SQUARE MILES OF TERRITORY PER MILE OF COAST LINE.

STATES AND CONTINENT.

State.	Coast-line.	Area ÷ Coast-line.	State.	Coast-line.	Area ÷ Coast-line.
	Miles.	Sq. miles.		Miles.	Sq. miles.
New South Wales[1]	700	443	South Australia ...	1,540	247
Victoria	680	129	Western Australia	4,350	224
Queensland ...	3,000	223	Continent[2] ...	11,310	261
Northern Territory	1,040	503	Tasmania ...	900	29

1. Including Federal Capital Territory 2. Area 2,948,366 square miles.

For the entire Commonwealth this gives a coast-line of 12,210 miles, and an average of 244 square miles for one mile of coast line. According to Strelbitski, Europe has only 75 square miles of area to each mile of coast line, and, according to recent figures, England and Wales have only one-third of this, viz., 25 square miles.

(ii.) *Historical Significance of Coastal Names.* It is interesting to trace the voyages of some of the early navigators by the names bestowed by them on various coastal features—thus Dutch names are found on various points of the Western Australian coast, in Nuyt's Archipelago, in the Northern Territory, and in the Gulf of Carpentaria; Captain Cook can be followed along the coasts of New South Wales and Queensland; Flinders' track is easily recognised from Sydney southwards, as far as Cape Catastrophe, by the numerous Lincolnshire names bestowed by him; and the French navigators of the end of the eighteenth and the beginning of the nineteenth century have left their names all along the Western Australian, South Australian, and Tasmanian coasts.

5. **Geographical Features of Australia.**—In each preceding issue of this Year Book, fairly complete information has been given concerning some special geographical element. Thus No. 1 Year Book, pp. 60-68, contains an enumeration of Coastal features, No. 2, pp. 66-77, deals with Hydrology, No. 3, pp. 59-72, with Orography, No. 4, pp. 59-82, with the Lakes of Australia, and No. 5, pp. 51-80, with the Islands of Australia. In the present issue the Mineral Springs of Australia constitute the special feature treated. An orographical or vertical relief map of Australia will be found on p. 53.

§ 2. Mineral Springs in the Commonwealth.

1. **General.**—The following Section contains the latest available information regarding the mineral springs in each State of the Commonwealth. Owing to incomplete examination the details given in some cases are extremely meagre.

2. **New South Wales.**—(i.) The accompanying information regarding the mineral springs of New South Wales has been compiled from particulars furnished by the State Department of Mines. Further information on the subject will be found in "Mineral Resources of New South Wales," by E. F. Pittman (see p. 448 therein), "Iron Ore Deposits of New South Wales," by J. B. Jaquet (see p. 52 therein), and "Geology of the Western Coal Field," by J. E. Carne.

(ii.) (*a*) *The Mittagong Spring.* The list given below must not be taken as exhaustive, for, as stated by Pittman in his "Mineral Resources," mineral springs are fairly numerous in New South Wales, and their waters vary considerably in composition. Chalybeate springs are common in the Permo-Carboniferous Coal Measures and the overlying Hawkesbury Sandstones, but only the Mittagong Spring—alluded to in the table—has been utilised. Out of a total solids amounting to 15.765 grains per gallon, the Mittagong water contains nearly 6 grains of bicarbonate of iron, over 2 grains each of bicarbonate of magnesium and calcium, over 2 grains each of chloride of sodium and

potassium, and over 1 grain of chloride of magnesium. The water has the usual inky taste, its odour is earthy, and the colour in a two-ft. tube, light brown. This spring is the source of a considerable deposit of brown hematite, and some years ago the Fitzroy Ironworks were opened for the purpose of utilising the ore. Facilities have been provided to enable local residents and visitors to drink the waters.

(*b*) *The Ballimore Spring.* This spring is situated on the Talbragar River, about 20 miles north-east of Dubbo. It was located by a diamond drill bore put down in 1886 in search of coal. The water, which has a pleasant taste and is highly charged with carbonic acid, rose from a depth of over 540 feet, and the pressure was found sufficient to cause it to flow through perpendicular piping 30 feet above the surface. Out of a total fixed matter amounting to 225 grains per gallon, bicarbonate of soda accounts for 183 grains, of potassium nearly 13 grains, of calcium over 11 grains, of magnesium over 9 grains, while chloride of sodium yields nearly 7 grains. Bicarbonates of lithium, strontium, and iron are present together with traces of silica and alumina.

