yielded £1,422,852, the Southern division contributing £810,953, the Central £300,036, and the Northern £262,888.

Postage is responsible for £197,703, and Electric Telegraph for £103,374. Interest paid by local authorities on loans from the Government amount to £73,929. There are also miscellaneous receipts contributing a total of £50,288. There are some other sources of revenue, such as commission on money-orders and postal-notes, harbour dues and fees, and fees of office.

The following table shows the amount of revenue raised from various sources during the last five years :—

YEAR.	REVENUE.	AMOUNT PER CAPITA.				
		Taxation.	Land Revenue.	Public Works and Services.	Miscellaneous Services.	Total.
	£	£ s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.
1895-1896 ...	3,641,583	3 9 2	1 4 6	2 17 8	9 6	8 0 10
1896-1897 ...	3,613,150	3 4 4	1 2 1	2 19 9	8 9	7 14 11
1897-1898 ...	3,768,152	3 5 2	1 3 5	3 0 1	8 11	7 17 7
1898-1899 ...	4,174,086	3 10 3	1 3 1	3 5 4	8 10	8 7 6
1899-1900 ...	4,588,207	3 17 5	1 4 2	3 8 5	9 0	8 19 0
1900-1901 ...	4,096,290	3 13 8	1 3 6	3 2 6	14 1	8 13 9

Compared with other States, excepting perhaps Western Australia, the revenue derived from taxation will appear high per head, but in considering a question of this kind allowance must be made for the relative percentage of sex in the aggregate population. Here and in Western Australia it will be found that males preponderate, and as a large number are employed in gold-mining, averaging good wages, they are large contributors to the revenue through the Customs, hence the rate per head appears high in comparison with that in the more settled States.

#### ORDINARY REVENUE EXPENDITURE.

The total revenue expenditure for 1899-1900 amounted to £4,540,417. The largest item under this head was the interest on the public debt, which amounted to £1,339,149. Railways expended £947,191, and the Postmaster-General's Department, which included Telegraphs, cost £362,908. The Home Secretary's Department expended £500,272, which embraces police protection, £178,926; cost of management of gaols, £29,013; lunatic asylums, £43,580. Benevolent Institutions, £20,682; and endowment to Fire Brigade Boards, £3,135; charitable allowances cost £84,402. Under the head of Chief Secretary an expenditure is recorded of £270,096; included in this amount is the cost of the Defence Force, £89,378. Included also in the expenditure of this department is the cost of the South African Contingents, amounting to £147,532. The Treasury spent £272,109,

included in which is endowment to local authorities, £103,935; harbour pilots, £58,655; public works cost £147,543; public lands, £96,123. Contained in this amount is £55,379 for surveys, a considerable portion of which is recovered from purchasers who are allowed to spread the cost of survey fees over the term allowed for the payment of the purchase money. Some of this is absorbed in what are called unproductive surveys, such as of roads and reserves. The Department of Public Instruction absorbed £286,220, of which £234,972 was expended on State and Provisional Schools, £11,917 on technical education, £21,360 on orphanages, and on museums, £1,912. The Department of Agriculture cost £67,116, which includes the cost of State Farms, £11,469; and Agricultural College, £9,457. The Departments of Justice and of Mines cost respectively £52,772, and £46,978.

#### LOAN FUND EXPENDITURE, YEAR 1900-1901.

In addition to the expenditure under the head of revenue there was disbursed during the year 1900-1901, as given below, £1,212,020 from the loan fund. This amount was chiefly spent on railways, in the construction of new lines and such works connected therewith of a permanent nature which are not usually a charge on revenue. Loans to local bodies, as this heading implies, are reduced by annual payments to the Treasury of redemption and interest, the former being recredited to the Loan Fund, and the latter going into the consolidated revenue. Such loans are granted for varying terms, according to the class of work, the annual payments to the Treasury differing according to the duration of the loan.

The following table shows the heading under which this expenditure has been incurred:—

	£
Railways ... ..	494,754
Immigration ... ..	53,415
Harbours and Rivers ... ..	156,507
Electric Telegraphs ... ..	26,869
Water Supply ... ..	12,967
Loans to Local Bodies ... ..	241,531
Public Buildings, &c. ... ..	60,681
Endowments to Harbour Boards ... ..	107,200
Defence ... ..	47,712
Miscellaneous ... ..	10,384
<b>Total ... ..</b>	<b>1,212,020</b>

Loan expenditure exclusively on Public Works during the last five years terminating on the 30th June of each year will be found on the accompanying table.

## LOAN EXPENDITURE—FIVE YEARS.

—	1896-97.	1897-98.	1898-99.	1899-1900.	1900-1.
Defence ... ..	9,626	3,874	13,342	36,065	47,712
Immigration ... ..	2,535	9,926	18,849	45,332	53,415
Loans to Local Bodies ... ..	136,331	116,877	118,811	192,530	241,531
Advances under Sugar Works Guarantee Act	158,310	70,016	48,356	18,511	1,928
Wire Netting—Rabbit Boards Act of 1896	5,861	17,868	24,556	9,178	456
Miscellaneous ... ..	*42,275	†23,771	...	...	8,000
Endowments to Harbour Boards	...	...	44,410	74,180	107,200
Experimental Farms ... ..	550	...	...	...	...
Expenditure on Public Works—					
Railways ... ..	709,462	626,974	628,812	637,674	494,754
Electric Telegraphs ... ..	25,038	36,101	34,569	40,459	26,869
Public Works and Buildings	11,691	12,274	47,497	54,490	58,432
Roads and Bridges ... ..	...	70	29,325	8,132	2,249
Harbours and Rivers ... ..	38,805	11,717	37,003	57,222	156,507
Water Supply ... ..	7,857	7,598	9,257	8,895	12,967
Total ... ..	1,148,341	937,066	1,054,787	1,182,668	1,212,020

\* Includes £20,000 Survey of Land, afterwards charged to Revenue.

† Do. £15,000 do. do. do.

## PUBLIC DEBT.

\* The gross public debt of the State on the 30th June, 1901, was £36,898,414, being an increase on the amount owing at the end of the previous year of £1,000,000.

By the Government Loan Act of 1900 there was authorised to be raised the sum of £2,374,213 for the following purposes:—

Railways ... ..	£1,624,393
Electric Telegraphs ... ..	13,211
Defence of the Colony ... ..	88,249
Buildings ... ..	324,352
Marine Department ... ..	59,000
Water Supply ... ..	25,323
Loans to Local Bodies ... ..	189,685
Sugar Works Guarantee Acts ... ..	50,000
Total ... ..	£2,374,213

Of this loan there has been sold locally to the public £1,000,000, the first occasion on which a Government Loan has been offered in Queensland. The result must be considered satisfactory, the average return being £99 9s. per cent. The rate of interest was fixed at  $3\frac{1}{2}$  per cent.

The balance of the loan has recently been sold in London.

The following table of the public debt of Queensland shows the debentures and stock as circulating on the 30th June, 1901, authorised by the several Loan Acts, the dates when redeemable, and the annual charge thereon for interest.

* £36,049,094
150,680 unsold Debentures
£35,898,414

## \*QUEENSLAND GOVERNMENT LOANS.

SUMMARY showing the GROSS AMOUNT REALISED, the CHARGES, the NET PROCEEDS, and the AVERAGE PRODUCE PER CENT. of the respective LOANS.

Date of Issue.	Total Loans.	Amount Sold.	Gross Proceeds.	Charges.	Net Proceeds.	Net Average per Cent.	Rate of Interest.	Interest.	Due Date.
£	£	£	£	£	£	£		£	
1872	1,436,500	1,466,500	1,204,129	7,238	1,286,890	87 15 0 <sup>3</sup> / <sub>4</sub>	4 per cent.	58,660	1913
1875	1,695,300	1,695,300	1,549,630	13,641	1,535,989	90 12 0 <sup>3</sup> / <sub>4</sub>	ditto	67,812	1915
1876	740,700	740,700	674,452	6,417	668,034	90 3 9 <sup>3</sup> / <sub>4</sub>	ditto	29,628	1915
1877	1,322,000	1,322,000	1,222,976	10,438	1,212,537	91 14 4 <sup>3</sup> / <sub>4</sub>	ditto	52,880	1915
1878	1,184,800	1,184,800	1,055,862	10,135	1,045,727	88 5 2 <sup>3</sup> / <sub>4</sub>	ditto	47,392	1915
1879	3,053,000	3,053,000	2,894,209	23,180	2,841,029	93 1 1 <sup>3</sup> / <sub>4</sub>	ditto	122,120	1915
1881	1,089,500	1,089,500	1,054,787	11,972	1,042,814	95 14 3 <sup>3</sup> / <sub>4</sub>	ditto	43,580	1915
1882	2,643,500	2,643,500	2,585,308	32,575	2,552,733	96 11 4	ditto	105,740	1915
1884	1,439,000	1,439,000	1,423,534	19,927	1,403,606	97 10 9 <sup>3</sup> / <sub>4</sub>	ditto	57,560	1924
1884	9,980,000	6,750,000	6,680,788	91,062	6,589,726	97 12 6	ditto	270,000	1924
1889	1,554,834	3,230,000	3,080,408	44,968	3,035,439	93 19 6	3 <sup>1</sup> / <sub>2</sub> per cent.	113,050	1924
1890	3,704,800	3,704,800	3,515,106	21,746	3,493,359	96 0 11	ditto	54,419	1924
1894	2,000,000	2,000,000	3,304,282	69,906	3,234,376	87 6 1	ditto	129,608	1930
1896†	1,724,480	2,000,000	2,014,160	40,137	1,974,023	98 14 0 <sup>3</sup> / <sub>4</sub>	ditto	70,000	1945
1899†	2,400,680	2,400,000	1,673,234	21,207	1,652,026	95 15 11	3 per cent.	51,735	1947
1900	2,374,213	2,374,213	2,188,210	37,619	2,150,590	93 10 0 <sup>3</sup> / <sub>4</sub>	ditto	69,000	1950
			997,126	3,299	993,827	99 7 7 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub> per cent.	35,000	1951
	£38,373,307	36,898,414	35,178,209	465,476	34,712,732	...	...	1,378,244	...

\* Exclusive of Treasury Bills—£1,000 due 1st January, 1903.

† Exclusive of £200,000 Debentures purchased by Government Savings Bank Inscribed Stock and cancelled.

‡ Exclusive of £200,000 Debentures purchased by Trustees Public Debt Reduction Fund and cancelled; also of £125,000 purchased by Government Savings Bank Inscribed Stock and cancelled.

## INTEREST.

Of the total amount of outstanding public debt at the end of June, 1901, amounting to £36,898,414, over £21,000,000 carried interest at the rate of 4 per cent., over £11,000,000 at  $3\frac{1}{2}$  per cent., and over £4,000,000 at 3 per cent. The following are the rates of interest payable on the complete public debt:—

Rates of Interest.				Amount at each Rate.
4	per cent.	...	...	£21,384,300
$3\frac{1}{2}$	"	...	...	11,489,634
3	"	...	...	4,024,480
Total				£36,898,414

The total amount of interest payable to bondholders on the full amount of the public debt as shown above is £1,378,244, which gives an average rate of interest of £3 14s. 8 $\frac{1}{2}$ d. The interest cost, however, to the State is larger, as it is on the net amount realised, and amounts to £3 19s. 5d.

## UTILISATION OF MONEY COMPRISING THE PUBLIC DEBT.

The following statement compiled from the Estimates submitted to Parliament by the Honourable the Treasurer shows the manner in which the public debt of the State has been appropriated and the purposes for which the money was voted:—

## THE PUBLIC DEBT OF THE COLONY OF QUEENSLAND, 30TH JUNE, 1901.

Nature of Appropriation.	AUTHORISED BY LOAN ACT OF—					
	1872.	1875.	1876.	1877.	1878.	1879.
	£	£	£	£	£	£
Immigration ... ..	150,000	325,000	...	150,000	50,000	100,000
Railways—						
Southern and Western ... ..	206,000	531,480	112,100	165,100	300,000	891,800
Wide Bay and Burnett ... ..	...	...	...	250,000	200,000	267,500
Central Railway ... ..	480,000	223,320	...	110,000	200,000	474,800
Northern Railway ... ..	...	...	...	200,000	100,000	390,000
Mackay ... ..	...	...	...	...	...	...
Bowen ... ..	...	...	...	...	...	...
Cooktown ... ..	...	...	...	...	...	...
Herberton ... ..	...	...	...	...	...	...
Cloncurry to Gulf ... ..	...	...	...	...	...	...
Extension Surveys ... ..	...	11,300	14,000	26,500	20,000	...
Rolling Stock, &c. ... ..	...	...	...	...	...	...
Purchase Permanent Way	...	...	...	...	...	...
Material ... ..	...	...	...	...	...	...
Electric Telegraphs ... ..	60,000	80,800	47,200	25,000	...	70,000
Roads and Bridges... ..	109,000	49,000	185,300	60,600	...	62,650
Public Buildings ... ..	44,500	60,000	77,300	86,300	47,800	80,000
Harbours and Rivers ... ..	42,000	125,400	85,000	100,000	100,000	249,000
Water Supply ... ..	...	78,500	25,000	54,500	20,000	18,250
Loans to Local Bodies ... ..	25,000	30,000	35,000	10,000	30,000	300,000
Defence of the Colony ... ..	...	...	...	12,000	10,000	10,000
Agriculture ... ..	...	...	...	...	...	...
Deficits on Loans ... ..	...	180,000	159,800	72,000	107,000	139,000
Retirement of Treasury Bills ... ..	350,000	...	...	...	...	...
Total Debt ... ..	1,466,500	1,695,300	740,700	1,322,000	1,184,800	3,053,000

THE PUBLIC DEBT OF THE COLONY OF QUEENSLAND,  
30TH JUNE, 1901—continued.

Nature of Appropriation.	1881.	1882.	1884.	1884 (No. 2.)	1889.	1890.
	£	£	£	£	£	
Immigration ... ..	...	350,000	400,000	750,000	250,000	200,000
Railways—						
Southern and Western ... ..	126,400	492,000	647,000	3,140,000	573,334	1,280,550
Wide Bay and Burnett ... ..	...	255,000	...	653,000	61,000	232,000
Central Railway ... ..	85,000	130,000	200,000	636,000	72,000	69,900
Northern Railway ... ..	...	125,000	...	475,000	10,000	...
Mackay ... ..	...	90,000	...	...	65,500	...
Bowen ... ..	...	150,000	...	100,000	...	...
Cooktown ... ..	...	180,000	...	150,000	...	17,000
Herberton ... ..	...	200,000	...	400,000	...	390,000
Cloncurry to Gulf ... ..	...	...	...	500,000	150,000	62,000
Extension Surveys ... ..	25,000	20,000	...	90,000	...	15,000
Rolling Stock, &c. ... ..	100,000	180,000	...	773,000	...	30,000
Purchase Permanent Way						
Material ... ..	...	...	...	...	...	160,000
Electric Telegraphs ... ..	33,000	135,500	10,000	250,000	75,000	...
Roads and Bridges ... ..	6,400	84,000	...	100,000	185,000	20,000
Public Buildings ... ..	38,400	18,000	37,000	485,000	...	50,000
Harbours and Rivers ... ..	115,000	184,000	10,000	593,000	63,000	345,500
Water Supply ... ..	87,800	50,000	...	250,000	50,000	15,000
Loans to Local Bodies ... ..	...	...	15,000	500,000	...	335,000
Defence of the Colony ... ..	2,000	...	...	100,000	...	60,000
Agriculture ... ..	...	...	...	...	...	...
Deficits on Loans ... ..	218,000	...	120,000	35,000	...	422,850
Retirement of Treasury Bills ... ..	252,500	...	...	...	...	...
Total Debt ... ..	1,089,500	2,643,500	1,439,000	9,980,000	1,554,834	3,704,800

	1894.	1896.	1899.	1900.	Total.
	£	£	£	£	£
Immigration ... ..	50,000	...	...	...	2,775,000
Railways—					
Southern and Western ... ..	302,950	396,910	320,200	611,885	10,097,709
Wide Bay and Burnett ... ..	...	244,720	70,750	6,500	2,240,470
Central Railway ... ..	34,958	292,850	71,000	423,050	3,503,378
Northern Railway ... ..	...	85,000	224,000	256,053	1,865,053
Mackay ... ..	...	20,000	...	39,869	215,369
Bowen ... ..	...	...	...	...	250,000
Cooktown ... ..	...	...	...	...	347,000
Herberton ... ..	...	255,000	13,700	87,036	1,345,736
Cloncurry to Gulf ... ..	...	...	...	...	712,000
Extension Surveys ... ..	8,660	20,000	15,630	...	266,090
Rolling Stock, &c. ... ..	...	200,000	382,000	200,000	1,865,000
Purchase Permanent Way					
Material ... ..	...	...	...	...	160,000
Electric Telegraphs ... ..	34,600	50,000	75,000	13,211	959,311
Roads and Bridges ... ..	90,000	...	...	...	951,950
Public Buildings ... ..	34,455	...	250,000	324,352	1,633,107
Harbours and Rivers ... ..	...	60,000	399,500	59,000	2,530,400
Water Supply ... ..	...	...	...	25,323	674,373
Loans to Local Bodies ... ..	...	175,000	275,000	189,685	1,919,685
Defence of the Colony ... ..	...	25,000	58,700	88,249	365,949
Agriculture ... ..	...	500,000	107,200	50,000	657,200
Deficits on Loans ... ..	315,977	...	463,000	...	2,232,627
Retirement of Treasury Bills ... ..	1,128,400	...	...	...	1,730,900
Total Debt ... ..	2,000,000	2,324,480	2,725,680	2,374,213	39,298,307

Less Debentures Account 1896 Loan Purchased and Destroyed ... 600,000

" " 1899 ... 325,000

925,000

38,373,307

The returns in cash from works and services, the cost of which are defrayed from the Loan Fund, are paid into the Consolidated Revenue. The following table shows the annual payment for interest during the last five years, the net return from railways and other services, the charge on revenue, the revenue collected, and the percentage of actual charge on revenue:—

—	1896-97.	1897-98.	1898-99.	1899-1900.	1900-1901.
	£	£	£	£	£
Interest on Loans ... ..	1,263,659	1,324,333	1,326,963	1,339,149	1,415,180
Net Return received from Railways ... ..	452,715	472,591	537,796	474,161	188,783
Interest received from Local Bodies... ..	70,801	78,403	86,598	73,929	87,253
Interest on the Public Balances ... ..	78,356	72,004	63,543	68,894	82,631
Total Receipts from Loan Works and Services	601,872	622,998	687,937	616,964	358,667
Actual Charge on Revenue ... ..	661,787	701,335	539,026	722,165	1,056,513
Revenue from 1891-92 to 1900-1901 ... ..	3,613,150	3,768,152	4,174,086	4,588,207	4,096,200
Percentage of Actual Charge on Revenue ...	18	19	15	16	25·79

The above percentage of actual charge on revenue is exclusive of the rent value of the public buildings, neither does it include the net revenue, if any, derived from services other than Railways, enumerated in the preceding return showing details of the Public Debt and the authorised appropriations.

#### PRIVATE FINANCE.

There are eleven banks doing business in Queensland, of which the Queensland National Bank, the Royal Bank, and the Bank of North Queensland are local institutions, and the remaining eight are branches only, the head offices being elsewhere. They are the Bank of New South Wales, the Bank of Australasia, Commercial Banking Company of Sydney, Commercial Bank of Australia, the Union Bank of Australia, the London Bank of Australia, the English, Scottish, and Australian Bank, and Australian Joint Stock Bank.

The total average amount of coin held by the banks during 1900 amounted to £2,155,185.

The total average amount of bullion held was £300,049.

The total average amount of Government securities held was £85,592.

The total assets of the various banks at end of 1900 amounted to £16,257,443.

The total amount of liabilities was £14,190,560.

In addition to banks there are numerous other financial institutions, loan and mortgage companies, building societies, &c., the amount of whose capital invested in Queensland cannot be ascertained with any degree of accuracy.

The only notes now issued by the banks in Queensland are Government notes, which the banks obtain from the Government for the purpose. These notes superseded the bank notes issued prior to the financial troubles of 1893.

On 27th December, 1900, the value of Government notes in circulation was £653,684.

A considerable amount of trouble has been taken to endeavour to estimate the value of the private wealth of Queensland, and great assistance has been afforded by some of the gentlemen engaged in commercial and pastoral pursuits in furnishing data which assisted in arriving at a fairly accurate result. Taking the term "private wealth" to mean all assets not the property of the Government of the State, or of the various municipalities, shires, divisions, or boards, an endeavour has been made to arrive at a fair and reasonable value of land, buildings, live stock, furniture, personal property and effects, machinery, merchandise, shipping, mining properties and plants, private railways (not owned by divisional boards or such bodies), tramways, coin and bullion, &c.

The assessments made by local governing bodies for taxation purposes have been taken as the value of the land in an unimproved state. This appears to be the best and safest valuation that can be obtained, since all the owners have notice of the values placed upon their properties, and have the right of appeal if they consider such valuations excessive. The aggregate of these valuations amounts to £41,518,832.

The principle of all taxations by local governing bodies in Queensland is based on the unimproved value of the land, no consideration being had for the value of buildings or other improvements, so that for local rates the vacant land upon which no improvements are erected pays the same as another piece near it upon which valuable buildings stand. No notice is taken by the local authorities of the value of improvements for purposes of taxation, and therefore the returns of such bodies do not contain information that would assist in forming an estimate of the value of property other than land; but from several sources the value of improvements belonging to private persons, and apart from the possessions of Government or local governing bodies, has been carefully estimated and found to be about £43,594,400.

Included in this amount are the values of all buildings, dwellings, shops, fencing, &c., in towns and country places, improvements on stations and pastoral holdings, bores, dams, fencing, &c., also all improvements on farms, wharves, railways and tramways which are privately owned and are not the property of the State Government or of any local governing body.

The Census just taken has afforded special opportunity for obtaining accurate results with regard to dwellings, the number of rooms in each, material of which built, &c. The total number of

buildings in which persons resided, including tents, huts, ships, &c., and also uninhabited dwellings, totalled 100,610, in addition to which there are buildings in which persons do not reside, such as churches, public halls, &c.

The numbers of live stock have seriously diminished during the few years last past, but the values have risen, if not to a corresponding extent, certainly to a much higher price than ruled say three years ago. Partly owing to their scarcity, and also in part to the fact that better means now exist for treating meat for market, and to the demand that has existed for meat foods of all kinds—frozen, tinned, and preserved—for some time past, the values of both cattle and sheep have increased considerably, and are now higher than they have been for many years past.

A large and steady demand has existed for all meat foods, arising out of the three wars which have been carried on for some time past—viz., the American-Spanish, China, and South African wars, which have all afforded profitable openings for the sale of Queensland meats, and of the extent of which this State was unable to fully avail itself owing to drought reducing the number of animals suitable for slaughter.

The value of sheep, horses, cattle, pigs, poultry, bees, &c., in Queensland, is estimated at the end of 1900 to have been £18,956,890.

The value of shipping appears small compared with the number of well-equipped steamers and other vessels trading regularly on this coast. The estimate, however, includes only vessels privately owned and registered in Queensland ports, and unregistered vessels and boats known to be owned by persons residing in the State.

Most of the vessels trading on the coast of Queensland are registered in the ports of other States, or in the United Kingdom, and are taken to belong properly to the State in which they are registered.

The total value of shipping registered in Queensland—yachts, boats, &c.—is estimated to amount to £365,000.

With respect to the value of mining property very considerable divergence of opinion prevails. If the value of the shares in each mine on a given date was taken as the value of the mine, the result would be that the total would reach a very large figure indeed. Many properties which have never yielded minerals in payable quantities, or have never yielded any at all, have still a value placed on their shares, at which price they are bought and sold, whilst many others though not actively quoted are still held by the owners as being valuable.

It seemed, however, undesirable to follow any method or valuation which would give an excessive or inflated value to this class of property. As the industry has been permanent in Queensland for many years, and will undoubtedly continue for many years to come, and affords employment to a large section of the community, it must be of considerable value, and the yield of gold and other metals will undoubtedly increase from year to year as gold-saving appliances are more effective and the gold is extracted at a lower cost. As mining appliances progress in this direction, other mines, the ore in which is of poorer quality, will be found capable of being worked at a profit.

Taking the yield of all minerals for 1900, which totalled a value of £3,180,064, and treating that amount as being one-fourth of the value of the mines, would bring the total amount up to £12,720,256, to which must be added the value of machinery at mines,

amounting to a further sum of £1,484,906, thus bringing up the value of mines and mining machinery to a value of £14,205,162. It may be objected that this method of estimating the value of mines does not allow for mines upon which a considerable amount of developmental work has been done without having obtained minerals, but, although the shares in many such mines have a distinct monetary value, their exclusion prevents the estimates of the value of this class of property being inflated.

The total amount of wealth in Queensland owned by private persons, and apart from that belonging to the Government or any local governing body, is estimated to be as under :—

Land, unimproved values	... ..	£41,518,832
Buildings and collateral improvements		43,594,400
Live stock	... ..	18,956,890
Furniture, personal property, and effects...	... ..	8,625,000
Machinery (not mining), implements, trade fittings	... ..	8,249,861
Merchandise	... ..	5,673,285
Shipping	... ..	366,000
Mining properties, plant, and machinery		14,205,162
Coin and bullion	... ..	2,655,334
Other	... ..	525,000
		<hr/>
		£144,369,764

As the total population ascertained at the last census was 503,266 persons, this would amount to £287 per head.

The method of estimating the wealth of a community by taking the value of the estates of persons dying and assuming that such wealth would produce in proportion to the number of deaths a similar average for the rest of the community is necessarily much below the true average.

As the death of one or two very wealthy persons may inflate the collections of any one year to a very appreciable extent, and in the reverse way an undue number of deaths in one year may reduce the amount per head in reckoning the values of estates proportioned to the number of deaths, the returns of the values of estates, and the corresponding number of deaths for several years, is required to obtain a fair average.

For the purpose of obtaining as fair an average as possible, the years from 1892 to 1900 inclusive have been taken partly because the returns of values of estates are readily obtainable in a reliable form for that period, and the numbers of the population are known to be more accurate at these dates than it was at a later time.

The returns upon which death duties were collected in Queensland for a period extending from 1892 to 1900 gave an average value of each estate proved at £2,327 8s. 10d. Taking the number of deaths during the same period, the value of estates to deaths is £237 12s. 1d. As the periods of 1892 and 1900 were close to census periods,

the mean of the population at these two periods was taken, and the wealth for the mean of this period—say on a population of 448,492—amounted to £106,563,567.

Assuming that the per capita wealth has at least not decreased since then—and this is a reasonable hypothesis—the present aggregation of private wealth would amount to £119,578,518, if taken on the basis of average values of estates of deceased persons.

That this amount is below the true figures is apparent, since estates are never returned as being of higher value than they really are, or at a higher price than could readily and easily be obtained for them, since death duties have to be paid on the declared value, and all debts and other set-offs to the estate are carefully deducted. Again, where the members of the family are the heirs, much property of a portable character is passed without its being mentioned. In many estates no will exists, and letters of administration are not taken out, unless authority is necessary to obtain a title to land, &c. In numbers of cases furniture, horses, cattle, farming implements, and crops pass to surviving members of the family without any record being taken or tax being paid. Although these amounts are small individually, they would be found to mount up to a large sum in the aggregate, and, making allowance for them, I believe the amount previously obtained of £287 per head of population to be as nearly correct as a calculation of this kind can be.

According to the most recent edition of Mulhall's Dictionary of Statistics, the per capita wealth of some other countries is estimated as follows:—

United Kingdom	... £302	United States	... £234
France	... 252	Canada	... 196
Germany	... 156		

Coghlan, in his "Seven Colonies," gives an estimate of the other Australasian States as follows:—

New South Wales	... £265	Western Australia	... £219
Victoria	... 233	Tasmania	... 212
South Australia	... 183	New Zealand	... 266

The Registrar-General of New Zealand estimates the private wealth of that Colony for 1899 to average £288 per head.

## Part XX.

# RAILWAYS.

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### INITIATION AND PROGRESS—COURSE OF LEGISLATION— POLICY AND PRACTICE.

When, in December, 1859, the territory now comprised within the State of Queensland was, by proclamation, separated from New South Wales and constituted a new colony, there was not a single mile of railway within its boundaries. The circumstances of the colony at that time were not such as would have justified railway construction. The population was about 25,000—men, women, and children. Of these about one-tenth resided in and around Brisbane, and about one twenty-fifth at Ipswich. Maryborough, Warwick, Drayton, Toowoomba, Rockhampton, Gayndah, and Gladstone were inconsiderable villages, each with from 100 to 400 inhabitants. Among them these centres had about one-half of the total population of the colony. The individuals who made up the other half were scattered partly over a few farms and plantations in the East Moreton district, but chiefly on squattages in the regions round or inland from the villages named. The revenue of the Colony for the year 1860 was no more than £178,589. The total value of exports was but £500,000. It was quite plain to the most confined understanding that by such a scanty population, and for products so trifling, railways were luxuries not to be thought of. But to understandings more expansive it appeared possible that there might be conditions under which it would be sagacious to construct railways in anticipation of population, production, and trade, and as potent means of attracting the first and developing the two latter. Even as early in the history of Queensland as the time when candidates presented themselves soliciting election to the first Legislative Assembly the subject of railway construction had begun to engage attention. The writs were issued in June, 1860. The addresses of candidates generally contained some reference to railways. But evidently the question was not a burning one of practical politics. Most of the remarks, which have been preserved in print, are framed in quite an academic spirit, as treating a subject of future and remote interest. The opinions then expressed of some notables of the time—some of whom thenceforward attained, and retained for very many years, positions of influence in the public affairs of the Colony—are interesting to-day. Frankly favourable to early railway construction westerly were Messrs. T. L. Murray-Prior and Stuart Russell, both interested in the pastoral industry. Mr. T. Warry, a Brisbane tradesman, was favourable to the idea, but was unable to conceive where the money was to come from. Messrs. C. R. Haly and Geo. Raff, the former a Burnett squatter, the latter a Brisbane merchant, thought the idea of railway construction to be premature in the then infantile condition of the Colony. Mr. Robert Mackenzie, squatter, opposed the idea outright. Mr. Henry Jordan, while not particularly concerned about railways in

a general way, thought that "if connection could be made with the splendid wheat-growing lands around Drayton and Warwick at a cost not exceeding £6,000 per mile, as had been estimated," such a railway would pay a very good percentage on its cost. Mr. Charles Lilley considered that "tramways and railways should be left to private enterprise, and be encouraged by grants of land. Government should not undertake commercial speculations, inasmuch as there was not only the making of the railways, but the provision of engines and working expenses of the lines." Mr. John Kent, a very old colonist—he had been the official in charge of the Government stock while Moreton Bay was yet a penal settlement—held opinions similar to Mr. Lilley's. He was for land grants and guarantees to capitalists who would undertake to make railways.

The remark by Mr. Henry Jordan shows that there must have been previous interest taken in the subject of railways for the new Colony, and a specific estimate of the cost of construction from the coast country to the Darling Downs. That estimate of £6,000 per mile provokes comparisons. The contemplated construction included an ascent of the Main Range, and it is difficult now to conceive how any engineer pretending to competent judgment in professional matters could have committed himself, even in the most loose way, to such a figure. When that construction, in later years, was actually accomplished, the line from Brisbane to Gowrie Junction, 113·99 miles, which includes the ascent of the ranges, cost £20,759 per mile. It is no doubt probable that in a rough estimate made in the year 1860, bridging the Brisbane River and the Bremer Creek were not taken into account. But the ascent of the Main Range itself presented difficulties to overcome which involved unavoidable expense irreconcilable with so low an estimate.

At the same time it is a curious fact that the general average cost of all lines constructed in Queensland up to the end of the year 1900 has been not so very wide of that early estimate, £6,178 per mile instead of £6,000 per mile.

The first Parliament of Queensland had been just three months in session when a Select Committee was appointed to make inquiry into the subject of Internal Communication. The investigations of this committee were directed chiefly to the condition of the main trunk highroads. The Commissioners gravely addressed themselves to eliciting evidence respecting the condition of the Brisbane-Ipswich road at the Four-mile Swamp, and respecting similar bad bits on other roads, including those from Maryborough, Gladstone, and Rockhampton. The subject of railways was evidently regarded as outside all reasonable scope, and was not so much as mentioned. But tramways engaged a certain amount of attention. Among the witnesses examined was Mr. William Coote—apparently the first appearance of that remarkable colonist in the affairs of Queensland. Mr. Coote presented himself on this occasion in the rôle of civil engineer and expert in the surveying and construction of tramways. He informed the committee that for a tramway a grade of 1 in 18 was admissible, and estimated the cost at from £600 to £1,600 per mile, according to the country to be traversed, but with a maximum grade of 1 in 20. On such a line he pronounced that two horses could draw  $1\frac{1}{2}$  tons at 5 miles per hour. Another witness, Mr. Roberts, Government road surveyor—an officer whose

staff seems to have consisted of one occasional overseer of works—gave evidence that a tram bridge across the Bremer at Ipswich from the end of Ellenborough street would cost about £3,370 “for the superstructure.” From Ipswich to the foot of the Main Range the cost of a tram would, he thought, be above £1,700 per mile exclusive of bridges, or £70,000 altogether. Mr. Tiffin, Colonial Architect, also examined, estimated the cost of a tramline at about £1 per yard—i.e., £1,760 per mile—from Ipswich to Toowoomba. The ascent of the Main Range, he considered, would be effected by means of stationary steam engines.

The members of committee were Messrs. Buckley, De Lacy Moffatt, Watts, Haly, Broughton, Raff, Taylor, and Thorn, of whom only Mr. Watts now survives. They were duly impressed by the evidence, and in one paragraph of their report informed the Legislative Assembly that “a good substantial tramway is by far the cheapest mode of transit.” They further affirmed that such a structure should be provided, commencing at Ipswich and terminating at the foot of the Dividing Range, “at which place means might be devised for reaching the summit.” That accomplished, two branches were recommended—one southward towards Warwick, and the other west to Dalby.

These, however, were but preliminary flourishes. By March of the following year the initiatory arrangements had been made for the flotation of a company to construct a tramway from Ipswich to Toowoomba, and from Toowoomba to Dalby. Mr. Charles Lilley was solicitor for the company, and under date the 1st March, 1861, he published the statutory notice of intention to apply for a Bill to incorporate the company, and amongst other things to enable the company to purchase and take lands, to construct a tramway from within the town of Ipswich, through or near to the townships of Laidley, Gatton, and Toowoomba, and thence to or near to the township of Dalby; and also, for considerations to be specified in the Bill, to acquire, hold, and dispose of, in fee-simple or in other tenure, lands to be particularised in a schedule; and further to empower the Executive Council for the time being to take possession of the tramway when completed, and to lease it to the company for a term of twenty-one years; the company to have power to levy tolls, rates, and charges for conveyance of goods and passengers.

The Moreton Bay Tramway Company had already been formed with a capital of £150,000 in 30,000 shares of £5 each. *The Moreton Bay Courier* of the previous January, in announcing the circumstance, crowed vigorously. “As we from the first predicted,” quoth the *Courier*, “this, our second public company, has been quite as successful as the Queensland Steam Navigation Company; and it speaks highly for our prosperity and is in every respect most gratifying when we find that the colony has been able to provide the required capital from its own resources.”

The facts were not so splendid. When in the Legislative Assembly the Moreton Bay Tramway Bill was introduced and referred, on the motion of Mr. Chas. Coxen, to a Select Committee. Mr. T. B. Stephens, one of the promoters, stated in giving evidence that shares to the value of £53,000 had been subscribed and a deposit to the extent of 2s. 6d. per share paid thereon. Half-crown deposits on £5 shares to the above

- total represented only a little more than £1,300 cash provided. Four of the largest subscribers also, it transpired, had made special stipulations enabling them to cover their investment by selecting land which it was intended the company should secure from the State as a set-off against expenditure on the tramway. In fact, the enterprise was very much more complicated than appeared upon the surface, and veiled, under an appearance of a spirited project for providing a public convenience, a device for acquiring from the State extensive areas of land, on a freehold tenure, at a cheap rate and in anticipation of legislation for alienation to settlers.

Mr. William Coote was again prominent among the witnesses examined. He now presented himself as general manager for the promoters of the company. He produced plans and sections of the proposed tramline, drawn from his own surveys and levels, with the assistance of Mr. Willoughby Hannam, a gentleman who had produced good recommendations from Sir Samuel Morton Peto, the eminent English contractor. The maximum grade provided was 1 in 25. The gauge was the British standard, 4 ft. 8½ in. The rails were to be of hardwood. Ultimate conversion of the tram into a railway was kept in view in laying out the line. The total cost from Ipswich to Too-woomba was estimated at £136,070, or, say, £2,200 per mile for 61 miles.

Another important witness was Mr. J. S. Turner, manager at Brisbane of the Union Bank, who testified that the bank regarded the enterprise with favour, and was prepared to render it every reasonable support.

The report of the Select Committee was favourable. One important alteration in the draft Bill was, however, suggested. The capital of the company was increased from £150,000 to £200,000, and with this modification the Bill passed through the Legislature. Its preamble very clearly indicates the prevalent sentiment with regard to railway construction among leading colonists of Queensland at that time. It declares that "It is necessary and desirable" that the proposed tramway should be constructed, so that the resources of the Colony might "be more fully developed by the increased facilities for transit." But it also pronounces that "It is expedient that the public revenues of the Colony should not be charged with the expenditure required for such purposes, but that encouragement should be afforded to private enterprise in the construction of the said tramway."

The Moreton Bay Tramway Act was passed by both Houses of Parliament, and received the Governor's assent on the 13th August, 1861. By its provisions the Legislature stamped with approval as the deliberate policy of the Colony the principle of railroad construction by private enterprise on the land-grant system. This is a point worthy to be noted, inasmuch as subsequently this system was superseded, and yet intermittent efforts have ever since been made to revive it. The Act itself is consequently of interest sufficient to justify some detailed description. It contains 296 clauses, of which the first 285 are devoted almost exclusively to the constitution of the company and its relations with land-owners and the public generally. These portions were obviously framed on the model of English railway legislation. From the 286th clause onward the contract between the company and the Colony is developed. The tramway was to be completed and open for public

traffic apparently all the way from Ipswich to Toowoomba—this point is somewhat vague—within five years. A penalty of £50 per month for non-completion thereafter is imposed, but for not longer than another five years. Consequently that penalty could not exceed £3,000 in all—a singularly mild provision. Power to appropriate lands privately owned, on due payment, was given, and the Government contracted to hand over to the company lands in fee-simple to the extent of 1 acre for every £1 expended by the company, with 25 per cent. added. That is to say,  $1\frac{1}{4}$  acre for every £1 expended. For that purpose there was to be reserved from public sale all such lands as might be agreed upon between the Government and the company to a depth not exceeding 12 miles from the centre of the completed portion of the said tramway on either side (? both sides), to be divided into lengths of 6 miles each, on each side of the said line, and the company to have the right of selection within alternate blocks only, commencing on the north side of the line at Ipswich. It will be seen that this arrangement is as loose as could be. The intention was, doubtless, to reserve the land for the company to pick from. But there is no prohibition of private sales, and no reservation till after portions of the tramline should be completed. On the other hand, the company was not required to select all of the land in the alternate blocks, each 6 miles by 12 miles—that is to say, containing each 72 square miles; but was at liberty to pick within these blocks. The company's claim was limited to 25 per cent. in excess of sums set forth as the estimated cost of the first 61 miles of tramway—seemingly to the foot of the Main Range—a total amount of £158,464, and the right to select land and receive the deeds therefor could be exercised as successive sections of 15 miles were completed. Twenty-one years after the completion of the line and the issue of deeds of grant as provided, the company was bound to convey and hand over to the Government the whole line, the land it comprised, with approaches, buildings, and rolling-stock. That is to say, the line, &c., became Government property in consideration of the adjacent lands granted and of the use and profit of the tramway for the first 21 years after construction.

It is easy now to detect in the details of the Act the prentice hand of Queensland's first legislators, and it appears probable that, had the Moreton Bay Tramway Company proceeded to operate under its provisions, disputes and litigation would have ensued. It was, however, never brought to the test. Despite the flourishes of the *Courier*, the promoters were unable to turn the concession to advantage. The company was never actually floated, and not a yard of the tramway was ever made. Among the omissions in the Act may be noted a fixed date for commencing work. It was stipulated that the line should be completed within five years as already stated, but there was no stipulation as to when it should be begun.

A change of sentiment with respect to the principle of railway construction operated on the public mind. The population, the industries, and the revenue of the Colony had expanded beyond all expectation. Its future seemed assured. Investors in the mother country were known to be willing to make advances on loan. The failure of the Moreton Bay Tramway Company to get underweigh had created a revulsion of feeling against trusting to private enterprise for constructing public works. In July, 1863, the Hon. Mr. Macalister,

at that time Secretary for Public Lands and Works in Mr. Herbert's Administration, gave notice of a motion in the Legislative Assembly to the effect that the House "being impressed with the importance of more speedy means of communication and transit than at present exist between the interior of the Colony and the metropolis" empower the Government to enter into and complete negotiations with the Moreton Bay Tramway Company for the transfer from that company to the Government of the whole of the company's interest, including all surveys, plans, and specifications, in the making of a tramway from Ipswich to Dalby, and on acquiring such interest, &c., to proceed with the tramway, issuing scrip bearing interest at the rate of 5 per cent. per annum to purchasers, such scrip to be available as cash in payment for land at Government land sales. Payment to the Tramway Company for their interest to be made in such scrip.

This ingenious proposition for helping a very lame dog over a stile did not, however, accord with the ideas of the time. The colonists were sick of promoters and impatient of half measures. The public had become enamoured of the conception of combining railway construction with immigration and settlement on the lands contiguous to the railways. Money for immigration, railways, and other public works could be borrowed. The moneys would serve to introduce population and build railways. The construction of railways would provide employment for the immigrants, and lands thrown open for settlement along the completed sections of railway would enable people to invest their savings in establishing themselves in homes, which in turn would provide traffic alike in produce and in passengers to make the railways pay. Accordingly, in 1863, debentures to the extent of £707,500 were sold, having a twenty-years' currency at 6 per cent. per annum, and went off at a premium of £2 5s. 5d. Immigration was encouraged, and people poured in from Europe, and on the 3rd September, 1863, an Act for the construction, by the Government, of railways was placed on the statute-book. The preamble of that Act mentioned that the Moreton Bay Tramway Company had abandoned its undertaking and was then in process of being wound up, and the second clause repealed the Moreton Bay Tramway Act so far as any rights to Government lands were concerned. The first clause empowered the Governor in Council to cause to be made a line of railway from Ipswich to Toowoomba, "and such other lines as may hereafter be specified." No other lines were, however, specified in the Act itself, but provision was embodied for laying before Parliament plans, sections, and books of reference of "every railway which it is intended to construct" from time to time; and a resolution of both Houses approving of same was made a condition precedent to the undertaking of every such work. There was also power given to appoint a Railway Commissioner. The bulk of this Act provided the machinery necessary for appropriation of privately-owned lands and the general management of traffic, &c.

It is to be remarked, also, that power was expressly reserved for private persons to make branch railways to connect with the Government line. A singular provision, which indicates how unsettled were the ideas of legislators at that time regarding what might become the railway policy of the Colony, was embodied in the Act, giving power to the Government to lease the railways or any part of them for any period not exceeding seven years to any person willing to deal. One

year later an amending Act of a few clauses was passed, but introduced no alteration of principle, being chiefly framed to patch sundry flaws in the detail of the principal Act.

Legislative sanction having been obtained for the construction of a railway by the Government, to start from Ipswich and be pushed to Toowoomba, Ministers addressed themselves to the task. No one of them had any previous experience. The Premier was an English barrister and trained politician. Most of his colleagues were squatters. His Minister for Works at that juncture was Mr. Arthur Macalister, an Ipswich solicitor, who had sat in the New South Wales Legislature. Professional advisers there were none of established reputation among the Queensland colonists. Mr. Coote, no doubt, was ready to assume any responsibility which might be placed upon him. Just as it used to be said of Lord John Russell that his confidence in himself was so thorough that he would have been willing at a moment's notice to take command of the Channel Fleet, so Mr. Coote was prepared to engineer a railway system, to plan a town hall, as he subsequently did with some credit for Brisbane, to edit a newspaper; or to embark in a sericultural undertaking. Probably there has never been in Queensland a colonist with more varied and adaptable talent. But the Ministry preferred to lean on some one of abilities not quite so elastic. A professional adviser was found in Mr. A. Fitzgibbon, an engineer, who presented himself with a reputation already established by success in connection with railway work in New Zealand. Mr. Fitzgibbon's accomplished work had not indeed been of great magnitude. He had engineered the construction merely of a short line for mineral traffic—the Dun Mountain Railway—on the 3-feet 6-inch gauge. This line has long since been done away with. In New Zealand, however, as early as 1860, the question of a suitable gauge had been much discussed. The New Zealand Government had sought and obtained counsel from the then greatest living authority in Great Britain, Robert Stephenson, who had advised a 5-feet 6-inch gauge as best suited to the circumstances of that colony, although the first line there was constructed on the 5-feet 3-inch, known as “the Irish gauge.” Mr. Fitzgibbon, however, recommended the adoption, for the proposed Queensland line, of the narrow gauge, 3 feet 6 inches. His counsel was followed, and up to the present time the adoption of this gauge has never been regretted. Every railway since constructed by the Government in Queensland has been built to this gauge without question or hesitation.

The choice of a gauge is a subject of so much importance that it can scarcely be passed over without some remarks. The sagacity of the engineer who in 1863 recommended, and of the Minister who adopted, the 3-feet 6-inch gauge for Queensland, has received strong endorsement from the subsequent history of railway construction in New Zealand, and still more recently in South Africa. The wealthier and more populous colonies of Victoria and New South Wales had, even earlier, adopted in the former the “Irish gauge of 5 feet 3 inches, and in the latter the standard English gauge of 4 feet 8½ inches,” while in South Australia the earlier lines are on the 5-feet 3-inch and more recent ones on the 3-feet 6-inch gauge. In New Zealand, while the earliest—the Canterbury—line was constructed on the 5-feet 3-inch, and later the Auckland-Drury, Dunedin-Clutha, and Nelson-Foxhill, and other lines were originally laid out or projected on the English standard,

4 feet 8½ inches, subsequent to 1870 every one was relaid on the 3-foot 6-inch gauge, which has ever since been the width of all Government railways there as in Queensland. What was sought to be achieved in Queensland was the substitution for highways, which themselves had to be made, of some system of railroads permitting of the employment of locomotive engines to draw trains of carriages and wagons at some approach to speed, and without interruption by weather condition or consideration of day or nights. It was urged at the outset, and is acknowledged now, that many miles of railroad permitting of a speed of 30 miles per hour, and of loads of, say, a couple of hundred tons, would be better value for a given outlay than fewer miles of railway allowing of a speed of 50 miles per hour and loads of, say, 400 tons. In reference to this matter, we cannot do better than quote from a recently published work relating to Queensland colonisation:—

“Few, except professional railway engineers or persons who have had to give the subject special attention, understand in how many respects a narrow gauge ministers to economy in construction, especially in rough and broken country. The uninitiated might suppose that a difference in cost between, for instance, the Queensland 3-foot 6-inch railways and those of the New South Wales at 4 feet 8½ inches, would be arrived at by a simple calculation of proportion. This, however, is far from being the case. It is not merely in dimensions of cuttings and embankments, width of bridges, length of sleepers, weight of rails, and amount of ballast, that differences exist. In surveying a route for a railway the adoption of the shorter course permitted by the narrower wheel base gives extraordinary advantages. Obstacles can be avoided by sharp detours; the track can be twisted round this cliff-face or that ravine, and by such and similar facilities miles of distance saved between two points. . . . The inhabitant of Great Britain is likely to imagine that in this remote dependency, the occupation of which by colonists had scarcely commenced in earnest half-a-century ago, the people have, as contrasted with their stay-at-home brethren in the mother country, a very insignificant proportionate provision of railroads. It must surprise many to learn that in reality the contrary is the fact. The United Kingdom, with a population of over 40 millions, has for their convenience a little less than 22,000 miles of railways. In Queensland, with a population little exceeding half-a-million—that is to say, about one-eightieth of the population of the British Isles—a proportionate railrage would be about 274 miles. The actual mileage in Queensland is 2,801 miles, only about 10 miles short of the lines of railway in New South Wales, where the British gauge of 4 feet 8½ inches has been adopted, and the cost of construction has been just about double that of the Queensland lines—viz., £38,477,269 against £19,320,902.”

It is in this connection particularly interesting to contrast the advantages possessed by the wider gauge over the narrower. Foremost come the rates of speed. For the doubled cost it might be expected that some approximation to a proportionate increase of speed would be secured. This is very far from being the fact. A fair comparison seems to be afforded by the run over the New South Wales and the Queensland lines between Sydney and Brisbane. From Sydney to Wallangarra, a distance of 490 miles, the express train runs—starting at 5:20 p.m. and arriving at 10:55 a.m.—in 17 hours 35 minutes. This

shows a speed, not allowing for stoppages, of just about 27 $\frac{1}{2}$  miles per hour. From Brisbane to Wallangarra, 233 miles, the time occupied is 10 hours 30 minutes, and the rate of speed, not allowing for stoppages, is 23 $\frac{3}{10}$  miles per hour. So that while the cost of construction of the wider gauge line has been double that of the narrower, the gain of speed has been only about 20 per cent.

As regards the comfort of passengers in the wider carriages as contrasted with the narrower ones, travellers find no appreciable difference. Vibration is no greater in the one than in the other.

On the whole, therefore, it may be affirmed that the choice of the 3-feet 6-inch gauge for the first Queensland railway, and subsequent adherence to that system of construction, have proved eminently satisfactory, and if no extraneous influences came into operation would probably be continued for generations to come; until, in fact, quite different conditions relating to density of population and amount of internal trade should have come into existence. But a disturbing factor has been introduced by the federation of the Colonies. It has been lost sight of by the majority of people, that the very first impulse which was given to the comparatively recent movement which resulted in Australian Federation proceeded from the representations of Major-General Edwards, a British emissary, who adduced as a prime reason for federation the imperative necessity, for strategical reasons connected with the military defence of Australia against foreign aggression, of all the railways being brought to a uniform gauge, to permit of the rapid transference to any threatened part of troops, artillery, material, and supplies. This subject, although it has been for a long time in abeyance, is sure to receive renewed attention when the Inter-State Railway Commission provided for in the Federal Constitution is brought into existence, and may vitally affect the future of Queensland railways.

Mr. Fitzgibbon's work in connection with the construction of the first Queensland railways showed that he was a fairly capable engineer. But apparently he was something more. The arrangement he effected with the Ministry in connection with his engagement as Engineer-in-Chief showed that he was more than a match for them all in striking a bargain. Instead of engaging at a fixed salary, he contracted to effect the surveys and specifications, and execute all the engineering and the supervision of the actual construction by contractors, for a lump sum per mile, providing and paying his own staff. The amount was about £400. Tenders for the first section—Ipswich to Grandchester, 28·88 miles—were duly called for, and the eminent English firm of Peto, Brassey, and Betts obtained the preference, sending out to represent them a gentleman named Wilcocks. The formality of cutting the first sod was carried out with all ceremony at North Ipswich on the 25th February, 1864, and on the 31st of July in the following year this portion of the line was opened for traffic with great pomp.

By the beginning of 1866 the construction had been effected up the Main Range, which was ascended by a system of contouring, although at one time there was an idea of climbing it by zig-zags, in imitation of sections of the New South Wales railway over the Blue Mountains. The extension towards Warwick was in progress. Serious dissatisfaction with Mr. Fitzgibbon's methods had, however,

been growing. The cost of construction had enormously exceeded his estimates. He had displayed a determined preference for procuring from British firms expensive bridges and station buildings of iron, instead of utilising the timber of the country. An idea was prevalent that he benefited pecuniarily by dispensing orders for such commodities. No proof of such being the case was, however, ever adduced. The popular uneasiness found expression in Parliament. Mr. Macalister, the Minister for Works, had steadfastly championed Mr. Fitzgibbon, and shared his unpopularity. In his official report in March, 1866, Mr. Fitzgibbon unflinchingly dealt with the censures which had been current. If his estimates of cost for the line as far as Toowoomba had been exceeded by £422,860, he had felt it his duty to lengthen the ascent of the Main Range by 9 miles beyond the originally surveyed route upon which his estimate had been framed. By so doing he had been enabled to secure an average gradient of 1 in 70 instead of 1 in 50 as previously designed. He pointed to the gain in trainloads, to the reduction in wear and tear, in maintenance, and so forth. Besides, he pointed out, his under-estimate of cost was a mere trifle. The railway from Liverpool to Manchester, only 31 miles long, had cost £820,000, which was four times as much as the original estimate. The London and Birmingham line, for which the estimate had been £2,500,000, had cost £4,500,000. He seemed to consider it very unreasonable for people to grumble at a trifling under-estimate of £400,000 or so after those. He detailed the difficulties surmounted in ascending the range. There had to be 126 curves, of which forty-nine were of 5 chains radius, and averaged 7 chains long. As for gradients, the steepest were 1 in 50, and there were but 4 miles 14 chains of that pitch. The average was 1 in 70.

These replications do not seem to have soothed the public irritation. In Parliament there were caustic remarks. It was hinted that if Mr. Fitzgibbon added 9 miles to the length of railway it was just as likely he considered the addition to his commission as the reduction of the gradients. Even the rates and the Railway Commissioner came in for a share of querulous complaint. The Commissioner was Mr. A. Orpen Herbert, Under Secretary for Works. The combination of offices was deprecated. One member with prophetic inspiration pronounced that the Railway Commissioner should not be closely dependent upon a political superior. As Under Secretary, Mr. Herbert was the Minister's subordinate. The rates for goods were absurdly high. The traffic by team over the road from Bigge's Camp to Ipswich was six times that carried by rail. Then, again, the short section of the present Central Railway which had been begun from Rockhampton to westward was cavilled at. Its authorisation had been merely a sop to Northern members, and unjustified by economic circumstances. The length, 30 miles, was too little to be of any use; also, it should never be increased. The first sod of this line had been turned on 7th September, 1865, Mr. Plews being the engineer-in-charge.

When Mr. Fitzgibbon's report was presented to Parliament the Colony was in the throes of a terrible financial agony. A commercial crisis in Great Britain had broken a number of banks and brought numerous trading firms crashing to ruin. The Queensland Treasury was empty. A loan just before authorised was unfloated. Advances

in anticipation of its flotation, promised by the Agra and Masterman's Bank, were rendered unavailable by the fall of that institution. Peto, Brassey, and Betts, the contractors, suspended payment and their operations came to a standstill.