(*c*) *The Rock Flat Spring.* This is a natural spring which comes to the surface on the bank of Rock Flat Creek, about 10 miles south-east of Cooma. The water, which is strongly charged with carbonic acid gas, is pleasant to the taste, and discharges at the rate of about 54 gallons per hour. Out of 143 grains of fixed matter per gallon, bicarbonates of calcium and sodium are responsible for 52 grains and 45 grains respectively, while bicarbonate of magnesium yields over 22 grains. Bicarbonates of potassium and strontium are also present, together with 5 grains of chloride of sodium, and traces of silica, alumina, and nitrate of soda.

(*d*) *The Bungonia Spring.* The mineral water from this spring, which is heavily charged with carbonic acid gas, possesses a very agreeable flavour. The spring is situated in Bungonia Creek, about a mile and a-half to the west of the town of Bungonia. Fixed matter per gallon amounted to nearly 207 grains, of which nearly 143 grains were bicarbonate of calcium. Bicarbonate of magnesium was present to the amount of 32 grains. The other principal constituents afforded by analysis were chloride of sodium and bicarbonate of sodium, which gave nearly 13 grains each.

(*e*) *The Jarvisville Mineral Spring.* This natural spring issues from the face of a cliff of Hawkesbury Sandstone on the Jarvisville estate, about a mile from Picton Railway Station. Out of 212 grains of fixed matter per gallon, chloride of sodium accounts for nearly 101 grains, hence the strong saline taste. Amongst the other principal constituents the most noteworthy are bicarbonate of magnesium 50 grains, bicarbonate of calcium 19 grains, chloride of magnesium 26 grains, and sulphate of potash 12 grains.

MINERAL SPRINGS IN NEW SOUTH WALES.

Name of Spring.	Geographical Position.	Geological Characteristics of surrounding Country.	Type of Spring.	Chemical Constituents of water (see also par. ii. above).	Facilities for public use and Medicinal or Remedial Properties.
Mittagong	Mittagong ...	Hawkesbury Sandstone	Chalybeate	For complete analysis see Pittman, Mineral Resources, N.S.W., p. 448, and J. B. Jaquet, Iron Ore Deposits. N S.W.,p.52	—
Ballimore	Ballimore, Talbragar R.	Mesozoic Sandstones overlying Permo-Carboniferous Marine beds	Soda "Zetz Spa"	See Pittman *supra*; also Carne, Geol. Western Coal Field	Bore and piping. Table water.
Rock Flat	Cooma ...	Silurian Slates and Limestone	Soda "Koomah Spa"	See Pittman *supra* ...	Table water.
Bungonia	Bungonia ...	Devonian Limestone	Soda	,, ,, ...	,,
Jarvisville	Picton ...	Hawkesbury Stone	...	,, ,, ...	,,

3. **Victoria.**—The tabular statement below which gives particulars of the chief mineral springs in Victoria, has been compiled from particulars furnished by the State Mines Department. At the time of compilation of this section it was understood that the Victorian Mines Department intended to publish a complete list of the springs, accompanied by plans.

MINERAL SPRINGS IN VICTORIA.

No. and Name of Spring.*	Geographical Position.	Geological Characteristics of Surrounding Country.	Type of Spring, Rate of Outflow, Temperature of Outflow.	Chemical Composition.	Character of Water and Facilities for Public Use.
	2 miles N.W. of Newstead on the north bank of the Loddon River and south of Allot. 19, Section VI., Parish of Tarrengower	Alluvial flat, no Ordovician bedrock showing			Crown Lands Shaft and pump over spring
	Near Turpin's Falls on the Campaspe River west of the western boundary of Allot. 6, Sec. 1, Parish of Emberton	Issuing from basalt	20 gals. per hour 64° F.	Grains per Gal. Na_2CO_3 ... 34.7 $CaCO_3$ ... 15.8 $MgCO_3$ ... 25.0 Na Cl ... 9.0 K Cl ... 2.6 Na_2SO_4 ... trace Na_2HPO_4 ... — Li_2CO_3 ... trace SiO_2 ... 5.3 Al_2O_3, Fe_2O_3 ... 0.9 93.3 CO_2 81.8 ccs of gas per 100 ccs of water.	Crown Lands
	Near Glenluce, on the western side of the Loddon River and west of the western boundary of Allot. 9, Sec. x.A, Parish of Fryers.	In river bed. Ordovician bedrock	16½ gals. per hour. 60° F.	Grains per Gal. Na_2CO_3 ... 17.4 $MgCO_3$ ... 19.9 $CaCO_3$ ... 19.6 Na Cl ... 8.9 K Cl ... 1.0 Na_2SO_4 ... 3.9 Li_2CO_3 ... trace SiO_2 ... 3.5 Fe_2O_3, Al_2O_3 ... 0.7 74.9 CO_2 69.9 ccs of gas per 100 ccs of water.	Crown land. Flow small & water difficult to get at, being 3 in. above summer level of river
7B	On Loddon River, about 7 chains up stream from Spring No. 7	On Loddon River In Ordovician bedrock	16½ gals. per hour 59° F.	Grains per Gal. Na_2CO_3 ... 26.4 $CaCO_3$ ... 30.8 $MgCO_3$ ... 29.5 Na Cl ... 42.5 K Cl ... 1.0 Na_2SO_4 ... 20.6 Li_2CO_3 ... trace SiO_2 ... 2.6 Al_2O_3, Fe_2O_3 ... 0.9 154.3 CO_2 83.7 ccs of gas per 100 ccs of water.	Crown land
	On Limestone Creek in Allot. 3, Sec. 6, Parish of Yandoit	On alluvial flat Ordovician bedrock	Soda spring Large flow		Outlets: (1) Under water in dam about 1 chain wide. On private land (2) A few feet south of the dam a free outlet