The very principle of railway construction by the Government appears to have fallen into some disfavour in common with every antecedent act. Mr. Robert Cribb, in October of this disastrous year, seems to have judged the time opportune for reviving proposals for railway construction by private enterprise. He moved in the Legislature towards that end. His proposals were that to a company undertaking railway-making land for the line should be granted free of cost; that selection of land to the extent of an acre for every £1 spent in railway construction should be conceded; that the Government should provide rolling-stock and lease it to the company on terms to be arranged; that the Government should have the right to repurchase the line ten years after its construction, or at any quinquennial period ensuing, on paying the whole cost of its construction with the amount of three years' profits added. This was the second attempt to substitute an alternate private enterprise for or with Government action. Summarised, its purport was that the company should be paid in land for making the railway, and later paid over again in cash the whole cost and more, and still keep the land. But, distracted as was the public mind at that epoch, it was not sufficiently unbalanced to entertain such a proposition. Mr. William Brookes, in the Legislative Assembly, probably voiced the popular opinion when he declared that the scheme was apt to develop into a gigantic swindle. Mr. Cribb did not persist, and the affair passed over.

When the Government was in its direst straits, and was casting about for financial support, a combination of banks doing business in Australia offered a certain amount of accommodation subject to conditions, one of which was that there should be a discontinuance of public works. The politicians, however, at this juncture showed themselves more sagacious than the money-brokers. They pronounced that such a prescription would not allay but aggravate the sufferings of the community, and peremptorily declined the overture. It is not necessary here to detail the devices by which the means for carrying on were secured. It will suffice to state that railway construction was resumed. Mr. Fitzgibbon's engagement was not renewed, and his functions were handed over to salaried engineers in the service of the Government. It was then that Mr. Henry Stanley, C.E., first took charge of Queensland railway construction, the supervision of which was partitioned for some years between that clever young engineer and a gentleman somewhat his senior, Mr. Thorneloe Smith, C.E. The latter in after years retired from the Government service to carry on his profession independently, and was nominated a member of the Legislative Council. Mr. Stanley, continuing his connection with the Government, became Chief Engineer for the Southern Railways and ultimately Chief Engineer of the Queensland Railways, a position from which he has only just retired.

For three or four years after the financial crash of 1866 the results of railway enterprise in Queensland were exceedingly disheartening. It was no uncommon incident for a train to travel from Toowoomba to Ipswich carrying only two or three passengers, and

goods traffic was deficient in about the same proportion. The mere running expenses were not nearly met by the earnings, while the prospect of such an achievement as paying interest on cost of construction appeared quite visionary. This railway was slowly extended from Toowoomba to Dalby—an inexpensive work, the line passing mostly over easy undulating or nearly level country, generally treeless. It was opened for traffic to that township in April, 1868. Early in 1871, the Southern branch had been carried to Warwick. These two extensions penetrated the very heart of the Darling Downs, and traversed the richest conceivable agricultural lands. But at that time, and for almost a quarter of a century later, the traveller looked out of the car windows, for hour after hour as the train sped along, upon landscapes which to the very horizon were devoid of every indication of human presence, save for the endless miles of wire fencing and the flocks of sheep which grazed in the vast enclosed paddocks and afforded evidence, in conjunction with the occasional distant view of head-station buildings, that these were domesticated and not wild animals.

As has already been stated, the construction of railways in Queensland was approved as one part of a tripartite policy. Railway construction, immigration, and settlement were to be proceeded with simultaneously, and each process was to support and be the complement of the others. The lands made accessible by the railways were to be populated by the immigrants and earlier colonists. The construction of the lines was to furnish employment and wages for some. The settlers were to provide passenger and goods traffic to make the railways pay. Two out of these three essential components of a complete public policy were carried out. But the third was omitted. Immigrants were poured into the Colony by tens of thousands, each endowed with a land-order entitling him or her to take possession, without payment, of 18 acres of land immediately after landing, and of 12 acres more after having resided two years in the Colony. The railways were duly made to reach and penetrate the most valuable agricultural tracks in the Colony. But the lands so traversed were not made available for the immigrant or intending selector. Mr. Jordan, the Immigration Agent of the Colony in Great Britain, had been authorised to inform persons contemplating emigration that agricultural reserves would be provided in the best localities in the country. Pages could be written dealing with the deplorable manner in which faith was broken with the immigrants, and the enduringly calamitous consequences of the selfish resistance which pastoral leaseholders successfully opposed to the opening for settlement of the lands bordering the railway in West Moreton and on the Darling Downs. Even the instruments ostensibly meant to facilitate such settlement—the land-orders—were ingeniously perverted into weapons for beating it off. They were made transferable, and the immigrants, learning that the promised land was barred against them, sold these orders at rates below their face value. They were purchased by runholders who used them to secure in fee-simple, by virtue of their pre-emptive rights and by other devices, considerable tracts of the very lands which the railways had made accessible and valuable for agricultural settlement.

The operation of a new Land Act in 1868, by securing a considerable amount of subdivision of lands in, among others, the West Moreton and Darling Downs districts, and a consequent increase of

resident population and of agricultural industry, improved conditions in connection with the traffic earnings to an appreciable extent, which was still further enhanced in 1872 by the discovery of extensive deposits of tin at Stanthorpe.

Thus encouraged, the community regained its spirits, and extensions and additional lines were authorised by the Legislature in unbroken succession. The prolongation westerly of the line from Rockhampton *via* Westwood was undertaken, and the gap between Ipswich and the metropolis was filled up. An extension of the line westerly beyond Dalby was contemplated, and the principle of construction by the Government appeared to have won general acceptance when, in 1874, Mr. Macalister again attaining the Premiership, he included in his colleagues Mr. Thomas McIlwraith, to whom he entrusted the portfolio of Public Works. Mr. McIlwraith had not filled that position many months before he astonished the community by announcing that he had received, and entertained, overtures from a Melbourne firm, the purport of which was that, in consideration of grants of land along the proposed route, a body of capitalists would undertake to build a line of railway to traverse the interior of the Colony from Roma, in the Maranoa district, right to the shore of the Gulf of Carpentaria, the Government on their part to extend their Western line from Dalby to Roma. The boldness of this conception and the magnitude of the proposed enterprise, together with the immense alienations of territory which it involved, seemed to stun the public. Politicians who preferred to adjust themselves to prevailing opinions could get no definite clue as to how the popular preference would ultimately trend. Mr. Macalister, as Premier, hesitated. He personally travelled to Melbourne and conferred with Messrs. Collier and Co., the ostensible promoters of the scheme. On the night of his return to Brisbane, a reporter from the *Courier* succeeded in getting access to him within a few hours after his arrival, and in next morning's paper was published a full account of the conversation which ensued, in the course of which Mr. Macalister had stated that he had decided to reject the project. This was the first intimation his colleagues received of the Premier's determination. Mr. McIlwraith was furious at the indignity, and, of course, displeased at so peremptory a rejection of a project which he, as Minister for Works, had endorsed. He flung his resignation to Mr. Macalister the same day. Thus the third attempt to bring into actual operation the principle of railway construction by private enterprise fell through, although, as already pointed out, the principle itself was recognised and approved by Statute. Railway affairs now continued to move in the ordinary groove. Mr. Macalister's Administration was succeeded by that of Mr. George Thorn in June, 1876, and that in turn by a Government formed by Mr. John Douglas in March, 1877, which lasted till January, 1879. During the years covered by these three Ministries the connection between Ipswich and the metropolis was completed by the construction of a railway bridge spanning the Brisbane River at Indooroopilly; the Western railway was extended from Dalby towards Roma as far as nearly to Dulacca; the line from Rockhampton pushed on almost to Emerald, and Mr. Fitzgibbon's costly iron bridge over the Bremer Creek at Ipswich, together with a loop line of about a couple of miles to which it led, were abandoned, a

more direct track through the town being substituted, reducing the running distance by over a mile.

Towards the close of this period attention was drawn to the increasing burdens laid upon the taxpayers by the growth of the public indebtedness. Up to the end of 1875 the amount of money borrowed, and of which the greater portion had been expended on railways, had grown to within £50,000 of eight millions sterling, involving a charge for interest alone of about £450,000 per annum. This was regarded as involving a heavy drain upon the earnings of a population which numbered then only 181,288 men, women, and children. Mr. Douglas invited the Legislature to inaugurate a more judicious and prudent system than the happy-go-lucky financial methods which had up to that time been tolerated. Since the creation of railways conferred upon tracts of country traversed by them or rendered convenient for settlement or other uses by their proximity, enhanced value had made alienation at fairly handsome prices possible, those increments of value ought, it was urged, to be applied to meeting the cost of construction, providing funds for paying interest, and even for extinguishing the capital liability. A measure—the Western Railway Act—had been passed in August, 1875, Mr. Macalister being Premier at the time.

Premising that the making of a railway from Dalby to Roma would be of great public advantage, this Act introduced a new method of finance in connection with such a work. A Western Railway Reserve was by it created, and the extent of such reserve was defined by drawing a straight line from Dalby to Roma, producing such line 50 miles beyond the latter town, and measuring off 50 miles on each side of such line. This constituted a reserve of about 15,000 square miles of country. The new principle introduced by the Act was in a provision that all moneys derived from the alienation of Crown lands within the reserve were to be paid into a special trust account in the Treasury, and to be applied, firstly, in payment of interest at the rate of 5 per cent. per annum upon moneys advanced by the Treasurer for railway construction within such reserve; and, after repayment of principal and interest, to the credit of such account, and to be expended in railway works within the reserve. The construction of a line from Dalby to Roma was authorised, and power given to the Colonial Treasurer to make advances not exceeding at any one time £250,000 to the Western Railway Account.

In 1877 the principle of the above Act was given an extended application by the passing of a Railway Reserves Act, which created immense reserves in connection with the Southern and Western, the Wide Bay and Burnett, the Central (Rockhampton), and the Kennedy (Townsville) Railways, and authorised the Government to make railways (not specified) within such reserves, subject to conditions identical in all essentials with those imposed by the Western Railway Act.

In January, 1879, the Douglas Administration was displaced, and Mr. McIlwraith succeeding to the Premiership, found himself for the first time in a position to give effect to the conceptions of his comprehensive mind, and to communicate to the affairs of the Colony the impulse of his bold and enterprising spirit. Not satisfied merely to continue the westerly extensions then in progress of the Southern and Central railways, he invited the Legislature to acquiescence in a number of fresh

constructions. From Warwick the southern line was to be advanced by Stanthorpe towards the New South Wales border, there ultimately to connect with the trunk line which the Government of that Colony was pushing to a point of junction. A new railway starting from Townsville and aimed at Charters Towers was an item in his programme. Another to connect Maryborough with Gympie had also a place, and from Bundaberg a line was to be made to the mining district of Tennyson, of which Mount Perry township is the central settlement. The propriety of the lastmentioned construction was sharply criticised, but, by intimations that any curtailment of his list of railways would involve reconsideration of all, resistance was overcome. To this period also belongs the authorisation of the branches from the Central Railway to Springsure, and to Clermont; of an offshoot from the southern line to Harrisville; and of a railway from Brisbane to its nearest seaside watering place, Sandgate, this being the first instance in which a line had been adopted for what may be termed recreative convenience. Previously development of the productive resources of the Colony had been the only justification which passed current for the expenditure of loan moneys on railway making. The time had, however, arrived when the growth of metropolitan population warranted the expectation that a line such as this would command ample passenger traffic to pay expenses and interest on prime cost and probably to yield a profit.

Mr. McIlwraith now found himself sufficiently strongly entrenched in power and popularity to give full scope to his predilection for his earlier scheme. In 1880 he secured the adoption by Parliament of "An Act to Provide for and Encourage the Construction of Railways by Private Enterprise." This very important Act enlarged and made more specific the general powers previously existing by virtue of earlier legislation. Its most essential provisions authorised the Governor in Council from time to time to enter into a provisional agreement with any persons or corporate body for the construction of a railway in or through any part of the Colony, and to make regulations governing traffic and rates on the railway when in operation. They permitted the grant in fee-simple to the railway-makers of alternate blocks of Crown lands on both sides of the line—such blocks not to have more than 5-mile frontage each to the line—on completion of each section of 50 miles of railway, and on terms to be arranged. They empowered the Government to purchase, at any time after five years from the final completion of a railway, the railway, with the rolling-stock and appurtenances, at a valuation. As an alternative, these provisions permitted an agreement on the basis that, at the expiration of twenty-one years from the final completion of the line, the railway, with rolling-stock, track, and appurtenances, should become the property of the Government; but in such agreement the conditions relating to the grants of land were modified. It was stipulated that any such provisional agreement would have to be submitted to Parliament, and to receive legislative sanction by an Act before becoming binding on the colony; and power was reserved to the Legislature to eliminate or alter details of such agreement. A very significant stipulation was embodied in the Act prohibiting the contractors from employing "in the construction of the railway at any place distant more than two hundred miles from the shores of the Gulf of Carpentaria, any Asiatic or African not of

European descent." The formal title of this Act was "*The Railway Companies Preliminary Act of 1880.*"

Had there existed at any time doubt as to the particular undertaking which Mr. McIlwraith desired to facilitate by this Act, the provision last referred to above must have dissipated it. But, in fact, it was, from the outset, fully recognised that this was simply a revival by Mr. McIlwraith, as Premier, of the great project of a railway from the South-western interior to the Gulf of Carpentaria, which as Mr. Macalister's Minister for Works he had been prevented from accomplishing. This, the fourth attempt to graft upon the railway policy of the Colony the principle of construction by private enterprise, on the land-grant system, now appeared almost assured of a practical issue. The new Act was not permitted to become a dead letter. Preliminary negotiations had, doubtless, preceded its introduction. A British syndicate promptly presented itself to enter into an agreement, in pursuance of the Act, with the Government, and the execution of a conditional contract was effected. As representative of that syndicate, Major-General Feilding presented himself in Queensland, and lost no time in proceeding with a numerous *entourage* to examine a route, from a point on the Western line to Point Parker, near the south-western embayment of the Gulf of Carpentaria, for a line of railway. These preliminaries took time, however, and meanwhile Mr. McIlwraith's hold on the country was weakening. Although he had been able in the Legislature to repulse every attack upon him, his popularity had been shaken by the determined fashion in which Mr. Samuel Griffith, leader of the Opposition, assailed his conduct in connection with various contracts with British shipowners, and especially with regard to the purchase and freightage of large quantities of steel rails for railways under construction. The details also of the preliminary agreement for the so-called Transcontinental Railway to the Gulf afforded many openings for cavil. An attempt to carry the application of the land-grant further, and apply it to the construction of an extension westerly to the Warrego of the Dalby-Roma line, at a point whence the Gulf line was to commence, was so weakly supported on the second reading of a Bill to authorise that project, that the greater scheme itself was obviously in danger of failing to secure Parliamentary endorsement when the time should arrive for it to be confirmed by specific enactment. When, therefore, after a general election, in 1883, on the opening of Parliament, the Opposition candidate for the Chairmanship of Committees was elected in lieu of the member supported by the Government, the Government resigned, and Mr. Griffith succeeded to the Premiership, further developments of railway construction on the land-grant principle were plainly at an end for the time. Thus terminated, amidst every token of popular disfavour, the fourth attempt to introduce that system.

The party led by Mr.—by this time become Sir Thomas—McIlwraith had claimed support on the ground, among others, that to them belonged the merit of bold progressiveness. The land-grant railways, advocated by them and strenuously opposed by the party led by Mr.—shortly afterwards Sir Samuel—Griffith, were to open up the far interior, and by introduction of large expenditures of capital, and by settlement, by the railway syndicates, of population introduced without cost to the Colony, to stimulate every department of industry and trade.

Sir Samuel Griffith, on becoming Premier, sought to dispel the allegation that the party he led, and which had appropriated the style of the Liberal Party, was one of timid counsels and unprogressive methods. In addition to and as a counterpoise to their land-grant railway proposals, the McIlwraith Administration had demanded and obtained Parliamentary sanction to borrow and expend on lines to be constructed by Government, and for other public works, £3,000,000 sterling. As a set-off against these impressive evidences of enterprising spirit, Mr. Griffith advanced a proposition that Parliament should authorise the raising by loan of no less a sum than £10,000,000 sterling, to be procured in suitable instalments, and expended on railways and other reproductive public works. The Legislature acquiesced, and nearly £10,000,000 sterling were added to the Colony's pecuniary obligations, and the extension and creation of railways by the Government were pushed on with a great accession of vigour and rapidity.

The "Liberal" Party, led by Sir Samuel Griffith, had perhaps been drawn by the current of political circumstances further in antagonism to the principle of railway construction by private enterprise, and especially to the Land Grant System, than deliberate conviction would have carried them. Sir Samuel Griffith himself had not on the first mootings of the "Transcontinental" project been unfavourable to the general idea. But antagonism to the particular scheme embodied in the provisional agreement with the syndicate of which General Feilding was the representative, leading to a long and ultimately an embittered contention, had unavoidably led to denunciations not only of that one project, but of the general principle. Preference for Government construction of railways as against construction by private persons thus became a test subject of prime political significance, indicating a demarcation between two Parties in the public policy of the Colony. Many years now elapsed before proposals to substitute, even in a subsidiary degree, private enterprise for Government action in this respect, or even a suggestion favourable to the latter, had a chance of being listened to with tolerance. It was not, indeed, until the old parties had been broken up and partially fused by a coalition, effected in 1890 between Sir Samuel Griffith and Sir Thomas McIlwraith, that the conviction that railway construction exclusively by Government was the Settled Policy of the Colony, was disturbed.

Political subjects have been dealt with, in this paper, only so far as reference was unavoidable in explaining the course of the influences affecting the creation, distribution, and ramifications of the Queensland Railways. It is outside the scope of this outline to detail the successive changes of Administration, except so far as they bore upon railway matters.

The Griffith Administration, pledged by antecedents to concentrate its energies exclusively upon the system of railway-making by the State, distributed such favours with a lavish hand. To their enterprise was due the commencement of new lines, starting from Mackay, from Cairns, from Cooktown, and of numerous branches from and considerable extensions of pre-existing railways. It would uselessly occupy space here to give a list of the constructions attributable to their initiative. A reference to the table, on a subsequent page, showing the dates of opening of the different sections of lines constructed from

first to last, will afford the information. Although Sir Thomas Mellwraith, in 1888, routed Sir Samuel Griffith at a general election and regained the Premiership, neither his Administration, nor that of Mr. Morehead which shortly succeeded it, made any attempt to revive the old contention and interfere with the subsisting system. Mr. Morehead's Administration, indeed, was beaten and forced to reconstruction on a proposal to borrow a million sterling for railway-making while refusing to specify the particular lines intended to be made.

When, however, Mr. Morehead's Administration resigned, and was succeeded by the Griffith-Mellwraith Coalition, already mentioned, not much time elapsed before it became apparent that the railway policy of the last-mentioned statesman had been adopted as the policy of the Government. A Bill was introduced by Sir Samuel Griffith "To make provision for the construction of railways by joint stock companies, and to authorise grants of Crown lands in aid of such construction." This Bill received the assent of both Houses, and on the 16th September, 1892, was entered on the Statute-book of the Colony under the title of "*The Railways Construction (Land Subsidy) Act of 1892.*" Its provisions were in the main repetitions of those embodied in "*The Railway Companies Preliminary Act of 1880.*" The third clause stipulated that "whenever the construction of a line of railway between specified termini, with or without the definition of a specified route, has been approved by a resolution of both Houses of Parliament, the Minister, with the sanction of the Governor in Council, and subject to the provisions of this Act, may make a contract with a company for the construction or for the construction, maintenance, and working of such railway."

In pursuance of this provision, Sir Samuel Griffith later introduced in the Legislative Assembly a resolution to the effect that the House approve of the construction of railways specified to the number of ten. These comprised a line from Charleville to Cunnamulla, and one from Charleville to Thargomindah. This was in fact a revival of Sir Thomas Mellwraith's Warrego Railway Bill, which, after passing its second reading, had been shelved in consequence of the then growing hostility to land-grant railway proposals. In addition, the list appended to Sir Samuel Griffith's resolution comprised a railway from Charleville towards the western boundary of the Colony, and to pass within 30 miles of Windorah; a line from Degilbo to Gayndah, in the Burnett district; an extension of the Central Railway from Longreach to Winton, and another line also from Longreach towards the western boundary of the Colony and to pass within 30 miles of Boulia township; a line from Hughenden to Winton, and one from Hughenden towards the Western boundary of the Colony, passing within 30 miles of Richmond and of Cloncurry. From Granite Creek, on the Cairns-Mareeba railway, a line to Georgetown, the capital of the Etheridge Gold Field, was in the list, and, finally, one from Normanton to Cloncurry.

In introducing the resolution to which the above formidable list formed a pendant, Sir Samuel Griffith intimated that the loan indebtedness of the Colony had already reached dimensions which could not for some time to come be expanded without imprudence even if further borrowings were practicable, of which he expressed himself more than

doubtful. Members generally seemed of the same mind, and the Minister experienced more difficulty from the eagerness of supporters to make additions to the list of railways than from opponents of the private-enterprise, land-grant methods. The resolution was duly adopted by both Houses of Parliament. But it remained a dead letter. No companies presented themselves with offers to construct any of the lines so authorised. Thus the fifth attempt to engraft railway construction by private enterprise and accompanied by extensive grants of land, although approved by Parliament, proved abortive. Although it would have been unreasonable to expect that the State could, even when the revenue recovered its buoyancy and money could again be borrowed plentifully and cheaply, enter upon undertakings so numerous and extensive as the railways in the above list, there ensued a sufficient revival of activity on the ordinary system of railway-making by expenditure of loan moneys. Two of the lines projected—viz., that from Charleville to Cunnamulla, and that from Hughenden to Winton—have since been so made, while a variety of branches from and feeders to the earlier lines have been added.

The demand for short lines for the advantage and convenience of fairly populous localities, however, greatly exceeded the number which responsible Ministers could perceive justification for undertaking. By way of compromise, during the Administration of Sir Hugh Nelson, a short Act was passed introducing a principle new to the Colony. The purport of this Act is "to facilitate the construction of Government railways by empowering local authorities to guarantee the profitable working thereof, and to secure the fulfilment of every such guarantee by levy of rates, and for other purposes." In effect, local authorities could, by virtue of this Act, strengthen applications for railway construction to serve a particular locality, by entering into a guarantee to make good to the State one-half of any deficiency resulting from the working of the line during the first fourteen years. This Act was passed in November, 1895, and since then four lines have been made subject to its provisions—viz., separate lines from Maryborough to Pialba, a seaside resort, 25 miles, and from Rockhampton to Mount Morgan, 24 miles, and short branch lines, one from Hendon to Allora, on the Darling Downs, and a suburban branch of 3.65 miles from the neighbourhood of the metropolis to Enoggera. The experiment has been as yet but brief. Of the four lines above mentioned, only one—the Mount Morgan line—yielded profit. In three years up to June, 1900, the Allora branch showed a loss, on working and interest on cost of construction, of £1,084, the last period being the worst. The Pialba line had a deficit during the same period of about £6,000, but its results had been gradually improving. The Enoggera branch in one year showed a deficiency amounting to £1,582 odd. Combined, these three lines made a loss of about £10,250, of which one-half had to be paid by the State—say, £5,125. But, on the other hand, the Mount Morgan line yielded, up to the same date, a net profit of £5,785, so that, taking the transactions under "*The Railway Guarantee Act of 1895*" altogether, a fairly handsome profit has been realised by the Treasury.

During the year 1897, a new proposition having for its object the extension, by private enterprise, of an existing Government railway was made. The holders of several groups of mineral leases, situated

about a hundred miles westerly beyond the terminus, at Mareeba, of the Government railway from Cairns, desired to have that line extended to their properties. They offered to make the desired extension at their own cost. A Bill was accordingly introduced to confer upon the company the necessary powers. The essentials of this Bill conceded to the undertakers the right to make the railway—about 100 miles long—with branches not exceeding 10 miles each, all to be on the standard Queensland gauge; to use vacant Crown lands for the tracks; and generally to equip and work same, subject to restraining conditions framed to conserve public interests. In addition, they were granted, in lieu of their existing ordinary mineral tenures, leases for fifty years of their mineral lands to the extent of 2,000 acres free from the usual labour conditions but subject to the usual annual rental of £1 per acre per annum, and with right to assign. They were empowered to charge for passengers and goods at rates 50 per cent. above those then established on the Government line. After fifty years, Government had the right to purchase the railway. There was not, it will be noticed, any demand for free grants of land. The Bill passed into law, and the company lost no time in commencing the construction of the main line. Early in 1901 it was opened for traffic along its entire length, from Mareeba to Mungana—a solidly constructed railway with several substantial iron bridges. Thus came into existence the first railway made by private enterprise in Queensland, known now as the Chillagoe Railway.

The example thus set was, after no long interval, followed by a number of imitators. During the year 1900, the Philp Administration holding office, applications for similar concessions were made by several other proprietories owning or holding leases of mineral lands. Five such proposals were entertained by the Government, and separate Bills dealing with each proposed railway concession were introduced by the Minister for Railways. Determined and uncompromising antagonism to these Bills was presented by a compact body of members representing the Labour interest, who now dominated the Opposition. The old "Liberal Party" had resisted private railway construction chiefly on the grounds of the mischiefs they held to be inherent in the alienation of extensive tracts of territory to proprietories conducted by directorates not resident in or concerned in Queensland otherwise than as investors desirous of obtaining the largest possible interest on their capital. But the Labour Opposition went further, and denounced the principle of permitting outside proprietories to own and control conveniences for conveyance, independently of any question of free grants of land. In no one of the five Bills for private railways introduced and fathered by the Government was there any proposal to give grants of land, other than the strips over which the proposed lines would run. In each of them there was embodied a clause prohibitory of the employment of coloured aliens in the construction, maintenance, and working of the railways, and on the mineral lands associated therewith. In all there was provision made for the ultimate acquisition of the railway and accessories by the State. General reservation of public interests was secured by numerous clauses. The rates, however, to be charged were permitted to be one and a-half times those charged on Government railways. The Labour Opposition objected, however, to the principle of private ownership under any conditions. Four of the

Bills were forced through the Assembly by a special adjustment of the Standing Orders, and drastic application of new and stringent facilities for application of the closure. Of the five lines proposed, three were formally styled tramways, and for two of these a minimum gauge of 2 feet was permitted, qualified in one instance by the words: "Or upon such other gauge as the Commissioner (for Railways) approves or prescribes." As, however, permission to use locomotive engines was given in each of these Bills, they were essentially Railway Bills. In the case of the third of these, the prescribed gauge was the Queensland standard, 3 feet 6 inches.

The other two Bills were to authorise "railways." In one of these instances the 2-foot gauge was authorised, in the other the 3-foot 6-inch was prescribed. Four of these Bills passed into law—viz., for a railway from Gladstone to Callide Creek, where coal measures of remarkable value had been discovered; for a tramway (and branches) from Mount Garnet Freehold Copper and Silver Mine, in the Herberton district, to connect with the Chillagoe Railway; for a tramway from the Albert River, *via* Burketown, to the Lilydale and Lawnhill Silver-Lead Mines, in the Burke district; and from Glassford Creek Copper Mine to Miriam Vale, connecting with the North Coast Railway, between Bundaberg and Gladstone. The fifth Bill, which the Government laid aside in consequence of some tampering with a view to disarm opposition of members of the Assembly coming to light, was for a railway from Port Norman, *via* Normanton, to the Cloncurry Copper Mines. This last has been a peculiarly unfortunate project. The Legislature voted loan money for its construction as far back as 1884, but nothing was done. Mr. McIlwraith's first Land Grant Railway proposals contemplated connecting this richly mineralised district of Cloncurry with a seaport in the Gulf. And now, again, expectations brought up to the highest levels were blasted.

Another Tramways Act, which, as it permitted of the substitution of steam locomotives, or other motive power, for horse traction, is really an Act to authorise street railways, and, by the wording of a clause which legalises such constructions not only along streets and roads through any "other place," but goes even further, was passed as early as 1882 under one of Sir Thomas McIlwraith's Administrations, and amended in some details by legislation in 1890. By these Acts, Municipal Councils, other Local Authorities, and Registered Companies are enabled, by complying with specific conditions, to construct tramways, use steam locomotives thereon, and conduct traffic. It was evidently not the intention when this legislation took place that lines constructed in accordance with it should be in any way connected or associated with the regular railway system of the Colony. The gauge stipulated—only to be departed from by express permission or direction of the Governor in Council—is the British standard, 4 feet 8½ inches, and there is no reservation of powers of management or control to the Commissioner for Railways, as in every other Railway Bill. In instances where such constructions should be accomplished by companies, power to repurchase is reserved to the Local Authority having control over the roads or streets where the line is laid. No tramway has been made under the provisions of these Acts, unless it be some short lines in connection with collieries in West Moreton. Even with regard to these, in some instances, a separate private Act

has been preferred, and the fine network of electrically-propelled trams which serves the city and suburbs of Brisbane runs by virtue of such an Act.

Reviewing and summing up the foregoing, it may be said that the Railway Policy of the Colony—now the State—of Queensland has been remarkably complex, as expressed by a series of Legislative Acts, while the practice has been just as simple when actual constructions are regarded. Thus the very first Act of the Legislature dealing with railroads was framed expressly to invite and encourage private enterprise by bonuses of free grants of land. Although, consequent upon the failure of the promoters of this earliest project to commence operations, the State itself undertook the construction of railways, the Legislature has intermittently, but persistently, renewed invitations and encouragements to capitalists to enter upon enterprises of that sort, and until within the last two or three years never failed to offer grants of land in fee-simple as part of the inducements held forth. On the other hand, until quite recently no private company has ever constructed a mile of railway for public use in Queensland. That function has been so exclusively discharged by the Government, that an impression, hardened into absolute conviction, has been created that railway construction by the State exclusively has been the settled policy of the country.

Concisely stated, the facts appear to be that the Railway Policy of the Colony has been miscellaneous and fluctuating, while the practice has been simple and uniform adherence to construction and management by the State, the construction being effected with moneys borrowed on security of the whole resources of the Colony.

Recently it has been stated, Ministerially, that among the provisions in "*The Mining Act of 1898*" exist some which confer authority for the construction of tramways in connection with mining enterprise, equivalent to a legal right to connect a mining holding with any part of the Colony—in short, to carry a tramway to a convenient point for the convenience of conveying products and supplies.

#### THE RAILWAYS.

The railways of Queensland are classified, for convenience of reference and administration, into three divisions, viz.:—Southern, Central, and Northern.

In the Southern division are comprised all the lines which lie within the territory extending north and south from the Southern boundary between Queensland and New South Wales, and Gladstone, including the Western country.

The Central division includes the trunk and branch lines of which Rockhampton was the original starting point.

In the Northern division several separate lines are included. These are the short lines running inland from Mackay and from Bowen; the railway from Townsville south-westerly, with its one branch to Ravenswood; the line from Cairns inland to Mareeba; the Cooktown brief railway towards the Palmer; and the Normanton-Croydon Railway, in the Carpentarian region.

All these lines are constructed on a uniform system and gauge. The principal bridges, where extent of span or extreme elevation demand exceptional strength, are of iron or steel. Stone piers are

provided in some places, and arches of concrete are used occasionally, but ordinarily the bridges of secondary importance and the minor culverts are built of the excellent hardwood timber of the country, which is generally procurable at no great distance from any line. All are substantially ballasted, and the sleepers are invariably of Queensland hardwood, the single exception being the Normanton-Croydon line, on which the sleepers are of steel.

RAILWAYS IN THE SOUTHERN DIVISION.—Brisbane, the metropolis of Queensland, may be regarded as the terminal or initial point of the railways of the Southern Division. Thence from a station on the south side of the river start railways, one passing through South Brisbane and its outlying suburbs, and proceeding first towards the river mouth and before reaching the embouchure turning south, skirting the shore of Moreton Bay, facing which along the track several seaside villages have sprung up, and terminating at Cleveland, 23 miles; another, known as the South Coast line, from the same point of departure, strikes southerly, throws off a branch at Bethania Junction, 21 miles, to Beaudesert in the rich agricultural Logan district, 26 miles further, the main line proceeding to Southport, a really attractive seaside resort, 50 miles altogether. At Ernest Junction, 47 miles, a curt branch of a couple of miles diverges to Nerang, whence at the present time an extension is in course of construction to reach the boundary separating Queensland and New South Wales, where it is hoped that the Government of the latter State will extend to meet it an extension of their Lismore to Murwillumbah line.

From Brisbane also, but from the north side of the river, the principal railway of the State starts towards the West, traversing at first the populous suburbs of Milton, Auchenflower, and Toowong, and at Indooroopilly, 4 miles, crossing the river by a fine steel bridge. Thence the railway proceeds up the alluvial valley of Oxley Creek, in which, at Corinda, 7 miles, an off-shoot connects it with the South Coast line. From Corinda the westerly course is continued, passing through long settled country, south of the course of the Brisbane River and Bremer River to Ipswich, 24 miles, a town of 15,000 inhabitants.

From Ipswich a couple of branch lines diverge, one northerly up the valley of the Brisbane River to Esk, a further distance of 43 miles; the other southerly by Fassifern to Dugandan, 36 miles, the localities served in both these instances being peopled by numerous settlers occupied in agricultural, dairying, and kindred pursuits.

Through Ipswich the trunk line proceeds, still westerly, through forest country, similarly settled, but in which there is a greater preponderance of the pastoral industry, passing through several small townships, and surmounting a minor hill-barrier, the Little Liverpool, to the Main Dividing Range of the State, which it ascends by an oblique course, covering about 17 miles from the commencement of the climb at Murphy's Creek, 82 miles, 788 feet above sea-level, to the crest at Harlaxton, 2,003 feet. Thence by a gentle descent of about 100 feet in 2 miles it reaches Toowoomba, 101 miles from Brisbane. Toowoomba is the most populous town on the Darling Downs, with a population of 14,000 souls. The railway has now reached the highest

rim of the interior tableland, which declines, almost imperceptibly, to the western centre of the Australian Continent, and has entered the margin of the Darling Downs, that lovely tract of champaign country, now undulating and anon almost level, and scarcely encumbered with fringes and patches of timber, which is the chief agricultural district of Queensland, the home of its choicest stud flocks, and the pride of the State.

Lady Mary Wortley Montague has said, and her dictum has been pronounced by Sir Walter Scott to be true and tasteful, that the most romantic region of every country is that where the mountains unite themselves with the plains or lowlands. This sentiment has been so invariably felt by travellers on the Queensland railways that the views which present themselves as the carriages ascend the flank of the Main Dividing Range, at this and at other parts of its course, are famed throughout Queensland for their impressiveness. The attractions of these prospects have been described in appropriate language by the writers of several Railway Handbooks and other publications.

From Toowoomba the railway is continued towards the west, throwing off, at Pengarry Junction, 5 miles out, a northerly branch along the rim of the range, and known as the Highfields line, 29 miles further to Crow's Nest. Three miles further on at Gowrie Junction, the trunk railway divides into two main limbs, of which one strikes off at right angles, southerly, towards the border of New South Wales. From this again a short line diverges at Wyreema, 20 miles from Toowoomba, through the heart of the Downs, south-westerly to Beauaraba (Pittsworth), 16 miles further. Again from Hendon, 53 miles from Toowoomba, the 5-mile-long feeder line to Allora, a wheat-growing centre, breaks off, and the main line continues through Warwick, 68 miles from Toowoomba, and the second town in point of importance on the Darling Downs, with a population of about 5,000. One mile before Warwick is reached the railway again forks, one track leading off, 27 miles up the Killarney Valley, towards the Main Range *via* Hermitage, Swan Creek, and Emu Vale, all of which are localities presenting many scenic attractions, and Killarney itself, nestling among the western spurs of the range, at an elevation of 1,691 feet, is in high repute for the excellence of its climate and the attractions it offers in the way of brooks and cascades. After quitting Warwick, the railway soon leaves the downs country for inferior tracts of forest land, and ascends to Stanthorpe, 38 miles further, and the second most elevated township in the State, being 2,656 feet above sea level. This height, with its southerly situation, invests Stanthorpe with a climate of exceptional coolness. From its neighbourhood, in the seventies, immense quantities of stream tin were won, but the deposits are practically exhausted, and the district is now dependent upon its pastoral resources and some farming, together with orchards of fruits of the temperate zones, which do not prosper in more northerly and lower situations in the State. From Stanthorpe the railway proceeds to Wallangarra, 233 miles from Brisbane, the southern terminus of the Queensland railway system, and the point of junction with the New South Wales trunkline, which in turn connects with the Victorian railways, through which, again, transit is continued over the lines of South Australia to Adelaide. Thus connection is provided with all those parts of the Southern States of the Commonwealth which are connected with the several capitals by rail.

Returning to the point of severance at Gowrie Junction, the other limb of the main trunk railway thence continues westerly over the downs country and past Dalby, 52 miles from Toowoomba, a town on an open black-soil plain, with a population of 1,500 inhabitants, and proceeds through country practically level, but gradually losing elevation, through Roma, 318 miles inland from Brisbane, and the principal town of the Maranoa district, a farmer's pastoral region, but also noted for its vineyards and wine production, and for considerable cultivation of wheat. Roma has a population of 2,700, and is situated in the centre of an expanse of splendid downs country, which indeed extends with occasional alternations of dense scrubs along the further prolongation of the railway past the little townships of Mitchell, 372 miles, and Morven, 427 miles, over the magnificent Victoria Downs to Charleville, 483 miles from Brisbane. What Roma is to the Maranoa district, Charleville is to the Warrego. It is built on the bank of the river bearing that name, and has a population of about 1,500.

At Charleville the almost direct westerly course of the railway from Roma thither is not continued. The line now turns sharply to the southward, skirting the eastern bank of the Warrego River to Cunnamulla, 121 miles (604 miles from Brisbane), through some heavily timbered country interspersed with fine plains. Cunnamulla is the present terminus of this Western railway, has a population of about 1,000, is a compact, well-laid-out little town, and the entrepôt of the trade and products of the South-western corner of the State. It is distant less than 150 miles from Bourke, on the Darling River, in New South Wales, where is the terminus of a railway from Sydney, and which in some degree disputes the possession of the trade of the region lying between the two.

In addition to the foregoing, the Southern division of the Queensland Railways includes the North Coast line and branches therefrom. This line is continuous with those already described, and, passing through the heart of the city of Brisbane, proceeds by tunnel to the suburb, Fortitude Valley, and thence strikes North, passing through and serving a number of pretty suburban places, and throwing off at short intervals a series of branches, of which one runs to Enoggera, one to Pinkenba on the lowest reach of the Brisbane River, 14 miles, and another to Sandgate, a watering place on the shore of Moreton Bay, 13 miles. It then runs, roughly parallel with the coast, direct to Gympie, 106 miles, passing over a range of no great elevation—the Blackall—its transit over which has called into existence a considerable amount of settlement, the soil on this range being rich, and the rainfall exceptionally frequent and plentiful, so that agriculture and fruit-growing prosper there more than ordinarily. The town of Gympie is the outcome of the compact but rich goldfield of that name, and sustains a population of 15,000. The next section of this railway, Gympie-Maryborough, was constructed earlier than that just mentioned. Before, however, Maryborough is reached, two branches successively leave the main line—one 26 miles long to Kilkivan, a locality abundantly mineralised, but at present neglected, and another to Degilbo, 46 miles, where there is excellent land for settlement. The latter branch was originally authorised as a first section of a projected line to Gayndah, the chief township in the Burnett district.

Maryborough itself, 167 miles from Brisbane, is a town of some importance, being the centre of an extensive agricultural district. It has a population of 13,000, with about 15,000 more in the adjacent localities, is accessible by sea, up the navigable waters of the Mary River, on the bank of which it stands, and which is crossed by a fine iron bridge, and is the site of some important industries, among which may be particularised several large engineering establishments, from which a considerable proportion of the locomotive engines used on the Queensland railways have been turned out. From Maryborough a line has been constructed to Pialba, a seaside resort of its citizens, distant 25 miles by rail.

Continuing northwards, this railway hence proceeds towards Bundaberg, over a stretch of more wretched country than is traversed by any other section of line in Queensland. But this miserable land covers Coal Measures of great extent and excellent quality, and from the collieries at Burrum, 17 miles north of Maryborough, the Maryborough foundries, the smelting works at Aldershot, 11 miles nearer the town, and the Railway Department draw their supplies. Before Bundaberg is reached, a feeder line, 19 miles long, comes in from Cordalba through a rich tract of scrub lands, where agriculture and especially sugar planting flourish.

Bundaberg is next reached, 54 miles from Maryborough. It is a flourishing little town laid out with streets of handsome width on rather level country on both banks of the Burnett River, navigable to the wharves (to which a siding from the railway is carried) by ocean-going vessels. The population of Bundaberg and district is about 17,000. The railway here crosses the river on a bridge of steel, and at North Bundaberg the track forks, one line striking westerly up the river to reach Mount Perry, 69 miles, a little township existing chiefly on the copper-mines which led to its commencement in 1870. The course of the railway from Bundaberg hither is through country of sufficiently varied character to abate somewhat the monotony of travelling through forest. The alluvial formerly covered with jungle between the Burnett River and the railway has been cleared and planted with sugar-cane for miles, thus opening extensive views with gleams of river reaches on that side. There is also some hill-climbing when the Mount Perry mineral country is reached, and the little hamlet itself is so situated as to present from the railway terminus an exceedingly picturesque appearance, having beyond it at no distance the abrupt mount from which its name is derived.

The trunk line of the North Coast Railway from Bundaberg continues to run parallel with the not very distant coast line, crossing the Kolan River on a steel bridge, coming in view now of distant hills and anon, at Rodds Bay, of the ocean; once more passing by bridge over a river—the Boyne—and terminating at the town and port of Gladstone at the harbour of Port Curtis. From the terminus of the trunk line a couple of service branches are continued, one to meat-chilling works at the water's-edge in one direction, and the other to the jetty, which projects almost from the township itself, in another. Gladstone is a little town in a situation of exceptional beauty, airiness, and apparent advantage, from the last of which, however, contrary to long-protracted and quite reasonable expectation, it has derived no particular benefit. Planted on the brink of an extensive harbour accessible

at all conditions of tide and weather, and incomparably superior to any other on the Queensland coast, it has, nevertheless, never been a considerable entrepôt. The projected private railways from Glassford Creek Copper Mine and from the Callide coal country may, if constructed, afford the long-sought stimulus. Meanwhile the North Coast Railway here having its temporary terminus, and discharging its passengers here to resume their travel northward, when the tide serves, daily by a light-draft steamboat, plying by a shallow channel entirely sheltered from the ocean by the intervening Curtis Island, to the lower reach of the Fitzroy River at Broadmount, Gladstone experiences a term of comparative bustle. Hence to Rockhampton there is a gap, a section of railway to cover which is now in course of construction. But at Gladstone, for the present, ends the North Coast Railway, and what is classified as the Southern section.

**RAILWAYS OF THE CENTRAL DIVISION.**—All the railways of which Rockhampton is the principal station come under the above designation. Earliest started to be made and first in importance is the line which from Rockhampton starts for the interior of the State, and of which the earliest made section was that from Rockhampton to Westwood, 31 miles. From that section, at Kabra, 11 miles out, diverges the line to Mount Morgan, 13 miles further. The trunk line continuing nearly due west, over varied country fit for many uses, but as yet devoted almost exclusively to grazing, to the little town of Emerald, 164 miles, whence one branch, 41 miles long, turns off to the south, to Springsure, a beautifully situated little township, 2,057 feet above sea level with a climate consequently delightful and surrounded by much agricultural land and a few farms. Another branch railway leaves the main line also at Emerald in a direction the opposite of the Springsure branch, striking in this case north towards Clermont, 62 miles, over very excellent and beautiful country. Clermont itself is the capital of the famous Peak Downs, little less esteemed as pastoral land than the Darling Downs, and having the additional value given by the existence of an extensive deposit of copper, of gold under the surface of an extensive area, besides coal measures which underlie portions of both these celebrated tracts. It is from the coal mines a few miles out of Clermont that the railway locomotives on this line derive a considerable proportion of the fuel they consume. Clermont has about 2,000 population.

From Emerald the principal line, proceeding westward through country of varied quality but frequent excellence and beauty, has a gradual ascent till shortly after leaving the hamlet of Alpha, 272 miles, passing over a depressed gap in the Main Dividing Range at 1,448 feet above sea-level, 296 miles from Rockhampton. Thenceforward the line is in the Western country, whence the waters instead of falling towards the Pacific Ocean find their way south into the Great Australian Bight, through the channels of the Barcoo and Thompson, heads of Cooper's Creek. From the wooded flanks of the range the line descends by gentle gradations till Barcaldine, 358 miles from Rockhampton and 953 feet above the sea-level, is reached, amidst level sandy country, studded with gidya scrubs. Barcaldine, with a population of over 1,500, is an entrepôt for the pastoral stations occupying a vast expanse north and south of it. From this township to Longreach,

at present the westernmost terminus of the Central Railway, the country is entirely put to pastoral uses, for which its park-like character and the excellence of indigenous grasses eminently qualify it. At Longreach, indeed, the country consists of broad tracts of open black-soil downs. The village, population about 1,700, through which passes all the trade and traffic of the further Western country to the very border, is planted on the brink of the Thompson River, but derives its purest supply of water from the flow of artesian bores sunk within its boundaries.

From Rockhampton an easterly extension of the railway, after crossing by bridge to the north bank of the Fitzroy River, proceeds towards the coast and by a fork to the lower river reach at Broadmount. The other prong of the fork almost reaches the ocean at Emu Park, a seaside resort for the population of Rockhampton and sun-dried visitors from the Western interior. Amongst the several water-places connected with Queensland towns, none can offer attractions for the eye equal to those presented from Emu Park. Here the ordinary seaside attractions of long stretches of sand, beach, and jutting headlands are enhanced by an outlying archipelago of islands near and remote.

RAILWAYS OF THE NORTHERN DIVISION.—Proceeding up the Pacific coast, northward from Keppel Bay, the first locality favoured with the convenience of railways is the Mackay district, of which the principal town which gives its name to the place is situated on the bank of the Pioneer River, as usual at the highest point to which the channel is navigable for sea-going craft, albeit the larger coasting steamers do not attempt the ascent, but discharge their passengers and freight under shelter of a clump of islets outside the river mouth. The neighbourhood of Mackay was the earliest locality in the northern parts of the east coastal region to attract the enterprise of sugar-planters, and still shares with its later rival, Bundaberg, the supremacy in Queensland of the sugar-growing industry. The tracts suitable for plantations extend along the banks of the river for many miles, and to the south, around Eton, a separate area of rich soil equally favourable has been put under the same class of cultivation. To serve the planters and farmers in these localities, railways have been provided. Starting from the river wharves at Mackay, running through the town and its suburbs, the line proceeds westerly to a place called Newbury, 15 miles, where it forks, one branch striking south to Eton, 23 miles from the starting point, the other continuing westward to Mirani, on the upper reaches of the Pioneer River, 23 miles from Mackay. The population of Mackay and district is about 20,000.

From Bowen, an early established township, from which originally great progress was expected, but which has been an instance of disappointing development up to the present time, situated as it is at the head of a harbour admirably sheltered and very commodious, a line of railway, designed to reach Ayr and thence connect with Townsville, has been constructed in that direction for 48 miles. One of the drawbacks to the port of Bowen is the shallowness of the foreshores of its harbour, Port Denison, and the railway has, to be of service for seaborne freights, had to be carried out to deep water on a wooden jetty

3,000 feet long. From that seaward extremity it enters and winds through the environs of the town of Bowen, and crosses the Don River. Six miles out it passes and serves large meat-preserving works at Merinda, whence it proceeds through pastoral country to its present furthest point at Wangaratta.

From Townsville, the most important and extensive of the railways in the Northern division starts for the interior. Townsville itself is the chief coastal town north of Brisbane, having a population of 15,500, and being the shipping port for a vast area of interior country and also for the important goldfield and town of Charters Towers. The roadstead at Townsville is sufficiently sheltered from most winds, and the actual port is created by utilising the embouchure of an insignificant waterway, Ross Creek, and by a double curve of stone breakwaters; to the extremity of the southern arm of which the railway is carried. Thence it skirts Ross Creek, on the fringe of the town, and proceeds southward at first and over level country till, after surmounting a moderate range, Ravenswood Junction, 54 miles, is reached. Then a branch, 24 miles in length, the only offshoot from this line, proceeds south-easterly to Ravenswood, an old mining centre of reviving importance. The main line continues, striking south-westerly from the junction, crosses the Burdekin River on the Burdekin bridge, and at 82 miles reaches Charters Towers at an elevation of 1,000 feet. From Charters Towers the line continued in the same direction makes a descent to Homestead, 128 miles, when the elevation is only 127 feet, and again ascends to Pentland 1,318 feet above sea level, at 148 miles from Townsville. Pentland is the depôt through which the traffic from the Cape River Gold Field passes. Continuing its south-westerly course to Torrens Creek, at 180 miles, the line there turns nearly due west, following mainly the crest of the divide between the watercourses which flow southward to the Barcoo and Thompson and so to the Great Australian Bight, and those which, as heads of the Flinders, find their outlet in the Gulf of Carpentaria, reaching at 256 miles, Hughenden, 1,071 feet above sea level, the depôt and trade centre of a wide expanse of pastoral country of a high standard of excellence, qualified, however, by liability to prolonged droughts, but for which the rich soil of the extensive open downs and plains invites agriculture. The district and town have a population of about 4,000. Numerous artesian wells compensate in some degree for the deficient average rainfall. From Hughenden the railway has been constructed over easy country, chiefly of the prairie character, to its present terminus at Winton, 132 miles further and 368 miles from Townsville. This little township shares with Longreach, the western terminus of the Central Railway, from which it is only about 100 miles distant, the business of the pastoral stations situated further west to the border between Queensland and the Northern Territory, which is under the administration of the Government of the State of South Australia. Winton has an elevation of 624 feet above sea level. Around it, as around Hughenden, are numerous deep artesian bores, the town itself deriving its supply from such wells overflowing at the rate of 650,000 gallons per twenty-four hours. Its population is about 1,000.

The Cairns Railway, starting for the interior from the town and harbour of that name at Trinity Bay, a roadstead perfectly sheltered only from the south and east, but leading into Trinity Inlet, a magnificent

landlocked salt-water lagoon or loch which could contain a navy, is one of the most interesting in many respects among the Queensland lines. Behind Cairns the main range approaches the ocean. Although not very lofty at this part of its course, its seaward front is steeply scarped and presents an obstacle of more than ordinary difficulty. To overcome this, the engineers in the service of the Colony sought and found a line of access to the summit by following the southern flank of a gorge with sides almost precipitous—which gashes the face of the range and forms the channel of the Barron River. That stream, collecting the waters of the plateau which, above the first precipitous ascent, tops the mountain chain, gently sloping towards its seaward face, makes a sheer plunge of 700 feet into the ravine, which further down its course receives from the flank, along which the railway climbs and twists, tributary streams, each with its glen and its cascades, and each of which has been crossed by a lofty bridge. It will readily be understood that from the carriages, as trains are dragged up this section of line, views of romantic beauty are obtained, and have been described in appropriate language by writers inspired by the wild and savage charms of the views close at hand and by the contrasts furnished by the more remote prospects of the level belt of forest country interposed between range and ocean, over which the sea-scape extends to the far horizon.

Starting from the Cairns station, on the landward outskirts of the town, this railway traverses for about 10 miles the almost flat tract to the foot of the range before commencing the arduous ascent, winds up the flank of the Barron Gorge, which is clad wherever vegetation is possible by a tropical jungle. The ascent is accomplished by a series of steep gradients, the severest being of 1 in 50, through a multitude of tunnels, and over some remarkable bridges till, passing in full view of the Barron Falls, the brim of the plateau is reached at a height of 1,065 feet above the ocean and 19 miles from Cairns.

Thence for another couple of miles the line runs parallel with the upper course of the stream, on a gentle ascent, to Kuranda a hamlet overlooking the river, here a placid chain of limpid pools. It is not the sense of seeing alone which is gratified in the course of this ascent. Inconsiderable although the elevation above Cairns may be considered, the alteration experienced in the temperature and in the briskness of the atmosphere is very striking and most agreeable. At Cairns, which is built on a sandy flat, only 5 feet above high-water level, the heat in summer is trying and the air moist and oppressive. At Kuranda, reached after but an hour and a-quarter, even in summer the temperature is but pleasantly warm by day, and sensibly cool by night; while the air, generally in motion, is dry and exhilarating. This place consequently is a favourite holiday resort for the residents of Cairns, and of visitors from the Western interior. From Kuranda the Government railway has been continued over undulating country, generally of a poor kind, to Mareeba, 46 miles from Cairns, and 1,525 feet above sea level, where a handsome terminal station is erected. The cost of the construction of that section of this line, which ascends the range, proved so much beyond the average of railway-making in Queensland that there was little prospect of a further extension during the present generation, although a westerly prolongation presented no special features of difficulty or probable cost.

The further westerly extension of this line, which successive Administrations regarded as not offering an opportunity for judicious investment of loan moneys, has been accomplished by a company—The Chillagoe Mines and Railway Company, Limited. From the Government terminus at Mareeba, the company's railway, of the same gauge and of a solidity of construction not to be distinguished by the ordinary traveller from that of the Government line, has been extended westerly, a little more than 100 miles, to Mungana, the last 10 miles or so being through the company's mineral leases, where lodes carrying copper, silver, and lead, with a little gold, are being worked. To connect with this privately-owned railway, also several others are projected, as branches and as a further continuation.

From Cooktown, at the harbour formed by a headland sheltering the debouchure of the Endeavour River, about a degree and a-half of latitude north from Cairns, another short railway has been made towards the interior, originally intended to be pushed on to the heart of the once famous Palmer Gold Field. The decadence of that field, however, consequent on the exhaustion of the rich alluvial deposits, led to a reconsideration of the first intention, and the line was carried no further than about half-way, terminating at Laura, 67 miles from the starting point. This is the northernmost railway on the eastern coast of Queensland.

From Normanton, on the left bank of the Norman River, which disembogues in the south-eastern sweep of the Gulf of Carpentaria, a railway has been constructed to the town of Croydon, the principal settlement on the important reefing goldfield of the same name, 94 miles. Normanton is a shipping port which ministers to the trade of the north-western portion of the territory sloping to the Gulf, and has a population of about 1,000. On the Croydon Gold Field there are about 6,000 souls. The line traverses country almost devoid of difficulties, with a gradual and almost imperceptible ascent through country for the first 14 miles of inferior value, but further on of good pastoral quality, till within the mineralised region a granite formation reproduces a comparative poverty of soil.

#### MANAGEMENT.

The very first Act passed by the Queensland Legislature in reference to construction of railways by the State made provision for the appointment of a Commissioner of Railways. This was in the year 1863, and in an Amending Act, passed in 1864, whilst repealing the clause legalising that appointment, re-enacted the same provision while enlarging the scope of such an official's responsibilities. The purport of both the original and the Amending Act, however, was to constitute a Commissioner chiefly to be a sort of legal John Doe or Richard Roe—a convenient personality to sue and be sued. In practice, outside these functions, the Commissioner appointed under the provisions of these Acts was simply the Permanent Head of the Railway Department, and subordinate as regarded all matters of administration to the Minister for time being in charge of railways, generally the Minister for Public Works. Mr. Arthur Orpen Herbert, Under Secretary for Public Works at the time when railway construction was first undertaken by the Government, was the first Commissioner for Railways, and it was not until his retirement that the two offices he held were separated

and a Commissioner appointed whose functions were concentrated upon railway matters exclusively. This was Mr. Francis Curnow, an officer who had worked his way up in the railway service of the Colony.

These arrangements continued until the year 1888, when, following an example set by New South Wales, previous legislation was repealed, and an Act was passed providing for the appointment of three Commissioners, constituting them a body corporate, vesting in them all property in the Colony's railways, rolling-stock, wharves, jetties, land, and other appurtenances, and defining their powers, duties, &c. The main purpose and broad effect of this Act was to remove from political control the administration and management of railways open for traffic, and to transfer responsibility in connection therewith from the Ministry to the three Commissioners, appointed by the Executive for a term of seven years. With regard to railway lines in course of construction or to be constructed in the future, the Commissioners were endowed with authority to decide on the situation and description of all stations, platforms, sidings, wharves, jetties, &c., in connection with any such railway. The functions of a Minister for Railways were not entirely extinguished, but they were defined and limited in effect to action as intermediary between the Commissioners and Parliament, to which body the Commissioners were directly responsible, and bound to report annually, respecting their proceedings and with regard to finance. The Commissioners were authorised to frame by-laws, subject to approval thereof by the Governor in Council. Provisions for restraining any Commissioner from certain inadmissible actions, and for the removal from office of anyone violating such prohibitions, were, in addition to numerous other necessary stipulations for governing their proceedings, embodied in this Act, which also continued to them the duties and obligations imposed upon the Commissioner in preceding Acts. One of their body was to be Chief Commissioner, with a salary of £3,000 per annum, and each of the other Commissioners was to receive £1,500 per annum, during their continuance in office and not subject to an annual vote by Parliament.

Two gentlemen from Great Britain were engaged to occupy positions under this Act—Mr. Mathieson as Chief Commissioner, Mr. Johnston as Commissioner, both these gentlemen having had standing as experts in railway affairs in the old country. The other Commissionership was conferred upon Mr. Robert Gray, a gentleman who had passed through all grades of the Queensland Civil Service to the highest position therein as Principal Under Secretary, and was therefore judged to possess not only organising faculties of the highest order, but an intimate acquaintance with local affairs and conditions which could not but be lacked by the imported officers nor fail to be of the utmost value to them when possessed by their colleague.

One of the motives which induced Ministers, in New South Wales and in Queensland alike, to shift, by legislation of this nature, the responsibilities of railway management from a responsible Minister, sitting in Parliament, to a Commission was undoubtedly the inconvenience and stress which had been experienced by every Ministry, one member of which was charged with the details connected with the working and the staff of the railways. Ministers were subjected to perpetual pressure by members of Parliament, and members to pressure by constituents, relative to an infinity of matters ranging

from important to absolutely insignificant. The timing of train runnings, their frequency, the situation of a wayside station—these and a hundred other subjects were forced upon members and Ministers for decision. But beyond all was the perpetual and intolerable demands for the promotion of this or that employee, and for the appointment to vacancies, or to a position even when no vacancy existed, of this or that person. Not a porter or an engine-cleaner could be appointed without members being harassed to intervene in favour of constituents or their sons or connections, and the member so harassed had to pass his trouble on to the Minister or imperil a bunch of votes at next election time, while the Minister had similarly the choice of complying with the demand made on his complaisance or of offending a supporter or exasperating an opponent.

The experiment of transferring all these functions to a non-political Commission, who had no constituents to placate, proved completely successful in these respects, and in other essentials was so far satisfactory that the principle was adhered to after the term of office of the first three Commissioners had expired. Mr. Mathieson then accepted the offer by the Government of Victoria to undertake the duties of Chief Commissioner of the Railways of that Colony at an advance upon the Queensland salary. Mr. Johnston returned to Britain. In anticipation of the expiration of the term of the three Commissioners, however, the Queensland Legislature passed an amending Act providing for the appointment thereafter of a single Commissioner in lieu of three, but continuing to the one all the functions and responsibility of the former body.

To fill this onerous position, Mr. Gray was selected, and his sole management gave so much satisfaction that by subsequent legislation his tenure of the office has been extended from time to time and his salary increased.

The last extension was in 1900, in which year also his salary was advanced from £1,500 to £2,000, the added term of his engagement being for three years.

Commissioner Gray, not having graduated in early life in any of the technical departments of railway affairs, and having, beyond natural aptitude for controlling extensive affairs, only such specialised knowledge of railway matters as he acquired since being associated as colleague with the two other original Commissioners, has, of course, the assistance and counsel of a staff of experts of high accomplishments in each particular department. As Engineer-in-Chief, Mr. Stanley, already mentioned, although charged also with the superintendence of all new constructions, which lie outside the province of the Commissioner till completed and ready for traffic, is available for counsel on matters of maintenance, deviations, and so forth. Mr. Thallon, General Traffic Manager during a series of years, and from boyhood bred to railway business, has recently been appointed also to be Deputy Commissioner.

In most of the other States of the Australian Commonwealth the Government lines have at some point connection which permits of supervision by members of a central staff. The Queensland Railways, comprising no less than eight separate sets of lines, each starting from a different coastal depôt, which in all instances are divided by over 100 miles of sea transit, and in one case by a voyage right round Cape York Peninsula, present singular difficulties in the way of management,

and their severance militates in some degree against economy in the article of supervision. The Commissioner occasionally, and the Chief Engineer and heads of the traffic and locomotive departments more frequently, make extended tours to inspect matters connected with their respective branches of the service. But it is necessary to maintain, in connection with each of the principal detached systems, as on the Southern and Western, the Central, and the Northern (Townsville) railways, its own distinct staff of managing and engineering officials. Thus for the Southern Division railways there are three traffic managers, four district engineers, and a locomotive superintendent; for the Central Railway, a traffic manager, a superintendent of maintenance, and a locomotive superintendent; on the Northern Railway, the same staff; on the Cairns Railway, a traffic manager and district engineer; one inspector in charge of maintenance attends to both the Mackay and the Bowen lines, each having a stationmaster in charge; while the Cooktown and the Normanton Railways are each attended to by an "officer in charge."

#### FINANCIAL ASPECTS.

Of the total Public Debt of Queensland, which amounted, at the close of the year 1900, to £35,898,414, there had been devoted to expenditure in connection with railways, up to 30th June, 1901, no less a sum than £23,120,305, of which there had actually been expended £20,277,244, the balance, £2,843,061, being moneys voted but not spent to that date.

The following table gives the particulars in this connection :—

Railway.	Amount Voted.			Expenditure.			Balance.		
	£	s.	d.	£	s.	d.	£	s.	d.
SOUTHERN DIVISION—									
Sundry Lines ... ..	12,606,839	0	0	11,146,302	6	8	1,460,536	13	4
CENTRAL DIVISION—									
Sundry Lines ... ..	3,510,878	0	0	3,125,958	2	6	384,919	17	6
NORTHERN DIVISION—									
Sundry Lines ... ..	4,735,158	0	0	3,785,307	5	2	949,850	14	10
GENERAL VOTES									
Surveys (Less £100 included in S.D., inoperative)	242,430	0	0	229,428	16	5	13,001	3	7
Railway Telegraph Lines ...	41,000	0	0	39,312	6	2	1,687	13	10
Rolling-stock, all Railways	1,824,000	0	0	1,763,514	14	8	60,485	5	4
Permanent Way Material...	160,000	0	0	...			160,000	0	0
	2,267,430	0	0	2,032,255	17	3	235,174	2	9
SPECIAL SUSPENSE ACCOUNT—									
Expenditure to Date ...	...			8,827	0	2	8,827	0	2
STORES SUSPENSE ACCOUNT—									
Expenditure to Date ...	...			178,593	8	1	178,593	8	1
	...			187,420	8	3	187,420	8	3
Total ... ..	£23,120,305	0	0	20,277,243	19	10	2,843,061	0	2

It will be observed that these expenditures include outlays for such items as Rolling Stock, Railway Telegraph Lines, Permanent Way Material, and Surveys. The last-mentioned deserves a few explanatory words. Under that head come not only the outlays on railways which have been constructed, those under construction, and

those of which the construction has been authorised by Parliament, but of trial surveys undertaken to ascertain the probable cost of railways only suggested, and in at least two instances of routes for tramways or railways which private undertakers had been empowered to construct, such as, for example, the projected private lines from Glassford Creek Copper Mine to Miriam Vale Station on the North Coast Railway, and from the Coal Measures at Callide to Gladstone.

While the average cost per mile of the 2,801 miles constructed and open for traffic up to 30th June, 1901, has been, as already stated, £7,047, the difference between the rates of outlay on different sections has been very great. Covering, as the collected figures do, a long period, extending back to the year 1863, variations in the cost of materials, freights from Europe, contractors' ideas of what profit should be looked for when tenders were framed, and of sundry other concomitants, must have been very considerable. But details relative to such things could not now be recovered and collated without infinite labour, and it must suffice for present purposes to merely bear in mind that some indefinite allowances must be made for such contingencies when contrasting the cost per mile of the different sections of railway.

The costliest lines have been such as, starting from the coast, have been carried up the face of the Main Dividing Range to the interior plateau, at a part of that range where no gap or depressed portion was available. Thus the first line constructed in Queensland—that which connects the coastal tract in the Moreton districts with the Darling Downs—starting originally from Ipswich and carried to Toowoomba in the first instance, but now reckoned in sections, of which the first is from Brisbane to Gowrie Junction, 113·99 miles, represents an outlay of £2,440,916, being at the rate of £21,413 per mile for the whole distance. This sort of average, however, does not effectually indicate the actual expense incurred at different periods and for sections of utterly diverse character of country. Thus the first constructed portion was made under the supervision of Mr. Fitzgibbon in the sixties, from Ipswich to Toowoomba.

The only portion of the Queensland railways rivalling that in cost has been the line from Cairns inland, which likewise encounters the Main Range, where there is no way of outflanking it, and its steepest battlements have had to be scaled.

To these instances of exceptionally high cost may be contrasted one of cheap construction equally exceptional. The stretch of 121 miles from Charleville to Cunnamulla, where the line is carried along country presenting no obstacles at all, and requiring no earthworks of any extent, the cost has been but £1,895 per mile. The 52-mile stretch of Darling Downs country between Gowrie Junction and Dalby cost for the permanent way at the rate of £3,763 per mile, but including station buildings (£6,244 9s. 4d.) and private land purchased (£9,761 3s. 4d.) the cost was about £4,071 per mile; while the whole stretch of line from Gowrie Junction to Charleville cost, inclusive, at the rate of £4,563 per mile.

There can be few problems more complicated than are constantly being presented for solution to the responsible Government of a territory under process of colonisation, as Queensland is, with respect to deciding upon provision of railways in this locality or that. Where

railway construction has been left to private enterprise, as in the United States of America, where some of the attendant circumstances nearly resemble those prevailing in Australia, the matter is shorn of many of its most puzzling difficulties. The investor governs his undertakings by one simple rule, which is subject to little variation. Before he will entertain the idea of venturing his money on making or extending a line of railway, he satisfies himself that either there already exists or will be called into existence population or traffic sufficient to pay profits. Indirect benefits to a State or a community do not come within the scope of his calculations nor sensibly influence his decisions.

But it is just such secondary considerations which intrude into the counsels of the statesman, and a decision as to whether a particular line of railway should or should not be constructed is not infrequently influenced by inductive reasonings about the indirect advantages which may accrue to the community as a whole, even although it may be demonstrated that, regarded separately, a railway will not merely produce no profit, but will actually, for an indefinite period, have to be worked at a loss. Australian Governments had, at the outset, when they undertook the function of providing railways, no precedents applicable to conditions on this continent for their guidance. When, as in North America, a new line of railway provided reasonably cheap and rapid transit from market centres, or places of export, for products, and penetrated a virgin tract of rich lands, close settlement invariably peopled the territory so rendered accessible, and thousands of ploughs were speedily breaking the glebe to produce harvests which would supply traffic for the railway. But in Australia climatic conditions are so peculiar that it is only in particular portions of the continent that even the easy access and cheap conveyance provided by a railway ensure early and ample subsequent settlement and consequent profitable working. The interior regions are generally, and in Queensland particularly, extraordinarily enticing, so far as their aspect in good seasons is concerned, to the agriculturist. The soil is of surpassing richness; the country is, as to immense expanses, free from obstructive forests. But there is one essential lacking. The average rainfall is distressingly meagre; regular seasons for its occurrence scarcely are appreciable, and cannot in the least be reckoned on; and there are long periods, sometimes extending over years when, beyond an occasional trifling shower at most, no rain at all falls.

The further one proceeds inland from the comparatively rough and heavily-timbered coast country of Queensland, the less is the average rainfall. Even pastoral occupation is carried on in these remote tracts under difficulties which augment as the coast is receded from. Under these and other conditions, the policy of pushing railways from the coastal settlements into the heart of the Colony has had to be regarded not so much in the aspect of an undertaking for direct profit, but as a method of rendering tenable large tracts of the public estate, and of enhancing their capital value.

This is not the place to enlarge upon the possible influence of party politics and Ministerial exigencies in determining the construction of various short lines of railway to which the foregoing remarks do not apply. Material for a wide range of reflection is contained in

the next table, which furnishes comparisons from various points of view between the railways of Queensland, the other Australian States and New Zealand, with those of Great Britain :—

—	Area in Square Miles.	Population.	Miles Open.	Gauge.	Total Cost.	Cost per Mile Open.	Population per Mile of Railway.	Cost per Head of the Population.
				Ft. in.	£	£		£ s. d.
United Kingdom	121,115	40,909,925	21,700	4 8½	1,152,317,501	53,102	1,885	28 3 4
Queensland ...	668,224	502,892	2,801	3 6	19,739,495	7,047	180	39 5 0
New South Wales	309,175	1,362,232	2,845½	4 8½	38,932,781	13,682	479	23 11 7
Victoria ...	87,884	1,195,874	3,218	5 3	39,658 819	12,324	372	33 3 3
South Australia ...	903,425	362,595	1,736½	{ 3 6 5 3 }	13,070,087	7,528	209	36 0 11
New Zealand ...	104,235	773,439	2,104	3 6	16,703,887	7,939	368	21 11 11

—	Train Miles Run.	Gross Earnings.	Earnings per Train Mile.	Working Expenses.	Ex-penses per Train Mile.	Percentage of Net Earnings to Capital.	Percentage of Working Ex-penses to Earnings.	Earnings per Head of the Population.	Year ended.
		£	d.	£	d.			£ s. d.	1899.
United Kingdom	396,241,265	101,667,065	61·57	60,090,687	36·40	3·61	59·11	2 9 8	31st Dec. 1901.
Queensland ...	5,788,112	1,316,936	54·61	1,057,981	43·87	1·31	80·34	2 12 4	30th June
New South Wales	10,763,697	3,573,779	79·69	2,043,201	45·56	3·93	57·17	2 12 6	ditto 1900.
Victoria ...	10,107,549	3,025,162	71·83	1,807,301	42·91	3·07	59·74	2 10 7	ditto
South Australia	4,178,636	1,166,987	67·03	657,841	37·78	3·90	56·37	3 4 4	ditto 1901.
New Zealand ...	4,187,893	1,623,891	93·06	1,052,358	60·31	3·42	64·80	2 2 0	31st Mar.

From this table an endless variety of interesting comparisons can be deduced. A few only are here presented. The Queensland railways have cost less per mile than those of any other country or State in the list. Of course, no significance attaches to a contrast of this particular between Queensland railways of the 3 feet 6 inch gauge and those of Great Britain and of New South Wales with a gauge of 4 feet 8½ inches, or of Victoria with its 5 feet 3 inch gauge. In the instance of Great Britain, also, the comparison is confused by the fact that every rood of land used for the railways had to be bought from private owners, and in entering great cities enormous prices had to be paid, which swell the cost per mile. But a more equitable comparison is furnished by New

Zealand, where the gauge is identical with that adopted by Queensland, and conditions as to land acquisition similar. There, it will be seen, the cost per mile has been nearly £1,000 greater than in Queensland, a difference probably attributable to the fact that New Zealand is a much more hilly country. Queensland, with the smallest population, shows the lowest rate of earnings per train mile run—far lower, in fact, than the proportion of populations would suggest. On the other hand, the working expenses in this colony per train mile are the lowest in the list, but again the percentage of working expenses to earnings is appreciably, although not extravagantly, higher than in the other places tabulated, save New Zealand, which has almost precisely the same rate. One matter of prime importance—the percentage of net earnings to capital—shows Queensland at a serious disadvantage. The colonists borrow money for railway-making at an average rate of £4 0s. 9½d. per £100, and, as the net returns from the investment are at the rate of only £2 13s. 4½d., the balance has to be made good by taxation. Thus an annual amount of about £140,000 has to be paid from the consolidated revenue to make good the shortage of railway net receipts as against interest on capital borrowed for their construction and equipment.

The Commissioner for Railways annually appends to his report a statement showing in considerable detail the receipts and expenditure on each section of railway. Such tables would occupy too much of the space available in this Year Book, but a few references will assist towards understanding whence the shortage proceeds. Thus the trunk line from Brisbane to Gowrie Junction—although the costliest for its length, 113·99 miles, of any in the Colony, £2,440,916 having been expended on it—paid during the year ending 30th June, 1901, clear interest at the rate of £4 8s. per cent., whereas the line from Gowrie Junction over the Darling Downs to Warwick and thence to Wallangarra, although of moderate cost to make, yielded no higher rate than £1 5s. 5d. per cent. All the lines in the Southern division together yielded, during the period stated, at the rate of but £1 15s. 1d. per cent. Investigation of details shows that, while the trunk line, connecting two considerable towns with the metropolitan seaport and traversing long settled localities, paid its way, extensions and branches generally fell short of that.

It would be difficult, however, to estimate what the broad result would have been had such extensions and branches not been constructed. The traffic they collect, convey, and contribute to the trunk line helps to swell the financial returns of the latter, notwithstanding that the transit over the extensions and branches themselves is effected, with some exceptions, either with results inadequate to pay interest on capital in full or at a downright loss. In eleven instances there is loss outright. They are feeders to the main line in one respect, and bleeders of the average financial results in another.

The railways of the Central division, in which the branches bear a small proportion in relation to the trunk line running west to the interior, pay in the aggregate more than interest on the capital expended on them. The results of working the different sections, proceeding from Rockhampton *via* Emerald to Barcaldine and Longreach, are not separately tabulated. It may be presumed that the interior sections contribute less than the section approaching the coast. But, taken

together, that trunk line yielded, during the year ending 30th June, 1900, at the rate of £4 3s. 9d. per £100, which is more than interest on cost. All the branches from this line either fell heavily short of interest-paying or were worked at a clear loss.

The Townsville Railway, which has but one branch, paid at the rate of £7 19s. 8d. per £100 for the stretch of line as far as Hughenden. The further extension to Winton paid only at the rate of £1 8s. 7d., while the branch to Ravenswood yielded but 9d. per £100. Taking all together, this railway realised £6 6s. 7d. per £100 capital invested.

Other railways included under the designation of the Northern division all impose burdens on the taxpayer. The Mackay, the Bowen, and the Cooktown lines are all run at a dead loss. The Cairns Railway paid 6s. 9d. per £100 during 1900-1901, that being only the second period that it had contributed anything towards interest. The Normanton Railway paid 6s. per cent.

Another table appended to the Railway Commissioner's report gives particulars similar to the foregoing, but covering a period of five years, and may be consulted with advantage by anyone desirous of becoming more intimately acquainted with these aspects of railway affairs in Queensland. In these pages it must be sufficient to state that the broad purport of the figures there given harmonises generally with those just printed in connection with the term 1900-1901.

The importance of the foregoing facts can hardly be overrated in connection with railways in Queensland. They furnish, in fact, material around which a fierce contention has constantly raged, and still continues, between the adherents of two schools of thought—the advocates of railway construction by private enterprise and of exclusive construction by the State. A very little consideration of the foregoing will show that, had private enterprise been waited for, probably not one of the railways now in the Colony would have been built until years after the work was actually done by the State. Further, that numerous extensions and branch lines would not now be in existence. The proposition obtrudes itself that it is better that there should be no railway at all than a railway which does not pay for working. On that theme countless variations may be played: Thus, for instance, that, when a profit may be anticipated from the construction of a new or extension of an existing railway, private speculators should be granted permission to make the railway. The corollary to this appears, however, such as few politicians would care to support—viz., that where no profit, or profits indefinitely postponed, or only indirect gain to the State by increment of Crown land values and stimulated settlement could be anticipated, the State should undertake the work. Of late years a middle course has been coming into practice. While the Government does not repudiate any obligation to construct important lines or extensions where public policy appears to indicate the propriety of such construction, Ministers of the party in office assist, with all the weight of their position and influence, speculators who offer to make railways and tramways to serve primarily some enterprise of their own, but in a secondary degree the locality traversed. In such instances the concessions embodied in Acts passed for the purpose have always granted to the railway-makers the right to charge rates 50 per cent. greater than is being charged on the Government

lines. This constitutes, in its effects, a reversal, so far as these private lines are concerned, of what has been and is the practice of the State. The general body of taxpayers is now compelled to make good all deficiencies resulting from inadequate receipts from freights and fares. No profit is looked for, and were any forthcoming it would return by some channel to the pockets of the people—either by a general reduction of taxes or by enabling a proportionate reduction to be made in railway rates. Private proprietors of railways require profits. The people who use their lines have not merely, therefore, to provide working expenses in full, but interest at satisfactory commercial rates. Thus private railway-owners appear to have no hesitation relative to a question which has never been decidedly answered by politicians—viz., whether profitable rates for railway freights and fares do or do not restrict traffic so as to make railways unprofitable by a roundabout process.

The equipment of the Queensland railways with rolling-stock has, from the first purchases up to the end of June, 1901, involved an expenditure of £2,161,110. This amount is, of course, not represented by stock now in use. Rolling-stock wears out, and repairs and replacements are taken into account. The locomotive engines in use at above date are as given in the next table. For many years the manufacture of locomotives has been entrusted to privately-owned engineering establishments in the State:—

Description.	Class.	Diameter of Driving Wheels.	Railway on which Working.								Total on 30th June, 1901.	Total on 30th June, 1900.
			Southern Division.	Central Division.	Mackay.	Bowen.	Northern.	Cairns.	Cooktown.	Normanton.		
Shunting motors ... ..	6 D 11½	30	3	...	...	...	...	...	...	...	3	3
Tank engines ... ..	4 D 10	36	4	...	...	...	...	...	...	...	4	5
"    "    Abt rack system	4 D 11½	36	...	2	...	...	...	...	...	...	2	2
"    "    "    "    "    "	6 D 13½	36	...	2	...	...	...	...	...	...	2	0
"    "    "    "    "    "	6 D 13	36	2	...	...	...	...	...	...	...	2	2
"    "    "    "    "    "	D 16	51	4	...	...	...	...	...	...	...	4	0
"    "    "    "    "    "	8 D 15	36	3	...	...	...	...	...	...	...	3	3
"    "    Fairlie patent, double bogie	8 D 11	39	1	...	...	...	...	...	...	...	1	1
Passenger engines ... ..	A 14	51	5	3	...	...	...	...	...	...	8	8
"    "    "    "    "    "	A 10	37	...	...	...	1	...	...	...	...	1	1
"    "    "    "    "    "	A 11	42	1	...	...	...	...	...	...	...	1	1
"    "    "    "    "    "	A 12	43	2	1	...	...	...	...	...	...	3	3
"    "    "    "    "    "	A 12	48	34	5	...	...	4	...	...	...	43	43
"    "    "    "    "    "	B 15	48	16	...	...	...	...	...	...	...	16	7
Mixed traffic engines ... ..	A 10	36	7	...	...	...	...	...	1	...	8	8
"    "    "    "    "    "	B 11	39	4	...	...	...	...	...	...	...	4	4
"    "    "    "    "    "	B 12	39	21	2	...	2	...	...	...	...	25	25
"    "    "    "    "    "	B 13	39	61	21	4	...	16	6	2	2	112	112
Goods engines ... ..	B 11	32	...	...	...	1	...	...	...	...	1	1
"    "    "    "    "    "	C 13	32	7	...	...	...	...	...	...	...	7	7
"    "    "    "    "    "	B 15	36	47	15	...	...	29	1	...	...	92	92
"    "    "    "    "    "	C 15	36	2	2	...	...	...	...	...	...	4	4
"    "    "    "    "    "	C 16	36	1	2	...	...	...	...	...	...	3	3
Total on 30th June, 1901	...	...	225	55	4	4	49	7	2	3	349	...
Total on 30th June, 1900	...	...	217	52	4	3	49	5	2	3	...	335

N.B.—In classification, A signifies 4-wheeled coupled tender engine.

" " B " 6 " " " "

" " C " 8 " " " "

" " D " tank engine.

The figures after class letter denote diameter of cylinder.

The figures before class letter D denote number of coupled wheels.

The carriages, which are built on a variety of models, and designed for the two classes of passengers—first and second—into which travellers are divided, no third class being provided on these railways, are much more commodious than persons accustomed only to the vehicles on broad-gauge railways would expect.

The difference between the width afforded in the interior of the carriages on the Queensland 3-feet 6-inch lines and those on English railways and those in the other Australian States which are constructed on the English standard gauge of 4 feet 8½ inches, is much less than might be supposed. The Queensland railway rolling-stock is allowed to overlap the wheel-base proportionately more than is customary on wider lines. Consequently, while the inside width of railway carriages in Great Britain and on the New South Wales railways is 9 feet, those on the Queensland lines are but 18 inches narrower, and are designed in the first-class compartments to accommodate four passengers on each seat, which gives ample space for comfort, while on occasion five persons can be seated in lieu of four without unpleasant squeezing. That type of carriage, however, is but one among many. Saloon cars are largely employed, generally as part of a composite carriage, comprising also some of the compartment style. For long-distance runs the carriages have lavatories appended, and for journeys which involve all-night travel sleeping-carriages, also on the saloon principle, and provided, in addition to the fittings usual in such vehicles for converting a handsome day-saloon into a sleeping chamber, with two rows of berths, upper and lower, with linen and other bed-clothing, as well as ample lavatory and toilet conveniences at each end of the car. No provision for heating these or any other carriages, such as is essential for the railway vehicles in countries where the winter temperature requires to be artificially modified for the comfort of passengers, is called for in such a climate as that which prevails ordinarily in Queensland. The prime object is to secure the maximum of ventilation.

The carriages of the first-class are handsomely upholstered and padded with dark dressed leather, and tastefully panelled with polished woods, the panels at suitable sections being brightened up by the insertion of plate-glass mirrors or by framed photographs of some of the most attractive views visible at different places along the railways from the carriage windows. The ceilings are in many carriages given a cheerful effect by being coloured in light tints, relieved by gilt or silvered beadings. For journeys of any extent, a caraffe or earthen cooler of filtered water is fitted in each compartment in a neat rack with tumblers. In carriages for second-class travel the apartments are, of course, less elegant, but the essentials of comfort are not disregarded.

On the trunk lines of the Southern division the carriages are lit with Pintsch's gas, which is also being fitted to carriages on the Central line; while for the Northern (Townsville) line the electric light is being introduced with eminently satisfactory results so far. The several short separate railways of the North, to which it would be extravagant to attach special experts to attend to the more intricate mechanisms for illumination, are served by the old-style oil lamps.

Particulars of the carriages in use will be found in the following list:—

Description of Vehicles.	Railway on which Working.							Total on 30th June, 1901.	Total on 30th June, 1900.
	Southern Division.	Central.	Mackay.	Bowen.	Northern.	Cairns.	Cooktown.		
Sleeping Cars, First Class	6	3	...	...	2	...	...	11	11
" " Second Class	...	1	...	...	...	...	...	1	1
Miscellaneous, Saloon Carriages	3	1	...	...	...	...	...	4	4
First Class, ordinary	51	6	...	...	2	...	...	59	58
" lavatory	4	...	...	...	2	...	...	6	4
" with large compartment for guard	19	2	...	...	2	...	...	23	23
" with small	11	...	...	...	...	...	...	11	11
Composite, lavatory	22	2	...	...	2	...	...	26	18
" ordinary	42	12	2	1	11	4	2	77	77
" with large compartment for guard	20	10	...	...	6	3	1	42	42
" with small	22	4	2	1	3	1	...	33	33
" with luggage compartment	4	...	...	...	...	...	...	4	4
Second Class, ordinary	59	11	2	...	3	...	...	75	68
" lavatory	...	...	...	...	2	...	...	...	0
" with large compartment for guard	5	...	...	...	...	...	...	5	5
" with small	12	...	...	...	...	...	...	12	12
Post Office, with accommodation for first and second class passengers	...	...	...	...	2	...	...	2	2
Post Office, with accommodation for second-class passengers	9	...	...	...	...	...	...	9	7
Post Office	...	2	...	...	...	...	...	2	2
Tramcars	*5	...	...	...	...	...	...	5	5
Prisoners	1	...	...	...	...	...	...	1	1
Total on 30th June, 1901	295	54	6	2	37	8	3	410	...
Total on 30th June, 1900	280	54	5	2	33	6	3	...	388

\* Four condemned ; used for special service on coal branch.

The wagons and other vehicles for conveyance of goods of all descriptions, including timber, and for live stock and chilled meat, are as under:—

Description of Vehicle.	Class.	Railway on which Working.							Total on 30th June, 1901.	Total on 30th June, 1900.
		Southern Division.	Central Division.	Mackay.	Bowen.	Northern.	Cairns.	Cooktown.		
Four-wheel covered goods wagons	A	140	25	5	1	15	4	...	190	185
Six " " "	B	31	13	...	...	2	...	...	45	45
Eight " " "	C	122	40	24	...	55	27	5	276	276
Eight " convertible vehicle for goods or passengers	CC	17	...	...	1	24	2	...	46	46
Four " high-sided goods wagons	D	1	...	...	...	...	...	...	1	1
Four " " "	DF	116	...	...	...	40	10	...	166	166
Six " " "	E	55	...	...	...	10	...	...	65	65
Four " low-sided	F	1,164	72	81	4	76	3	8	1,408	1,207
Six " " "	G	25	12	...	...	...	...	...	37	37
Eight " " "	H	457	271	9	4	219	17	20	999	892
Four " cattle wagons	CI	10	7	...	1	6	2	...	28	28
Six " " "	J	15	6	...	...	...	...	...	21	21
Eight " " "	K	70	35	...	8	82	8	1	204	191
Four " sheep vans	L	63	8	...	...	...	...	...	71	51
Six " " "	M	9	...	...	...	...	...	...	9	9
Eight " " "	N	31	91	...	...	32	...	...	154	154
Eight " " "	NM	...	...	...	...	33	...	...	33	33



to the rolling-stock on the lines to which they minister. At Ipswich, however, a complete series of new buildings is being erected, and furnished with an entirely new plant, embodying the most recent results of ingenuity and invention in the departments of engineering science for which they are designed. The buildings are of brick, and occupy an area of 10 acres. Compressed air and electricity provide the motive power for most of the machinery. Shafting will be employed only for machines of variable speed and for groups of small machines. Hydraulic power will be applied to riveting machinery and cranes for heavy lifting.

The whole of the workshops and the method and disposition of their equipment have been designed and arranged for by Mr. W. H. Nisbet, M.I.C.E., till lately Chief Mechanical Engineer, whose retirement in 1901 consequent on his acceptance of a more highly remunerated position in private employment in Sydney, New South Wales, has been regarded as a serious loss to the Queensland Railway Service. The buildings comprise: A power-house covering 9,900 square feet, and divided into engine-room and boiler-room. The former houses three Westinghouse compound engines, connected directly with three 200-kilowatt two-phase electric generators, and driving also a Reidler air-compressor for pneumatic force, and a compound duplex pump for hydraulic power. In the boiler-house are installed four Babcock and Wilcox boilers, each of 250 h.p., fed by mechanical stokers, and served by Hunt's patent conveying gear for coaling and ash-clearing.

The other buildings are: An erecting shop, 54,000 square feet; a boiler shop, 36,000 square feet; a smith's shop, 45,000 square feet; a foundry, 22,000 square feet, with brass furnaces and a 3-ton cupola blast furnace; a tin and copper smiths' shop, 11,000 square feet; a car and wagon shop, 90,000 square feet; a sawmill, 20,000 square feet; a timber store, 32,000 square feet; a dressed-timber store, 22,000 square feet; a paint shop, 28,000 square feet; a trimmer's shop, 5,260 square feet; a car and wagon machine shop, 11,000 square feet; and a locomotive store, 11,000 square feet.

The timber stores have a special utility apart from the service of the repairing business. In his latest annual report, Mr. Railway Commissioner Gray, advertng to a special representation made to him by his Chief Mechanical Engineer, Mr. Nisbet, C.E., points out that the carriage and wagon stock is deficient in quantity, and to some extent unsatisfactory in condition. This, he points out, is attributable to two related causes, viz.: The inability of contractors to deliver vehicles within their stipulated time, even when mulct in penalties for delay, and their confessed incapacity to keep on hand a supply of seasoned timber sufficient for their needs. The latter shortcoming was explained by them to be attributable to a lack of capital. It is now proposed by the Commissioner that the Department should stock the requisite timber, and serve it out to contractors in a seasoned condition as required.

#### THE LATEST OFFICIAL DETAILS.

The Annual Report of the Commissioner for Railways covers a period of twelve months from the commencement of July in one year to the 30th of June in the next, and is ordinarily issued about September following.

The latest available for this Year Book is consequently that for the period ending 30th June, 1901, and from that report the following particulars are derived :—

*The whole of the Queensland Railways* open for traffic on 30th June, 1901, were as under :—

Railway.	Mileage.
1. Southern Railway and branches ... ..	1,523
2. Central Railway and branches ... ..	591
3. Mackay Railway ... ..	33
4. Bowen Railway ... ..	48
5. Townsville Railway and Ravenswood branch... ..	394
6. Cairns Railway ... ..	48
7. Cooktown Railway ... ..	68
8. Normanton Railway ... ..	96
<hr/>	
Total ... ..	2,801

*Capital Account.*—The Railway Fund on 30th June, 1901, amounted to £23,120,505. The expenditure on construction for the twelve months had been £474,005. The total expenditure on the railways of the State up to the date given has been £20,277,244, leaving an unexpended balance to the credit of the fund of £2,843,061.

*Revenue and Expenditure.*—The twelve months under review have compared unfavourably with those last preceding, in consequence chiefly of an obligation which devolved upon State-owned railways, inflicting considerable loss, and which to railways privately owned might have been a source of profit. A season of prolonged and calamitous drought had afflicted the pastoralists of the Western interior. Grass had disappeared from their runs. Their stock were perishing. Those who had been foreseeing enough, or fortunate enough to secure grazing rights over portions of coastal country, where the effects of drought had been less destructive to the pasturage, shifted their flocks and herds from the desolated runs of the West, and despatched them by trainloads towards the coast country. Others, to whom this resource was not available, had fodder conveyed to them in large quantities. Thus the traffic on the railways was greatly augmented. But, as a matter of State policy, the ordinary charges which would have swelled the railway receipts while in most instances completing the ruin of the squatters—already shaken by the unavoidable enormous mortality of stock—were waived, and special rates were arranged which threw some of the loss upon the community at large by an augmentation of working expenses on the railways in excess of the receipts from this class of traffic. The Commissioner remarks that “the cheap rates for the live stock and fodder have, no doubt, been of very great assistance to our Western pastoralists, but they have had a disastrous effect on the railway returns.”

There were also other exceptional disbursements during the twelve months, and the comparison between these and the preceding equal period works out as follows:—

	1899-1900.		1900-1901.
Paying traffic ... ..	£1,408,313	...	£1,248,522
Non-paying traffic (being services performed for other Government Departments) ... ..	56,086	...	68,414
Gross revenue ...	1,464,399	...	1,316,936
Deduct working expenses	948,691	...	1,057,981
Producing a net revenue of ... ..	£515,708	...	£258,955

Showing a net decrease of £256,753.

The net revenue from all lines, after deducting working expenses, has returned a sum of £1 6s. 3d. per cent. on the capital expenditure on open lines, being a decrease of £1 7s. 2d. on the previous year's percentage.

The total quantities of stock conveyed on the railways during the twelve months were: Cattle and horses, 168,810; sheep and pigs, 2,582,245. As compared with the preceding twelve months, there was a decrease of 84,600 cattle and horses, and 265,506 sheep and pigs. Wool, ordinarily an important source of railway revenue, had, as another consequence of the drought, sunk from 32,472 tons to 24,525 tons, a total decrease of 7,947 tons and of £33,228 in revenue. Agricultural produce—chiefly fodder—was carried to a weight of 273,516 tons, being a decrease of 77,510 tons over the preceding year.

Mineral, chiefly coal, another important freight, showed also a slight decrease. In the preceding twelve months the quantity carried by the railways was 578,755 tons. During 1900-1 the amount was 567,851 tons.

#### PROFIT AND LOSS.

The following statement, from the Railway Commissioner's report, shows, under the different heads of revenue, the result of the year's working on all lines, compared with the previous year's operations, and the expenditure of each branch from revenue funds:—

	1899-00.		1900-1.		Increase or Decrease. —
By Revenue—	£		£		£
Passengers ... ..	341,725	...	349,217	...	7,492
Parcels ... ..	116,362	...	127,085	...	10,723
Minerals ... ..	74,213	...	71,326	...	2,887
Agricultural Produce ...	119,404	...	97,871	...	21,533
Wool ... ..	111,256	...	78,028	...	33,228
Timber ... ..	89,950	...	85,478	...	4,472
General Merchandise ...	388,251	...	331,599	...	56,652
Live Stock ... ..	167,153	...	107,917	...	59,236
Non-paying Traffic ...	56,086	...	68,414	...	12,328
	1,464,400	...	1,316,935	...	147,465
Balance (deficiency in meeting interest) ... ..	276,421	...	552,136	...	
	£1,740,821	...	£1,869,071	...	

	<i>Dr.</i>				Increase or Decrease.—
	1890-1900.		1900-1.		
To Working Expenses—	£		£		£
Maintenance and Re- newals	335,777	...	401,013	...	65,236
Locomotive Branch ...	359,008	...	390,967	...	31,959
Traffic Branch ...	221,640	...	229,903	...	8,263
General Charges ...	32,266	...	36,098	...	3,832
	£948,691	...	£1,057,981	...	£109,290
Add Interest at 4 per cent. on total Capital Expenditure ...	792,130	...	811,090	...	
	£1,740,821	...	£1,869,071	...	

Thus, it will be seen, the working of the railways during the twelve months resulted in a total deficit of £552,136, which has to be made good out of the general revenue of the State. In other words, the community as a whole has been required to provide for the year's operations that sum for the advantages of railway communication—apart from and additional to the fares and freights paid by the actual users of the railways.

The number of train miles run during 1900-1901 was 5,788,112, a decrease over the preceding period of 637,942 train miles. The earnings for the earlier period were 4s. 6 $\frac{3}{4}$ d. and the cost 2s. 11 $\frac{1}{2}$ d. per train mile, and for the latter term 4s. 6 $\frac{1}{2}$ d. and 3s. 7 $\frac{3}{4}$ d.

Passengers carried during the year showed an increase of about 364,718. During some previous years, indeed, the increase had been unprecedented, running up to 1,650,000 passengers. The suburban traffic is mainly instrumental in this advance, but long-distance traffic also appreciably participates in it. The revenue for the year from this source shows an increase of £7,492 over that of 1899-1900.

The following, from the Commissioner's Report, is a general summary of the leading features of work for the twelve months ended 30th June, 1900, compared with those of the previous year:—

		Twelve Months ended 30th June, 1900.	Twelve Months ended 30th June, 1901.
Total capital voted ...	£	21,495,912	23,120,305
Total capital expended ...	£	19,803,239	20,277,243
Capital expended during year ...	£	594,915	474,005
Average cost per mile open*	£	6,897	7,047
Total mileage open for traffic ...	£	2,801.15	2,801.15
Average miles open ...	£	2,796.33	2,801.15
Revenue { Paying traffic ...	£	1,408,313	1,248,522
{ Non-paying traffic ...	£	56,086	68,414
Working expenditure... ..	£	948,691	1,057,981
Profit on working ... ..	£	515,708	258,955
Percentage of earnings to capital expended on open lines	£	2 13 5	1 6 3
Percentage of working expenses to revenue ...	£	64 15 8	80 6 9
Earnings per average mile open ... ..	£	523 13 9	470 2 10
Expenditure per average mile open ... ..	£	339 5 3	377 13 11
Gross earnings per train mile ... ..	£	0 4 6 $\frac{3}{4}$	0 4 6 $\frac{1}{4}$
Expenses per train mile ... ..	£	0 2 11 $\frac{1}{2}$	0 3 7 $\frac{3}{4}$
Number of passenger journeys (exclusive of season tickets)		4,395,841	4,760,559
Goods tonnage ... ..		1,688,635	1,530,440
Train mileage ... ..		6,426,054	5,788,112
Locomotives, number of ... ..		335	349
Passenger stock, number of ... ..		388	410
Goods stock, number of ... ..		6,036	6,502
Brake-vans, number of ... ..		105	117

\* Includes rolling-stock.

Part XXI.

## POST AND TELEGRAPH.

Prior to the 1st January, 1901, when on the accomplishment of Federation the erstwhile Colony of Queensland became an integral State of the Australian Commonwealth, postal and telegraph matters were conducted under the auspices of the Government of the Colony. Under the Federal Constitution Act their control, in common with those for the other States, was vested in the Federal Executive under a Postmaster-General for Australia, a responsible Minister with Cabinet rank.

Up to 1859, when the Colony was separated from New South Wales, the demand for post and telegraph facilities was limited, and the methods adopted for meeting it somewhat primitive. The progress, however, exhibited during the forty years of the Colony's existence point to vigorous and liberal administration of the Department. In 1860 there were 14 post offices and 1,970 miles of mail route; these had expanded by the end of 1900 to 1,277 in number and 33,798 miles respectively. Documents carried in 1860 were—Letters, 279,379; newspapers, 250,365; and packets, 4,456; or a total of 534,200; and in 1900—Letters, 22,681,798; newspapers, 12,091,809; packets, 6,518,215; and parcels, 284,154; or a total of 41,575,976; thus increasing upwards of eighty times in the forty years. Whilst in 1860 money orders were not in issue and postal notes were not yet dreamt of, last year the transactions in the former of these documents issued and paid numbered 250,975 and assumed a money value of £912,713, and of postal notes 581,392 were issued and paid of a face value of £222,587.

With respect to telegraph business, the expansion has been but little less extensive.

No records are available for 1860 and for 1861; those that exist are meagre in the extreme, but starting in 1862 it is found that there were 7 telegraph offices in existence, manipulating 169 miles of single-wire line. Messages transmitted numbered 16,833, and the O.H.M.S. business was valued at £702. These figures had swelled by 1900 to 472 offices, with 10,221 miles of line, and 19,308 miles of wire upon which 1,364,147 messages were transmitted, and 194,136 received into Queensland, whilst the O.H.M.S. business was valued at £14,052. The following table gives particulars showing the growth of postal and telegraph work since 1860:—

Year.	No. of Offices, Post and Telegraph.	Revenue.	Expenditure.	Postal Route (Miles).	Telegraph Wire (Miles).	Letters, &c., through Post.
		£	£			
1860	14	4,867	12,067	1,970	...	534,200
1865	71	28,425	41,187	5,650	1,131	2,488,859
1870	157	32,356	66,679	9,725	2,221	3,000,507
1875	274	62,121	127,292	14,702	5,229	5,489,129
1880	537	81,176	171,235	20,773	8,149	9,229,349
1885	882	178,974	295,594	25,231	12,289	19,726,057
1890	1,243	222,770	327,173	27,622	17,437	28,141,210
1895	1,399	231,709	297,713	29,507	17,790	34,894,969
1900	1,749	314,840	370,175	33,798	19,308	41,575,976

Year.	Telegraph Messages Transmitted and Received into Queensland.	MONEY ORDERS ISSUED AND PAID.		POSTAL NOTES ISSUED AND PAID.	
		Number.	Amount.	Number.	Amount.
			£		£
1860	...	...	...	...	...
1865	... *47,697	9,841	41,592	...	...
1870	... 89,368	19,923	85,295	...	...
1875	... 448,915	37,260	147,458	...	...
1880	... 574,445	69,839	252,502	1,447	294
1885	... 1,202,080	137,479	514,593	33,408	7,191
1890	... 1,329,934	191,346	637,341	50,260	10,784
1895	... 1,055,615	295,765	828,359	380,734	133,214
1900	... 1,558,283	250,975	912,713	581,392	222,587

\* Transmitted only; received, not recorded.

*Telephones.*—Exchanges are now established in the following towns: Brisbane (3, including Albion and Toowong), Bundaberg, Cairns, Charters Towers, Gympie, Ipswich, Mackay, Maryborough, Mount Morgan, Rockhampton, Toowoomba, Townsville, and Warwick.

Long-distance telephones are now in operation between Brisbane and Toowoomba, and also Townsville and Charters Towers.

Telephones are available for the use of the public, on payment of a small fee, at all telephone offices and many other places. In 1896 there were 808 telephone lines in operation and 6 exchanges; the numbers had increased in 1900 to 2,247 public and 150 private lines and 14 exchanges.

On 31st December, 1900, the length of the lines amounted to 280 miles of aerial and 685½ miles underground.

## Part XXII.

# PORTS, HARBOURS, AND LIGHTS.

### THE COAST OF QUEENSLAND.

[Contributed by M. A. JONES, Inspector of Shipping, &c.]

From a shipmaster's point of view the eastern coast of Queensland presents unique conditions from any other part of the world, since from Sandy Cape to Bramble Cay, a distance of some 1,000 miles, the coast line is fronted by a Barrier Reef, a gigantic coralline structure, which from its vast extent proves a formidable obstruction to navigation. There is, however, a track laid down for vessels within the barrier, known as the Inner Route, which, though used for many years, has only recently been closely surveyed by the British Admiralty Authorities; and now being navigated by the largest class of steamers, may be considered as one of the ocean highways of the world.

A pilot service, duly licensed by the Marine Board of Queensland, exists for Torres Strait and the Inner Route, and shipmasters can always obtain the services of a pilot by communicating with the secretary of the Marine Board, Brisbane, or else the secretary of the Torres Strait Pilot Association, 89 Pitt street, Sydney. From Point Danger [the southern boundary between Queensland and New South Wales], to Sandy Cape the coast is quite clear of dangers, with the exception of those lying off Cape Moreton and the entrance to Moreton Bay. From Sandy Cape to Cape Grafton (which is to the eastward of the port of Cairns) the principal dangers to be avoided are numerous small islands, especially between Port Mackay and Bowen, where the channel known as the Whitsunday Passage narrows down in some places to a width of 2 miles. This passage is well known as a beauty spot amongst travellers on the coast, the scenery here at certain times of the year resembling that of the Scotch Lochs. Between Cairns and Thursday Island the characteristics of the coast change, and instead of high well-wooded islands the navigator has to pick his way amongst sandbanks and sunken coral reefs, though all those lying adjacent to the track have been beacons. Numerous small low wooded islands are also passed between Cooktown and Thursday Island. Between November and April many of these abound with Torres Strait pigeons, which afford excellent sport to passengers on board a vessel which "is not in a hurry."

The coast line of the mainland itself is, generally speaking, high and well wooded from Cape Cleveland (Townsville) right up to the Flinders Group. In some places—viz., Hinchinbrook Island and at the back of Cape Tribulation—the coastal range reaches a height of some

3,000 feet. The shores of Princess Charlotte Bay are low and fringed with mangroves, but as soon as Cape Sidmouth is reached the high land commences again and continues without any great break to Cape York.

The lighthouse system has hitherto been maintained at the cost of the Government of Queensland, and is kept in a high state of efficiency. It is not too much to say that, considering the long coast line, the numerous dangers, the large number of small ports, and the sparse population of the State, in this respect Queensland can take her place with any country in the world. It is proposed, however, that all the main coast lights will come under the jurisdiction of the Commonwealth Government at an early date.

There are 25 main coastal lights between Cape Moreton and the Proudfoot Shoal, 22 of them being exhibited from lighthouses, and the other 3 being lightships. This, of course, does not include the lights within port limits.

Cape Moreton and Sandy Cape lights are of the 1st order; Bustard Head, Pine Islet, North Reef, and Booby Island being 2nd order lights; whilst the rest are chiefly of the 3rd or 4th order.

The Brisbane, Mary, Burnett, Fitzroy, Pioneer, and Johnstone Rivers are all lit, and are equally safe for navigation day or night.

From April to October the south-east trade wind prevails on the coast, and the weather may generally be depended upon between these months, the atmosphere being generally fine and clear and the rainfall small.

From December to March, however, is the hurricane season, and, though these visitors are not of regular annual occurrence, the navigator must always watch his barometer, and be on the alert for storm indications in this season. The geographical limits between which hurricanes have struck the coast are between Cape Grenville, in latitude 12 degrees south, and Wide Bay, in 26 degrees south.

In March, 1899, a severe cyclone visited the coast in the neighbourhood of Cape Melville, doing serious damage to the pearling fleets, sinking the Channel Rock Lightship at her moorings, and causing a terrible loss of life, some 200 to 300 being the official estimate.

After striking the coast, these storms generally recurve to the southward and eastward, and blow themselves out in the Tasman Sea.

Storm signals are always displayed to shipping from the principal lighthouse stations on the approach of bad weather.

On the east coast of Queensland, as far north as Cooktown, the tides are of the regular semi-diurnal type, though, in consequence of a large diurnal component, there is a considerable diurnal inequality in time and height.

In the winter months—i.e., from April to October—the night tides are always the highest, whilst the reverse conditions obtain during the other half of the year.

Between Cape Manifold and Port Mackay the tides run with great strength, the rise and fall at Broudsound being 28 feet at springs, consequent on the formation and contour of coast line.

From Cooktown north the tides are irregular, whilst in the Gulf of Carpentaria there is the phenomenon of only one tide in the twenty-four hours.

The voyage through Torres Strait and down the Inner Route has the great advantage not only of much interesting scenery, but further, it is made in smooth water, since the long rolling swell of the Pacific is entirely broken by the Barrier Reef, and many a shipmaster after being battered about in the Coral Sea, bound over from New Guinea, has been glad to come through one of the numerous openings in the reef and find himself under the friendly shelter of its lee.

*The Port of Brisbane*, the capital of the State of Queensland, is situated in latitude 28 degrees south longitude 153 degrees east. Moreton Bay and the Brisbane River lie within its limits, which extend from the south end of Stradbroke Island to Cape Moreton, and thence by an imaginary line to Caloundra Head.

For deep or heavy draft vessels the safest entrance is through the north-west Channel, which is remarkably well lighted and buoyed, and which may be considered quite safe for a stranger to enter, there being no less than 6 fathoms of water anywhere until the Pile Lighthouse (at the entrance to the Brisbane River) is approached, provided, of course, that the directions are strictly adhered to.

The entrance to the North-West Channel lies some  $1\frac{1}{2}$  miles south of Caloundra Head. There are good leading lights placed on Bribie Island to bring a vessel in clear of the North Banks, and thence the channel is lighted by intensified arcs of white light from Caloundra Head Lighthouse and Bribie Island, right down to the Skirmish Banks, whence three gas buoys lead a vessel on to Cowan Cowan Light, on approaching which, and the East Knoll Bank cleared, a vessel can stand over to the anchorage at the mouth of the river.

Coasters and vessels of light draft are, however, in the habit of using the North Channel, but since the banks in the channel are subject to periodical changes, and the track is somewhat circuitous, it is only safe for those shipmasters who have local knowledge, and who being frequently in and out of the port are in touch with the port authorities to obtain notice of any changes. This channel carries about 18 feet at low-water springs.

Another small channel known as "Freemans" exists a mile or two north of Comboyuro Point (on Moreton Island). This is, however, only used by the smallest class of vessel, the masters of which have local knowledge; but, in consequence of the shifting nature of the banks, this channel cannot rightly be considered yet as generally navigable, though it is suggested to commence dredging operations in the future, with a view to test the possibilities of deepening this channel; since if it could be done with any degree of permanency it would save some 35 miles, as against the North-West Channel, for vessels coming into Brisbane from the south.

The tidal rise at springs varies from 5 feet to 6 feet 6 inches, whilst at neaps the range is about 3 feet 9 inches. The pilot service is maintained by the Government, the pilot vessel being stationed off

the north end of Moreton Island, between the Cape and the Fairway Buoy. The steamer is fitted with towing gear, so that, in the event of a vessel getting into difficulties through a breakdown or otherwise, she can, in the absence of a private-owned tug, assist her into safety.

In consequence of its large area, a nasty, choppy sea gets up in Moreton Bay during strong north-easterly or south-easterly winds, and, though it is not sufficient to cause any discomfort to the larger class of vessel, it is inconvenient to lighters and small craft lying alongside.

The south end of Moreton Bay is studded with numerous sandbanks and small islands, and, except for pleasure yachts and small craft trading to the Logan, Albert, and Nerang Rivers, is not frequented by shipping.

The Quarantine Station is situated on Peel Island, on the east side of which there is good anchorage in 8 fathoms about half-a-mile from the shore.

The Brisbane River is some  $17\frac{1}{2}$  miles from the Pile Lighthouse at the entrance, to the Victoria Bridge, which is the head of navigation for oversea vessels (nothing but launches and shallow draft punts, &c., navigate above the bridge).

A vigorous system of harbour improvement is now being carried on in this river. Formerly there was only 4 feet of water on the bar, but now there is a minimum depth of 20 feet at low-water springs in all the navigable channels of the river and on the bar, and it is in contemplation to increase this in the future to 26 feet at low-water springs in all the cuttings.

The course of the river is fairly straight as far as Bulimba Point (some 12 miles from the Pile Light), whence it is very tortuous, there being four nasty corners between this and the bridge, though amongst other harbour improvements it is intended to cut off some of these points, thus giving a vessel a larger swinging area. Kangaroo Point (the worst) is, in fact, already started upon, some  $1\frac{1}{2}$  acres having been now cut away, and the river bed there deepened to 20 feet.

Two powerful dredges, built to the design of Mr. Lindon Bates, have recently arrived in Brisbane, and have already been put on to the work of further deepening and widening the cuttings. The width of the dredged cuttings at the present time being 300 feet, it is proposed in the future to widen all these to 400 feet, thus giving ample room for the largest class of ocean-going steamers to pass one another safely in the cuttings.

Substantial training walls are in the course of construction, one wall between the Hamilton and Eagle Farm Flats on the left bank of the river, and extending for 3 miles, being now completed, and other walls blocking small outlets are now being rapidly pushed ahead in order that the river may be directed into a regular channel, and thus form a scour in the event of flood waters coming down from the upper reaches of the river. The river is well lighted and buoyed, and is equally easy of navigation for medium-sized vessels up to 20 feet draft either by night or day.

A local code of tide signals is established at the Pile Lighthouse, and shipmasters can learn the amount of water in the cuttings and over the bar at a glance.

There is good wharf accommodation, the principal wharves being as under:—

Name of Wharf.	Owner.	Length of Frontage of Wharf.	Minimum Depth at Low Water 15 feet off Wharf.
Webster's ... ..	Private	ft. 260	17 ft.
Parbury, Lamb, and Co. ... ..	"	390	24 "
Musgrave ... ..	"	528	22 "
D. L. Brown ... ..	"	290	14 ft. 6 in.
Railway Wharves, South Brisbane ... ..	Public ...	1,190	11 to 30 ft.
A.U.S.N. Co. ... ..	Private	220	20 ft.
A.U.S.N. Co. ... ..	"	240	20 "
A.U.S.N. Co. (Norman Wharf) ... ..	"	395	20 "
A.U.S.N. Co. ... ..	"	100	20 "
A.U.S.N. Co. ... ..	"	230	20 "
Parbury, Lamb, and Co. ... ..	"	270	18 "
D. L. Brown and Co. ... ..	"	200	15 "
Adelaide S.S. Co. ... ..	"	750	15 to 20 ft.
Wm. Howard Smith and Sons ... ..	"	680	18 ft.
Sugar Refinery ... ..	"	140	19 "
Pinkenba Railway Wharves ... ..	Public ...	600	25 "
Q.M.E. Co., Eagle Farm ... ..	Private	220	24 "

As well as the above, there are several small wharves from 50 feet to 100 feet, carrying varying depths from 6 feet to 12 feet at low-water springs.

The Railway Wharf at Pinkenba has only recently been finished, and it is suggested to further lengthen the frontage to allow two or three vessels of large tonnage to lie alongside without inconvenience. Some of the largest troop vessels chartered by His Majesty's Government to convey troops to South Africa have already used this wharf, and the work of embarking troops and horses carried out expeditiously.

At the back of the wharf there is a large horse compound, subdivided into small drafting yards, and connected with a permanent "race" for walking the horses on board.

The Railway Wharf at Woolloongabba, South Brisbane, is especially used for the loading of coal, there being five permanent cranes at the present time for this purpose. The coal trucks are of the "hopper" class, the crane swinging the hopper plumb over the ship's hold when the lever is raised, and the bottom falls back on hinges; the average weight of each hopper load equalling about 6 tons.

Two or three vessels can lie at this wharf at a time loading, though, the water at the lower end shoaling off to some 11 feet, the crane at this end is more especially used for loading punts and lighters.

Quarrying operations are now in full swing in order to extend the frontage of these wharves lower down the river, when up-to-date machinery will be provided, and increased facilities given to vessels coming to the port for coal cargoes.

There are numerous private-owned coal punts and lighters trading on the river, and vessels requiring bunker coal can always obtain a supply, though, if the quantity required be large, it would always be

well to give agents a few days' notice to make the necessary arrangements.

In close proximity to the railway wharves at Woolloongabba is the graving dock. This is 430 feet long and 44 feet broad on the floor level, these dimensions being increased to 431 feet 6 inches and 50 feet 4 inches on the level of the blocks; the depth over the sill being 12 feet 2 inches at low-water springs and from 18 feet to 19 feet at high-water springs.

The dock is capable of accommodating a steamer of 5,000 tons gross.

As well as the dock, there are two "slips" in Brisbane, both being situated on Kangaroo Point, and close to one another. The larger of the two is owned by Mr. Alexander Peters, and is capable of safely slipping a vessel of 1,000 tons gross; whilst the other one is owned by Mr. S. Moar, and can take anything up to 400 tons with safety.

There are three efficient tug boats in the port—the "Beaver," a twin-screw vessel of 222 tons gross, 96 h.p., owned by Messrs. Webster and Co.; the "Boko," a paddle boat of 203 tons gross, 99 h.p., owned by Messrs. Gibbs, Bright, and Co.; and the "Greyhound," a screw steamer of 77 tons and 30 h.p., owned by Messrs. Campbell and Sons. As well as the above, there are two or three tug boats of a smaller class.

*The Port of Maryborough*, the next port to the northward of Brisbane, may either be approached by the Wide Bay entrance or by Hervey's Bay. The town lies 20 miles up the Mary River.

The passage over the Wide Bay Bar and through Sandy Strait, though saving over 200 miles to a vessel coming from the South, can only be taken in moderately fine weather, and by ships limited to a draft of 12 or 13 feet. Sandy Strait is well lighted, and for light-draft vessels the navigation is equally safe both night and day. The shoalest water is over the Stewart Island Flats, there being only 7 feet 6 inches at low water here. In heavy easterly or south-easterly weather there is a dangerous sea running on the bar, and vessels have been lost by imprudently attempting this channel in bad weather; there is, further, a general tendency of the channel to shift further northwards, the banks constantly undergoing a gradual change.

The Hervey's Bay entrance, on the other hand, is open, and does not offer any serious obstacle to the navigator until the limits of the port are reached, when the channels are well buoyed and beacons. The west channel is lit at night by a pair of leading lights on Woody Island; there is, however, only about 14 feet at low water through this channel, whereas the east channel, though not lighted up, is safe as far as White Cliffs for any draft up to 21 feet, White Cliffs being the usual anchorage for the British-India or any large vessel coming to this port.

The tidal rise is about the same as Brisbane. The Mary River, from the heads to the town wharves, is some 22 miles, and, though well lighted and beaconed, is by no means easy of navigation unless the navigator has local knowledge to assist him. There is a minimum depth of 10 feet at low water in the Mary River, the tidal rise at the heads varying from 7 to 10 feet, where the stream attains a velocity of from 3 to 4 knots.

The principal wharves are the—

	Feet Frontage.		Feet at Low Water.	
Australian ... ..	175	...	21	
Union ... ..	150	...	18	
Howard Smith and Company	250	...	21	
Queen's Wharf ... ..	111	...	16	
Government (Railway) ...	294	...	14	(Upper crane)
Government (Railway) ...	149	...	10	(Inner crane)
Government (Railway) ...	100	...	22	(Lower crane)

As well as the above, there are several smaller wharves with frontages from 30 to 70 feet, with depths varying from 7 to 24 feet.

Maryborough may be considered the second coaling port in Queensland, since the Government Railway Wharf is in direct communication with the colliery at the Burrum district, and at the present time there are several small colliers of 300 or 400 tons gross which trade with coal cargoes from Maryborough north to Rockhampton and Townsville. The method is similar to that adopted in Brisbane, the hopper truck being lowered over the hold of the vessel. There is a large slip here, owned by Messrs. Walkers Limited, capable of slipping vessels up to 500 or 600 tons gross.

The pilot station is at Inskip Point, but, should a vessel entering by Hervey Bay require the service of a pilot, she can obtain one off the Fairway Buoy; since the pilot vessel has to attend to all the work of the port, as well as visiting lighthouses once a month, notice should be given to the harbour-master at Maryborough of the probable time of arrival of vessels from the last port of call.

*Bundaberg* is situated on the Burnett River, some 9 miles from the mouth. At the river heads there is a lighthouse and signal station, the approaches from seaward being quite clear of dangers to within 2 or 3 miles of the coast. Fronting the river mouth is the outer bar, which in July, 1900, had a depth of 10 feet at low water in the line of leads, though inside is an inner bar with only 7 feet at low-water springs and a rocky bottom. The tidal rise at springs is about 9 feet, the stream running 4 knots approximately at the entrance to the river. The Burnett is well lit, buoyed, and beacons, coasting steamers of 600 and 700 tons constantly trading to this port and navigating the river day and night.

This port is the centre of a large sugar district, and a large quantity of sugar is annually exported from here.

There is good wharf accommodation for vessels of 12 or 13 feet draft, the principal wharves being—

	Feet Frontage.		Feet at Low Water.	
Harbour Board ... ..	162	...	14	
Harbour Board ... ..	167	...	12½	

There being also several smaller wharves on either side of the river, with depths varying from 7 to 12 feet at low water.

The harbour works are under the control of a properly constituted board. They have a suction dredge working at the present time deepening and widening the channels; also, a training wall is under construction on the south side of the sea or outer reach of the river.

There is a patent slip here capable of taking on vessels up to 300 tons register.

*Gladstone (Port Curtis)*, lying some 85 miles north-west of Bundaberg, is the next port in order of rotation. Since Gladstone has become the Northern terminus of the South-western Queensland railway system, it has sprung into considerable prominence as a port of call, there being also some meatworks erected here which are in an active state of work. The Northern mail train lands the mails and passengers for North Queensland here on every Saturday morning, when those bound to Rockhampton and the Central district proceed by the "Premier," the railway steamer, to Broadmount wharf, where the Rockhampton train meets them, while those bound to Mackay, Townsville, and the North are embarked on the Australasian United Steam Navigation Company's mail steamer. There are two entrances to the port of Gladstone—the North and the South Channels. The North Channel is, however, only used by small vessels, there being only about 7 or 8 feet at low water between the buoys; further, from a shipmaster's point of view, it is not an easy channel to navigate through at night, judgment playing a very large part in the calculations. The s.s. "Glanworth" was totally wrecked in 1895 while endeavouring to enter this channel on a dark night. Since that time, however, a light has been placed on East Point, which simplifies matters, but even now the "longest way round is often the shortest way in." The South Channel, on the other hand, is easy of entrance. It has recently been lighted with two pairs of fine leading lights, which entirely clear away all difficulties. In the daytime, also, the navigator can pick up the buoys and landmarks without any trouble or risk of danger.

The pilot station is at Gatcombe Head (Facing Island). The pilot has, however, an efficient vessel, and will generally be cruising in the neighbourhood of the Jenny Lind Buoy at the entrance to the South Channel when vessels are expected.

The tidal rise at springs at this port is from 10 to 12 feet. There is not less than 26 feet at low water through the South Channel.

All the dangers within the harbour (which is large and commodious) are buoyed or beacons.

The Government jetty at Auckland Point has a clear approach, with not less than 21 feet at low-water springs, the frontage being 120 feet. There is also a jetty, the property of the Gladstone Meatworks Company, with a frontage of 120 feet, and 20 feet at low water. On the former jetty there are special arrangements for the shipment of live stock.

This harbour is well protected from all winds.

Between Port Curtis and Keppel Bay there is a channel, known as the Narrows, running between Curtis Island and the mainland. This has been dredged in places and beaconed, and vessels of light draft, say up to about 8 feet, can now navigate through this channel, though, since at low water some of the banks dry 2 feet, it can only be worked on the tides, and then only by men with local knowledge. The railway steamer "Premier" uses this channel, though her draft is only 3 feet.

*Rockhampton*, the next port on the coast, takes within its limits the Fitzroy River from the head of navigation as far as Sea Hill in Keppel Bay. Heavy draft vessels will find good anchorage and shelter either under Sea Hill or else by proceeding down the Sea Reach to Port Alma. The latter place was formerly always used by the British India

and Ducal line steamers, but, since the erection of the Broadmount wharf and the opening of the Middle Channel to navigation, Port Alma is little used. A wharf was built there some eighteen or twenty years ago, but, since there is no land communication with it either by road or rail, it has served no particularly useful purpose. The channel through Sea Reach is, however, well lit and beacons, and is easy of navigation. Sea Hill is the usual anchorage for the coasting steamers which do not go up the river; they are met there by a tender, which conveys mails, passengers, and perishable freight to town. Since it is some 50 miles by river from Sea Hill to Rockhampton, it is no uncommon experience for passengers to spend a good part of the night on board the tenders. These vessels, however, are well fitted up with accommodation. The entrance into Keppel Bay from seaward is well lighted, the main coast light of Cape Capricorn being especially useful in assisting the navigator as far as the Timandra Bank gas buoy, where the stranger will pick up his pilot. The pilot station is situated on Grassy Hill, a point of land between Sea Hill and Cape Keppel. Vessels bound from the South should signal off Cape Capricorn, when their signals will be telegraphed on to the pilot station, thus giving the boat time to get out clear of the Timandra Bank. If bound from the North, a signal should be made when about 15 miles off the Timandra Buoy.

There are several outlying dangers, but they are all accurately charted on the Admiralty chart—"Keppel Bay and Islands."

The Middle Channel into Broadmount Harbour, which was dredged and lit up in October, 1899, is undoubtedly the channel of the future; though there are no less than seven lines of leads between the Middle Channel gas buoy and Broadmount wharf, the navigation is comparatively simple, since all the leads are lit at night, while the navigator has also the further assistance of buoys at nearly all the intersections to guide him in the day, as well as the leading beacons on which the lights are exhibited. Through this channel there is a minimum depth of 15 feet at low-water springs; the spring tides rising from 13 to 15 feet, and neaps from 8 to 10 feet.

The Government wharf at Broadmount has at the present time on the outside a length of 500 feet with a depth of 23 feet at low-water springs. There is also an extension in course of construction of 250 feet, which will be continuous with the present berth, and carrying 22 feet at low-water springs. This should be completed about September, 1901. On the inside of the wharf a berth is dredged to 20 feet at low-water springs, 300 feet in length and 60 feet wide; also there is a further length of 200 feet with a similar depth and width dredged out below the wharf on the inside. The wharf is connected by rail with Rockhampton, the journey by train occupying about one and a-quarter hours.

The Fitzroy River, from the shifting nature of the shoals and the general intricacies of the channels, is not easy of navigation, and no fit place for any but a constant trader to navigate. There are also several dangerous patches of rock to be passed between the mouth and the town. The river is lit at night; also there are several buoys and beacons for day use.

At the present time there is 12 feet at low water in the cuttings in the river. Tide signals are exhibited from the lightship moored on the Upper Fats; the average spring rise at the wharves being 9 feet.

This port is under the control of a harbour board. Recently a new powerful suction dredge of the Lindon Bates type has arrived, and has been put on to the work of widening and deepening the channels in the Fitzroy River, it is expected that the town wharves will be accessible to vessels of larger tonnage in the near future.

The wharf accommodation at the present time is as follows :—

	Frontage.		Depth at Low Water.	
			Ft.	in.
Deepwater Wharf, high level ...	95	...	20	0
low    "	445	...	20	0
Railway Wharf                   ...    ...	304	...	18	0
Queen's Wharf                   ...    ...	449	...	13	3
"       "	100	...	12	0

Also, five other jetties with from 30 to 130 feet frontage, and depths varying from 8 to 12 feet.

The above are all the property of the Rockhampton Harbour Board.

*Port of Mackay* is situated in latitude 22 south longitude 148°30 east, the town itself lying some 5 miles up the Pioneer River is not visible from seaward, the approaches to the mouth of the Pioneer are marked by Flat-top Island Lighthouse and the leading lights into the outer anchorage and across the bar. The land at the back is high and well-wooded, though between the first range of hills and the coastline there is a distance of some miles of flat country, which has all been taken up and devoted to the cultivation of sugar-cane.

The outer anchorage is on the north-west side of Flat-top Island in from 3 to 5 fathoms, but, as the area of anchorage ground is small, the bottom has been much broken up by vessels' anchors, and is in consequence not very good "holding ground" in bad weather; further, in strong easterly wind a nasty swell rolls in, making the work of loading and discharging cargoes somewhat difficult and risky. This anchorage is easy of approach both day and night, though on the northern side of the port many shoal patches exist, which the navigator will have to avoid; also, half a-mile north of Round-top Island, which lies about  $1\frac{1}{2}$  miles to seaward of Flat-top, there is a nasty patch of rock with less than 15 feet of water on it. The British-India steamer "Taroba" struck this rock in October, 1889, doing herself considerable damage. It was then uncharted and unknown.

The pilot station is situated on the mainland to the westward of Flat-top Island. Vessels requiring a pilot should signal to the lighthouse on Flat-top, whence the signal will be repeated to the pilot station. The present entrance to the Pioneer was created by heavy floods in that river in 1898, and lies about  $1\frac{1}{2}$  miles north of Flat-top Island. A bar extends across the mouth of the entrance, which nearly dries at low-water springs; thence the channel of the river, which has an average width of from a-half to three-quarters of a cable, varies in depth from 1 to 5 feet at low water until about three-quarters of a mile from the town, when it is nearly dry again.

The tidal rise on the bar is from 12 to 16 feet, and at the town from 10 to 12 feet; thus the smaller class of coasting vessel can, by working the tides, get up to the wharves. The tidal streams run from

3 to 4 knots, and strangers should not attempt the bar without a pilot. During dead neaps vessels of 6 or 7 feet draft can safely enter on the top of high water if the weather be fine.

Lately there has been an efficient pilot steamer provided for this port, which enables the pilot to get out in plenty of time to board an incoming vessel.

In heavy south-east or easterly weather this bar is dangerous. A black diamond is, under these circumstances, hoisted at the Fisherman's Point flagstaff, and also at the Flat-top Island Lighthouse, to warn vessels accordingly.

In the rainy season heavy freshes occasionally alter the formation of the sandbanks in the river, though not the general character of the channel. Any changes, however, that may occur would be shown by the alteration of the buoys and beacons.

Including the bar leading lights, there are six pairs of leads as far as the Railway Wharf.

The principal wharf accommodation is as under:—

				Feet Frontage.	Feet at Low Water.
Howard Smith and Sons	...	...	...	241	2
Adelaide Steam Ship Company	...	...	...	270	dries
Australasian United Steam Navigation Com-					
pany	...	...	...	330	dries
Victoria	...	...	...	330	dries

All the larger class of vessel visiting this port lie at the outer anchorage to load or discharge.

*Port Denison (Bowen)* lies at the north-west head of Edgecombe Bay, some 16 miles from Gloucester Head. The town of Bowen is situated on a grassy knoll on the north side of the harbour. This port may be approached by two entrances—known as the North and South Channels. The former is, however, very narrow, and should not be taken by strangers; further, since there is only 15 feet at low water in the channel, it can only be navigated under the most favourable conditions of tide by vessels of moderate draft. In 1884 the Australian Steam Navigation Company's s.s. "Wentworth" was wrecked on the rocks of North Head whilst coming into Bowen by the North Channel, and the cylinder of the engines is still visible at half-tide.

The South Channel to the westward of Stone Island is, however, the principal entrance, there being nothing less than 23 feet on the line of leads until well inside the harbour, when the water gradually shoals. This channel is lit up by two pairs of leading lights—one on the main land known as the Mount Bramston lead; while the second pair lie on the western side of the town, and bring a vessel right in to the anchorage.

The landmarks for entering this port are all well and clearly defined, and there is really no difficulty for a stranger to enter by the South Channel, provided he carefully studies the chart and keeps the bearings of his landmarks well in hand.

The tidal rise at springs varies from 8 to 10 feet, and at neaps from 6 to 8 feet.

There is a Government pier in Bowen Harbour 2,770 feet long. At the outer end on both sides mooring berths for large vessels have been dredged.

On the south-west side the berth is 408 feet long, with 19 feet at low water. On the north-east side the berth is 408 feet long, with 17 feet at low water.

Small vessels may berth inside these in depths gradually decreasing to 9 feet 6 inches at low water.

The approach to the jetty, which is a cutting 200 feet wide and dredged to 16 feet, leads into a swinging basin at the end of the pier.

There is also a large mooring buoy placed north-west by west from the end of the pier.

This is the only wharf accommodation in this port. The harbour is well protected, and is quite land-locked; consequently no dangerous sea can get up with any wind.

The pilot station is on Dalrymple Point, which lies to the north and west of North Head Lighthouse. The lightkeeper can, if necessary, communicate with the pilot station by signal.

There are meatworks in full working operations at this port, and the large steamers of the Grange and Federal lines frequently call in for cargo, berthing alongside the wharf.

*Port of Townsville.*—Next in importance to Brisbane, this port is situated on the shores of Cleveland Bay. The approaches both from North and South are moderately clear of dangers. Cape Cleveland, the southern limit of the port boundaries, is a conspicuous headland some 200 feet in height; on the summit there is a lighthouse exhibiting a 4th order revolving light. South and east of the cape lie the Salamander Reef and the 4-feet Rock. Vessels coming from the South can either keep to the northward of these dangers or run to the southward and westward of the 4-feet Rock, keeping the leading lights in line. Bay Rock, on which there is also a lighthouse showing a 4th order light, marks the entrance from the North into what is known as the West Channel. There are two anchorages in Cleveland Bay—the one off the town and about 1 mile north-north-east of the breakwater entrance; while the other one is some 6 miles from the breakwater head, under the shelter of Magnetic Island, a large wooded island, some 1,600 feet high, lying to the eastward of Cleveland Bay. Townsville is built on the southern end of the bay; in the middle of the town there is a high rocky hill over 900 feet in height, known as Castle Hill or Mount Cudtheringa, which is an excellent landmark for anchoring.

The depth in any part of Cleveland Bay does not exceed 5 fathoms, the approach to the mainland shores being shoal and very gradual. In the anchorage off the town there is about 17 feet or 18 feet, but by anchoring some 3 miles from the breakwater head a vessel can get up to 24 feet at low water. In strong easterly or south-easterly weather this is a bad anchorage, since the position is exposed and a nasty swell rolls in and subjects the lighters working alongside a vessel to a great deal of knocking about and discomfort, as well as much damage to cargo.

The usual anchorage for large vessels is under Magnetic Island, which is well sheltered from every point, except the north-west (from which quarter it seldom blows here). This anchorage can only be approached by rounding the north end of Magnetic Island by any vessel drawing over 19 feet; since there is only 12 feet at low water

between the harbour breakwater and this anchorage. The southern anchorage is practically an open roadstead, and offers no difficulties, day or night. The northern anchorage, though well lit and buoyed, is somewhat awkward for a stranger to attempt at night.

The harbour itself is enclosed by a breakwater, and, though as yet it has limited accommodation for large vessels, the enclosed area is large, and will, in time, when the dredging operations are completed, have greatly increased capabilities.

The Platypus Channel, which is  $7\frac{1}{2}$  cables long, 250 feet broad, and a depth of 14 feet 6 inches at low water, leads from Cleveland Bay to the breakwater entrance.

The wharves, with a present frontage of nearly 2,000 feet, are built on the eastern breakwater, the berth being dredged out from 20 to 24 feet.

From the breakwater entrance across the harbour to the wharves there is a channel 600 feet in width and 15 feet deep at low water.

The Northern Queensland Railway is in direct communication with the wharves, and shipments of cargo can be brought right down alongside the ship's rail in the railway trucks. Ross Creek flows into the harbour, but, since this is very shoal and only navigated by small craft up to 6 or 7 feet draft, it does not call for any special attention here.

The harbour improvements at this port are under the control of a harbour board.

Alligator Creek flows into Cleveland Bay, about 6 miles south-east from the breakwater. There is a boiling-down establishment on this creek, and, though the sandbanks at the mouth dry at low-water springs, there is a tidal rise of 8 to 10 feet, allowing small vessels to enter the creek and load.

*Port Hinchinbrook*, lying 60 miles north-west of Townsville, is the next port on the coast. This port was formerly known as Dungeness, but of late years the wharf and township of Dungeness have become extinct, and all business, shipping, customs, telegraph, &c., have been established at Lucinda—this being the general name of the port now.

The two entrances to this port are in reality the two ends of the Hinchinbrook Channel, a narrow waterway some 15 miles in length, dividing Hinchinbrook Island from the mainland.

The southern entrance is over a bar, which has only 7 feet at low water. The channel is well lit and buoyed, and presents no difficulties. The spring rise is about 12 feet. There is a large export of sugar from this port, which is the outlet for all the Herbert district.

The northern entrance is easy of approach, there being lots of good landmarks to assist the navigator. Though the channel is long it is by no means difficult, and from a scenic point of view it is quite the most picturesque waterway on the Queensland coast, and thoroughly repays the traveller the loss of a day or two who can spare the time to go this way. There is not less than 18 feet of water (provided the channel is kept) between the entrance and Lucinda.

Hinchinbrook Channel is not lit, so it can only be used in daylight.

Light-draft steamers trading between Townsville and Cairns always use this channel both ways.

There is a jetty at Lucinda capable of accommodating a good-sized vessel, the depth in the berth being 18 feet at low-water springs.

*Mourilyan Harbour*, situated about 35 miles north of Hinchinbrook, though not now a port of entry, calls for a passing reference. The harbour, though small, is almost entirely land-locked, the entrance being about one-eighth of a mile wide between two headlands some 300 feet high, though the navigable entrance is reduced by rocks to a width of only about 70 feet.

The tide races in through this entrance with great velocity, and a stranger should never attempt the entrance at all. The wharf is built just inside the entrance, and careful handling is necessary to bring a vessel alongside in consequence of the tidal eddies.

The pilot for this port is stationed at Flying Fish Point (the mouth of the Johnstone River), where a vessel wishing his services would have to proceed in order to pick him up. The available depth in the 70 feet channel when entering is 18 feet 6 inches at low water.

Spring tides rise from 7 feet to 10 feet; neaps, 2 feet to 4 feet.

Leading beacons are placed on the western shore of the harbour, which, when brought in line, lead right through the middle of the channel. These beacons carry lights at night.

*Geraldton*, the next port, is situated about 5 miles from the mouth of the Johnstone River. The entrance at the mouth of the river, known as Gladys Inlet, is easily distinguished by the houses on the pilot station at Flying Fish Point. There is a large fairway buoy moored about 2 cables outside the bar, on which there is a depth of only 2 feet at low-water springs; the tidal rise varies from 3 to 9 feet; thus this port can only be used by light-draft vessels. Further, the sandbanks over the bar and at the river mouth are constantly shifting. The navigation of the river should only be attempted by those persons who have local knowledge. The wharf accommodation is limited, and only adapted for small vessels. Several small steamers trade between here and Townsville; the river is navigable for 10 miles above the town of Geraldton, as far as the Goondi Sugar-mill, but the navigation is intricate and can only safely be used during daylight above Geraldton.

*Cairns*, lying in the south-west corner of Trinity Bay, is a port which has of late years come into much prominence. This being the port for the Georgetown, Herberton, and Etheridge districts, as well as the copper country of Chillagoe and Mount Garnet, to which places a railway has been recently constructed, the trade is on the increase, and several of the large coasting companies send their vessels here every week.

Though the town is built on low-lying ground at the western side of the inlet, the surrounding country is very high, the land in some instances rising to a height of 3,000 feet. The harbour itself has good water and plenty of room, but the approach, which is a dredged channel some  $4\frac{1}{2}$  miles in length, 200 feet wide, and 11 feet deep at low water, and marked by eight piles carrying square black beacons, requires much attention, and the navigator must be very careful to keep his vessel exactly in the line of leads. The tidal rise varies from 2 to 8 feet. The pilot will board vessels if signalled for outside the dolphin beacon,

which stands at the outer entrance of the cutting; but since he has to pull out the 5 miles from the town, and vessels coming from the South will not be able to signal until within 2 or 3 miles of the dolphin, they must be prepared to anchor and await him.

The principal wharf accommodation is as follows:—

		Frontage.	Depth at Low Water.
		Feet.	Feet. in.
Burns, Philp, and Co.	...	200	14 6
T. G. Fearnley	...	109	14 0
Chillagoe Railway and Mines	236	...	21 0
Chillagoe Railway and Mines	52	...	21 0

The Barron River flows into Trinity Bay about 2 miles from the Dolphin Beacon. This river is navigable for small craft under 7 feet for 4 or 5 miles from the mouth, when the river bed is blocked by snags and trees. The annual rainfall in this neighbourhood exceeds that of any other part of the Queensland coast, especially between the months of December and March, when the rain comes down for days together in ceaseless torrents. The whole way from Townsville to Cairns the coast is a continuous range of high land affording wild and picturesque scenery.

*Port Douglas*, the next northern port, from seaward has the appearance of an island. The town lies just at the back of the hill, on the summit of which there is a lighthouse, showing a 5th order red light. The anchorage is an open roadstead, about half-a-mile off the lighthouse, in 5 fathoms. It is much exposed, and during the strength of the south-east season a nasty sea rolls in. Several dangerous reefs lie off the port on the southern side; the outer one, Wentworth Reef, being marked by a black buoy.

There is a small creek, known as Dickson's Inlet, which flows in at the back of Island Point; the entrance is marked by buoys and leading beacons, but, since there is only 4 feet on the bar with a tidal rise of from 2 to 8 feet, it can only be used as a harbour for small craft. The coasting steamers always anchor in the roadstead.

*Cooktown*, on the Endeavour River, lies about 60 miles north of Port Douglas. This river has historical associations, since it was on its banks that Captain Cook beached his ship, the "Endeavour," for repairs after grounding on the reefs outside—hence the name.

The river runs out on the north-west side of Grassy Hill, which is some 550 feet in height. A signal station and lighthouse stand on the summit of the hill, from which tide signals are displayed showing the water over the bar. The town stands on the south side of the river, and is well sheltered from the strong south-east trade wind which blows here nine months out of the twelve. The anchorage is an open roadstead; it is quite exposed to the east, north-east, and south-east.

Though it is of infrequent occurrence for the sea to be too heavy to prevent communication, it sometimes happens that oversea vessels have to pass this port in bad weather without communicating. There are two or three dangers between Archer Point and the mouth of the river, but the navigation is rendered quite safe by an ingenious system of coloured sectors in the Archer Point light at night, and the careful navigator has no difficulty in piloting his vessel through this channel.

There is 15 feet on the bar at low water, the tidal rise varying from 4 feet to 10 feet. The entrance is buoyed and beacons, the leading beacons being lit at night with two red lights.

The wharves lie about one-sixth of a mile from the outer bar; thus a vessel entering must not come in with too much weigh on. The harbour is well sheltered by Grassy Hill, and is always smooth.

The wharf accommodation is as follows:—

Name.	Frontage.	Minimum Depth, Low Water.	
		Feet.	Feet.
No. 1 Municipal ...	100	...	15
Railway ... ..	100	...	17
No. 2 ... ..	100	...	9

This is the Queensland port which has the most frequent communication with New Guinea—several small craft trading from here regularly to Samarai and Port Moresby. Coal and supplies are always obtainable at reasonable rates.

The largest class of coast steamers call here, this being the Northern terminus of the A.U.S.N. Company's steam service from Melbourne. These vessels, of some 1,800 tons gross, always berth alongside either No. 1 or the Railway wharf.

*Thursday Island*, or *Port Kennedy*, is situated some 15 miles west of Cape York, amongst the Prince of Wales group of islands.

This port is the centre of the pearl fisheries, and has of late years come into much prominence on account of its important position relative to the Australian seaboard, and the fact that it commands the principal entrance through Torres Strait from the westward. Further, it is the first and last port of call for oversea vessels, and is in telegraphic communication with all parts of the Australian colonies.

On Goode Island, adjoining the lighthouse, there is a signal station maintained by Lloyds, and whence vessels are reported to London direct.

Into this port there are two entrances—from the westward by Normanby Sound, an open clear passage with not less than 22 feet at low water right into the harbour, though after the pilot station is passed the channel narrows considerably, and is fringed with rocks and coral reefs on either hand. All the dangers are, however, buoyed and beacons.

The pilot is stationed on Goode Island, and is always out in time to board a vessel in the fairway, provided that signals are made to the lighthouse in good time.

The other entrance is known as Ellis Channel, a narrow waterway carrying only 13 feet at low water; consequently this channel is only used by coasters and light-draft vessels. This entrance is also buoyed and beacons, and presents no difficulties to the careful navigator.

Hitherto this port has not been lit up at night; thus it can only be safely entered during daylight.

The tides here run with an extraordinary velocity; off Vivien Point at times they attain a speed of from 7 to 8 knots, and it takes a full-powered steamer all her time to get round in safety. Off the

town, on the north side of the harbour, the tidal stream considerably slackens, and numerous pearling luggers and small craft are always to be found at anchor here.

The rise varies from 2 to 10 feet, but there is such a remarkable irregularity about the tidal condition that it has been found impossible to tabulate either time or height with any degree of accuracy. Sometimes there are two tides in the twenty-four hours, and at other times only one, this phenomenon depending chiefly on the parallax and declination of the moon, and not the full and change as is generally the case.

Vessels coming from the westward and bound to the ports in the eastern States of Australia *via* Torres Strait and Inner Route will here obtain a coast pilot, if the services of one be required. By anchoring off the Goode Island buoy, and signalling with the letter K (commercial code) under the Union Jack at the fore. It is, however, better if it can be so arranged by shipmasters using this route and requiring a pilot for them to communicate by cable first with the secretary of the Marine Board, Brisbane, or the secretary of the Pilots' Association in Sydney (Torres, Sydney), whereby they will make certain of obtaining a pilot; otherwise, if the matter were left to chance, it is just possible that it might result in disappointment.

There is a good jetty built by the Government. The T head at the end is 200 feet long, with a depth alongside of 22 feet at low water, except within 3 or 4 feet of the piles, where there is only 19 feet. This jetty is at present leased to Messrs. Burns, Philp, and Co., to whom applications for berthing, &c., must be made.

There are two or three small slips at this port capable of slipping a vessel up to 300 tons gross. This work is, however, much in the hands of the Japanese.

Messrs. Burns, Philp also have a hulk moored in the harbour above the jetty.

Vessels requiring coal can obtain it at fairly reasonable rates here.

*Normanton* is situated some 55 miles from the mouth of the Norman River, which flows into the south-east corner of the Gulf of Carpentaria. At the mouth of the river there is a light vessel moored, which is really about the only mark for entering this port, there being very few landmarks by which a stranger can fix his position, since the shores of the Gulf are low and fringed with mangroves. The pilot and telegraph stations at Karumba are also visible from the anchorage, from which they are distant about 7 miles.

The channels from the lightship as far as Karumba, which have been dredged, are marked by buoys and leading beacons, on which there are lights placed at night.

After passing Karumba, the Norman River retains an average width of half-a-mile for the first 15 miles, when it begins to narrow, and sandbanks become numerous, making the navigation somewhat intricate. On the bar there is only 5 feet at low water, though the water deepens again after it is crossed.

The tidal rise and fall at ordinary springs is about 8 feet, except in the months of December, January, and February, when it reaches 13 feet sometimes.

There is only one tide in the twenty-four hours in the Gulf of Carpentaria.

The Norman River is navigable for vessels up to 10 feet draft as far as the Baffle Group, which is 45 miles from the mouth, whilst vessels drawing over 10 feet can discharge at Double Island, some 7 miles lower down.

Between Baffle Group and Normanton the channels are narrow and shoal, and are only safe for small craft up to 6 feet draft.

The pilot both for the Norman and Albert Rivers is stationed at Karumba.

In the south-east season—from April till October—the anchorage off the lightship is quite safe, there being little or no sea; but between December and April these parts are subject to strong north-westerly gales, which bring down a nasty sea, making the anchorage a dead lee shore.

*Burketown*, lying 35 miles up the Albert River, is the last port on the coast of Queensland.

The entrance to the Albert lies 30 miles from Sweer's Island. Sandbanks extend a long way off the land in the vicinity of the river mouth, and here the navigator has but little to guide him when making this port beyond a careful use of the lead; though Kangaroo Point, the eastern head of the river, may be distinguished by a peculiar clump of trees on it.

Some  $6\frac{1}{2}$  miles north by east from Kangaroo Point a red buoy has been laid down in 17 feet to mark the usual anchorage of the mail steamer.

From thence three buoys mark the entrance to the river. There are no lights exhibited here; consequently it is only safe for daylight navigation.

The depth on the bar varies from 3 to 5 feet at low water, but is liable to constant change, the banks at the entrance being formed of shifting sand.

The tidal conditions are similar to those in the Norman River.

The Albert is only navigable for very small craft as far as the Truganini landing, the average depth from the mouth to here being only  $4\frac{1}{2}$  feet at low water.

This completes the list of Queensland ports; there are as well, however, numerous creeks and waterways on the coast navigable for small vessels, which have from time to time as local exigencies require been buoyed and beacons by the Marine Department.

Where the trade has warranted it and the traffic been permanent, these navigation marks have been maintained, though in many cases, the traffic having ceased after a short time, the beacons have not been renewed.

Fuller and more detailed information upon the ports and harbours of Queensland can be obtained from the "Sailing Directions," which are revised and published every year.

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## Part XXIII.

# ABORIGINAL NATIVES.

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## THEIR STATE AND TREATMENT.

### NORTHERN DISTRICTS.

[Contributed by DR. W. E. ROTH, the Northern Protector.]

The following notes, which have been compiled at very short notice, deal mainly with the aboriginals in the northern half of the State, from latitude 22 degrees northward.

Owing to the many abuses under which the autochthonous population of adjoining States continues to suffer, various expressions of opinion have appeared in the public press as to the advisability of federating all aboriginal interests under the Commonwealth. The difficulty of making the question a federal one is enhanced, however, by the fact that three of the Federated States—Tasmania (with no aboriginals), Victoria and New South Wales (with comparatively few)—cannot be expected to make the pecuniary sacrifices necessary for carrying the project into execution. On the other hand, the remaining States might well follow the example now set by Queensland in her dealings with her native population. Indeed, the whole object of the Queensland Aboriginals Protection Act of 1897, and the Amending Bill of 1901, is to promote the welfare and ameliorate the condition of the blacks, to end hitherto-existing abuses, and to prevent their recurrence in the future. First and foremost, let the public be once and for all assured that the *régime* of the Native Police is now a thing of the past. One of the first acts which followed the appointment of the present Commissioner of Police, some six years ago, was the issue of distinct orders, which have been implicitly obeyed, that the aboriginals were to be treated on humanitarian lines, with the result that since then not a single “dispersal,” *i.e.*, by bullet, has taken place.

Queensland's Aboriginal Protection Acts are now administered by two laymen—the Northern and Southern Protectors—who are guided by, and carry into execution, all instructions and orders of the Home Secretary (the Hon. J. F. G. Foxton), and in all matters report to him. The Northern Protector's (Dr. Roth's) headquarters are at Cooktown, the Southern Protector's (Mr. Meston's) at Brisbane. Both these officials are assisted by local protectors (civilian as well as police), the latter receiving material aid from Mrs. Frew, the local protectress at Brisbane and surrounding Petty Sessions Districts, who is responsible for the welfare of the Aboriginal Girls' Home in the capital city.

Where the advance of white settlement has destroyed the hunting-grounds of the aboriginals, the Government has provided feeding-stations

at various centres in the Northern district—this food distribution being in the hands of responsible and reliable people. In other cases, relief in the form of tobacco, &c., is granted for conciliatory and other purposes. Such relief, however, is mainly intended for the very young, for the very old, or for those who, incapacitated by disease, &c., are unable to follow the various kinds of employment which may be offered them by the white settlers. Something between £60 and £70 monthly is thus spent on this item alone.

As to the principle of establishing reserves for the blacks where they could live in their primitive state, the details of a scheme have now arrived at such maturity that its practical execution, in the hands of the Minister, is almost completed. The natives are not to be forcibly removed from their homes, but large reserves are to be proclaimed in those unoccupied areas of country (in the Peninsula and Gulf coasts) where the blacks already are. This action of forming large reserves has been in part necessitated by the fact that of the 690 square miles comprised by the thirteen northern aboriginal reserves already gazetted in past years, not 200 are really suitable for the purpose. In those cases where mission stations happen to be connected with the reserves—(*i.e.*, Batavia, Embley, Cape Grafton, Cape Bedford, Andromache, and Ayton), the missionaries in charge have been appointed superintendents of such reserves, under the 1897 *Aboriginals Protection Act*.

Blankets were distributed this year (1901) in the Northern district to a total of 5,597 aboriginals (2,582 men, 2,200 women, 804 children under sixteen years of age, 11 unspecified) at fifty-six different centres. These Government blankets are specially branded, and their possession by others than aboriginals constitutes a penal offence. Of course, they are supplied only to blacks not in employment, and even then only to the sick, the very young, and the very old: it has been found inadvisable for the sound and healthy adults, and “myalls” not already accustomed to them, to be thus provided, especially as in the large majority of cases these articles are not retained, but utilised for trade and barter. The blanket returns, compiled by the Government Storekeeper, furnish opportunity of making certain deductions with regard to population and vital statistics. For instance, for every one of the 5,597 blacks who are thus known, it is a very fair estimate to reckon that there are two who are not known—(*i.e.*, 11,194), making a total of about 16,800 aboriginals in that portion of the State lying north of 22 degrees latitude. Again, amongst the blacks who have received the bounty, the fact of the number of children (804) being but a third of the total number of adults of either sex (2,582 and 2,200), or one-seventh of the total adult population under review (5,597), bears silent testimony to the terrible rate at which the native must be disappearing.

The principle which generally obtains in regard to the State aid to the mission stations is that the Government subsidises them with an annual grant of money varying in each case according to the number of aboriginals relieved or maintained. This subsidy does not exceed in any case the sum of £200 per annum, and the money is applicable exclusively to procuring food and necessaries for the aboriginals themselves, the missionaries and their assistants being paid and maintained by the various religious organisations under whose auspices they are established. In one or two instances, the grant has been

temporarily increased for special purposes. The mission stations so subsided in the North are the following:—

- “Yarrabah”—Cape Grafton, *viâ* Cairns. Rev. E. R. Gribble.
- “Mapoon”—Batavia River, *viâ* Thursday Island. Rev. N. Hey.
- “Weipa”—Embley River, *viâ* Mein E.T.O. Rev. E. Brown.
- “Hope Valley”—Cape Bedford, *viâ* Cooktown. Rev. G. H. Schwarz.
- “Bloomfield River”—Ayton, *viâ* Cooktown. Rev. W. Poland.
- “Marie Yamba”—Andromache River, *viâ* Proserpine. Mr. C. Freiboth.

Yarrabah Mission Station is worked under Anglican auspices; Mapoon and Weipa by Moravians with Presbyterian support; and Hope Valley, Bloomfield River, and Marie Yamba by the Lutherans. The Presbyterians are taking steps to open another branch at the mouth of the Archer, while the Anglicans propose securing a site at the mouth of the Mitchell, further down the Gulf coast, for similar purposes.

If the school at a mission station is conducted on lines similar to those which obtain in connection with the ordinary provisional schools throughout the State, the Government (in addition to the mission subsidy) pays the salary of the teacher. Religious instruction is permitted in these schools, but with this exception the system of teaching is the same as that adopted at the ordinary State schools, and they are subject to Government inspection. All of the Northern missions have availed themselves of this assistance, and with excellent results. None of the mission inmates, male or female, are ever allowed out into service: they all have to work for the common good, they ultimately marry their own colour, and settle down to a life of usefulness, happiness and comfort. Two of the mission stations—Yarrabah and Mapoon—have been proclaimed Industrial schools under the Reformatories Act.

During the past two years a system has been inaugurated in the North of deporting aboriginal criminals to Fraser Island with very encouraging results, so much so that, removed from their old haunts and associations, they have become law-abiding and useful citizens. The majority of such cases refer to so-called “crimes” committed as a rule in the exercise of tribally-recognised laws and customs, and committed by blacks on blacks. The absence of suitable interpreters, the generally unreliable nature of aboriginal evidence, and the heavy expense to the State, without adequate results, are facts which all militate against the present method of bringing such cases before the courts. Even if a conviction is obtained, the ultimate return of the savage to his native country is fraught with danger on account of the imprisonment not being regarded by him in the light of any punishment. Furthermore, the protection of the blacks must not be carried out at any risk to the safety of the Europeans, and accordingly, when the presence of any particular aboriginal has proved a source of possible danger to the white population, his removal to and detention in another district is sanctioned by the Minister. Otherwise, all aboriginal crimes are dealt with by laws identically applicable to Europeans. There is no flogging, and no forcible indenture to white employers.

If the whites wish to employ aborigines they have to obtain permits from the local protectors, who are the judges as to whether the would-be employers are trustworthy and reliable. The permit having been obtained, agreements are next entered into, but in no case does the agreement extend for a period longer than six months on the boats, or twelve months on land. The agreement, which is perfectly voluntary, is, however, comparatively stringent, and provides, amongst other things, for maintenance of the employee during sickness. On the other hand, if the agreement for hiring is drawn up in accordance with the regulations, &c., warrants can be issued in cases where they would be issued against servants under the Masters and Servants Act. Of course, without proper legal process, the police are not now allowed to bring back any runaways, &c. On the whole, the insistence on agreements is conducive of a great deal of good not only in enabling the blacks to get redress where necessary, but also in tending to destroy the long-cherished and still prevalent idea amongst many whites of their having any "vested interests" in the aborigines. Furthermore, the agreement is a protection to many station managers and other employers of native labour in that their "boys" when properly signed on, cannot now be decoyed away by their neighbours unless the latter wish to run the risk of rendering themselves liable to a prosecution for "harbouring," which now carries heavy penalties in its train.

Again, the whites are not allowed to remove blacks out of a petty sessions district without a permit from the local protector, and then only on entering into bonds and sureties for their return. Indeed, the insistence of these bonds for the return, within limited periods—a twelvemonth at the most—of aborigines when removed from one district to another, or to beyond the State, will gradually put a stop to an abuse that has apparently been going on unchecked for years past. Blacks were repeatedly left stranded in places far distant from their homes, and in many cases the Government was put to the expense of bringing them back.

The interests of aborigines employed on the boats in the pearl-shelling and *bêche-de-mer* industries are carefully watched over by the Thursday Island (local) Protector, Mr. G. H. Bennett, who is also an Inspector of Fisheries. A similar appointment is held by the Northern protector, and the master of the Government ketch, the "*Melbidir*," stationed at Cooktown, patrols the whole Northern littoral, both Gulf and Eastern coast, at least twice during the year. The presence of children under puberty, and of women, are absolutely forbidden now in these pearling and *bêche-de-mer* boats. The wages of the aboriginal crews have also to be paid in full—*i.e.*, without any deductions whatever, at the shipping office, where they are in most cases handed over to the local protectors, or other officials specially authorised, who see that the moneys are spent to the best and most useful advantage. Even in cases of death or alleged desertion on the boats, the wages have to be paid now up to the time of death, &c., to the local shipping office. This regulation will do much to minimise an injustice which is believed to have been at one time very prevalent—the employer, when the time was about expired, forcing the boys to desert, and then pocketing the wages.

No marriages of female aborigines with others than aborigines are now allowed to be celebrated without permission from a protector

specially authorised to give it by the Minister. This step has been rendered necessary from the fact of the probability that most, if not all, of these marriages were contracted to defeat the provisions of the *Aboriginals Protection Act of 1897*. Cases occurred where men of bad character, upon being warned against harbouring or employing native females, deliberately went and married them, and so defied the protectors. It was considered a grave breach of the moral law that if an aboriginal woman were already married according to the recognised native rites and customs she should be allowed to marry, under British law, any other person—alien or European—without proper and full inquiry being made as to the possibility of any wrong being inflicted on her tribal husband.

With regard to sickness and disease, a matter on which the Northern Protector has fully reported to the Minister, much requires to be done, and that by segregation only. The majority of deaths are due to opium, alcohol, syphilis, and consumption. The stringent measures which have lately been passed for the punishment of purveyors of narcotics and stimulants will probably prove of very great benefit in dealing with the first two causes: furthermore, the increased duty of 30s. per lb., instead of 20s., on the opium will also exert good influence. The danger with this latter drug is that it is apparently becoming indulged in by Europeans.

Except where already in service under proper agreement, all full-blooded and half-caste children—especially the girls—are gradually being drafted into the mission stations, on the authority of the Minister, or on the order of the local magistrates to the (mission) reformatories, every child of an aboriginal woman being a “neglected” child under the *Reformatories Act*.

The Northern Protector, who regularly issues an Annual Report, has special instructions to collect all information regarding the ethnology of the native population. The results of his scientific investigations are being published in the form of bulletins, of which at least two are issued annually as Parliamentary papers. The first three already printed deal respectively with String and other forms of Strand, the Language of the Endeavour River tribes, and the Search for Food.

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#### SOUTHERN AND CENTRAL DISTRICTS.

[Contributed by ARCHIBALD MESTON, Protector of Aborigines.]

Before reference to the working of the *Protection Act of 1897*, the first on the Statute-book of Queensland, it seems well to briefly review the position of the aboriginals before legislation intervened on their behalf, and on the experience of the past to found some reliable conclusions with regard to the prospects of the future.

The astounding mortality of the past ten years enables us to see very clearly that if the same death rate continues the vanishing point of the primitive race of Queensland is not far ahead. Beside the death rate is the ever-decreasing number of births.

The changed conditions of the aboriginal woman's existence have destroyed her primitive virtues. She has degenerated morally and physically. The excitement, the pastime, the freedom, the loves and

passions, the social laws and customs, the severe morality, the joyous wild free healthy life of the primitive past have vanished for ever, and left her stranded in an artificial environment that has destroyed the desire for maternity, destroyed her morality and self-respect and physical vigour, leaving the present with no joys and the future without a hope.

The conditions of settlement have scattered the aborigines far and wide, and separated fathers, mothers, children, and all other relatives in hundreds of cases beyond all prospect of ever reuniting while alive.

Isolated from each other as solitary individuals, in single couples, or small parties, distributed among whites between whom and themselves there is very little genuine sympathy, and no racial affinity whatever, the Queensland aborigines are dying off at a rate appalling to contemplate, and we are looking to-day on the mournful spectacle of probably the oldest existing race of mankind, with their laws, languages, customs, and weapons, passing rapidly and silently and uncomplainingly from the face of the earth. The same is told over all the Australian continent.

The Australian aborigine is doomed, and now imposes on us merely the sacred duty of making all possible atonement for the past by brightening his declining years and guiding him gently and kindly over that bridge spanning the abyss between the present and the rapidly-nearing point of final departure.

For ten years the aboriginal population of all Queensland has decreased at the rate of at least 500 per annum. Drink is responsible for some, syphilis for many, and opium for hundreds. Numbers die from pneumonia and defective nutrition.

South of the 22nd parallel, on the area assigned to me as "South and Central Queensland," there are at present about 3,600 aborigines, exclusive of 350 in the reserves at Deebing Creek, Durundur, and Fraser's Island.

The aboriginal population of Queensland in 1840 was certainly not less than 200,000. The earliest reliable statistics give 8,000 within 50 miles of Brisbane, and that is only a pin-point of the colony. There were at least 400 on Bribie Island and 3,000 on Fraser's Island.

To-day, on the whole of Queensland, there are probably not more than 25,000 aborigines, so that in sixty years of contact with whites the race has decreased by 175,000, or nearly 3,000 per annum.

There is no exaggeration here. Not a square mile of Queensland but was occupied as a hunting ground by some tribe or sub-tribe. Blacks were numerous along the coast from Point Danger to Cape York, an unbroken distance of 1,600 miles, for the sea supplied unlimited food. Vast areas of the colony even now unoccupied by whites, or only by stations 50 to 60 miles apart, supported a numerous aboriginal population.

The Gulf country and Cape York Peninsula carried many thousands.

Without a knowledge of the past, the people of the present can have no idea whatever of the numbers of aborigines in the early days of Queensland.

Donald Coutts, of Rosewood Station, in the "fifties," saw "Woonamba," the chief of the Tent Hill tribes, alone march past with 300

fighting men. A thousand men engaged in the fights between the West Moreton and Moreton Bay tribes, the inland and saltwater blacks. The exact number of aboriginals who assembled at the triennial bunya feast would appear incredible if recorded.

To-day, in all localities except the Cape York Peninsula and part of the Gulf country, the tribes have intermingled, and dialects become more or less confused. In the South and Central districts the Bora ceremony is unknown, except to the adult blacks, and corrobories are few and far between. Weapons are rarely made, and some are practically extinct. The genuine return boomerang as made and used 100 years ago is now obtainable only in two or three localities.

Old customs are passing away, and the ancient tribal distinctions, and class divisions, and bora lessons are unknown to the young generation born in the midst of a white population.

Soon after my appointment as Protector I strongly advocated a reform in the system of Native Police. This reform was inaugurated shortly afterwards by Mr. Commissioner Parry-Okeden, and the result for three years has been a complete cessation of the wars between blacks and whites.

The Act of 1897 effected a transformation scene among the aboriginals. The passing of the Act and Government acceptance of the special care of the aboriginals has diffused throughout the white population a far more friendly feeling towards them, and advices by wire or letter of any cases of wrong, sickness, or destitution are now no longer left to the precarious mercy of private benevolence.

Half-caste and aboriginal girls and women with children have been removed to the coast from many parts of the West, south to Mungindi and north to Boulia.

In all cases the removals were made on the repeated reports and earnest advice of the police.

These girls and women were sent to the Magdalen Asylum at Woolloowin, the Home for Aboriginal Females at South Brisbane, or one of the Reserves.

About 50 half-caste and aboriginal girls and women have been sent to service in or near Brisbane since the passing of the Act, and in nearly all cases their record is entirely satisfactory.

Since the Act came into force on the 1st of January, 1897, there has been a very decided change in the condition of the aboriginals throughout the whole of Queensland.

From all quarters come very satisfactory reports of the great improvement in the Western aboriginals since the decline in the opium traffic, but this traffic has been partly resumed, and so long as opium is allowed to be kept by Chinese cooks and gardeners, or white men scalpers or hawkers, so long will it continue to be sold to aboriginals in defiance of all the vigilance of the police.

#### DEEBING CREEK.

This aboriginal station, 5 miles from Ipswich, is in charge of a married superintendent, and the financial affairs are managed by an Ipswich committee, of whom the Rev. P. Robertson is chairman. The number of aboriginals and half-castes varies up to a maximum so far of 150. With the exception of those who are committed under the Industrial Schools Act, all have liberty to come and go at discretion.

Some of the men work on the station, and others work on selections recently acquired by the committee. The station receives an annual grant of £550 from the Aboriginal vote.

The children at Deebing Creek are taught in regular school hours by a white woman teacher.

#### FRASER'S ISLAND.

This settlement began on the 24th of February, 1897, with 51 Maryborough aboriginals taken to the White Cliffs, from which they were removed about six months afterwards to the present position near the mouth of Bogimba Creek, opposite Woody Island.

In Australian history this is the first aboriginal settlement embodying the principle of complete isolation from all contact with the white race.

This principle is a vital part of the *Aboriginals Protection Act of 1897*. This station is now under the control of the *Anglican Board of Missions*, who have a school and church there.

The original intention with regard to this settlement was to collect the unemployed and degraded blacks from the settled districts, place them on a tract of country which they could regard as their own, free from all contact with whites, except those controlling them and occasional authorised visitors; allow them to live as near as desirable to their primitive condition and retain their own language, their weapons and corrobories, and various customs. By no other method can any section of this race be handed down to posterity. By no other method are they worth handing down. When an aboriginal ceases to speak his own language and make and use his own weapons, it is time for him to leave this planet. He is no longer of any interest to the philologist, ethnologist, anthropologist, or the general public.

There is a new reserve at Baramba, 30 miles from Kilkivan, with about 100 aboriginals, and one at Durundur, 15 miles from Caboolture, with an equal number.

The system of permits has worked smoothly and with satisfactory results. About 600 permits have been applied for and granted to employers of about 2,400 aboriginals in my division of Queensland. There is still much work to be done in the West, and some abuses to correct. No effort will be spared in accomplishing this.

#### SUMMARY.

The Act and the system of protection have effected a complete and highly satisfactory change in the condition of the aboriginals throughout the whole of Queensland, and even the first years of work will show results not hitherto attempted or attained in any Australian colony—results of incalculable benefit to the aboriginals, and infinitely creditable to our common humanity.

It was specially fortunate for the aboriginals of Queensland that so earnest a friend as Sir Horace Tozer was available as a statesman to initiate effective legislation, and that the administration of that legislation was left by him to be continued by so enthusiastic a friend as the present Home Secretary, the Hon. J. F. G. Foxton, whose new Bill is a valuable addition to the original Act.

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