* The number given to each spring corresponds with the number on the list as furnished by the State Mines Department.

MINERAL SPRINGS IN VICTORIA—Continued.

No. and Name of Spring.*	Geographical Position.	Geological Characteristics of Surrounding Country.	Type of Spring, Rate of Outflow, Temperature of Outflow.	Chemical Composition.	Character of Water and Facilities for Public use.
10	Near Kyneton on the Campaspe River and south of Allot. 1, Sec. XLVIII, Parish of Lauriston	Ordovician bedrock	654 gals. per hour 61° F.	Grains per Gal. Na_2CO_3 ... 28.8 $CaCO_3$ ... 20.3 $MgCO_3$ ... 30.7 NaCl ... 7.2 KCl ... 2.8 Na_2SO_4 ... trace Na_2HPO_4 1.9 Li_2CO_3 ... 0.3 SiO_2 ... 6.8 Al_2O_3, Fe_2O_3 } 0.9 99.7 CO_2 91.5 ccs of gas per 100 ccs of water.	Clear sparkling water Crown land Pump attached, but natural flow is sufficient.
21 Kangaroo Creek Mineral Spring	On Kangaroo Creek, and about three chains south of the Glenlyon-Franklinford rd. Section VIII, Parish of Glenlyon	Issuing in small vents from Ordovician bedrock	Large flow		Private land
25 Boot's Gully Spring	In Boot's Gully, about 14 chains slightly N.W. of Allot. 16, Section XXX, Parish of Wombat	Issuing from Ordovician bedrock	Small flow		Permanent reserve in State forest
27 Hepburn Spring	On Spring Creek, about seven chains east of Sec. IV, Township of Hepburn, Section XXIV, Parish of Wombat	Ordovician bedrock	Soda-Magnesia Not flowing	Grains per gal. No. 1 Tap. No. 2 Tap. $NaHCO_3$ ... 67.16 73.00 $Ca(HCO_3)_2$ 46.43 45.70 $Mg(HCO_3)_2$ 25.67 25.70 $Fe(HCO_3)_2$ .63 3.05 $MgSO_4$ ... 11.06 2.76 K_2SO_4 ... 1 37 1.46 $CaSO_4$ ... trace Silica ... 1.73 2.65 Organic Matter } trace 3.52 NaCl ... 3.13 trace 157.18 157.84 Much gas from both taps	Crown lands Fitted with pavilion for public use
31 Argyle Spring	In Argyle Gully, about 21 chains west from western boundary of Allot. 3, Sec. VIII, Parish of Wombat	Issuing from Ordovician bedrock	Small flow		Crown land Fitted for public use
36 Tipperary Spring	On Sailor's Creek, about 54½ chains west of the western boundary of the Township of Daylesford, Sec. XXVI, Parish of Wombat	On alluvial flat Ordovician bedrock	Good flow		Permanent reserve in State forest Fitted for public use
37 Brandy Hot Spring	On Deep Creek, about 2½ chains west of N. W. corner of Egan's Corinella Pre-emptive Right, Section B, Parish of Bullarrook	On small alluvial flat Ordovician bedrock	Good flow		Crown lands. One of the best springs in the district

* The number given to each spring corresponds with the number on the list a furnished by he State Mines Department.

MINERAL SPRINGS IN VICTORIA—Continued.

No. and Name of Spring.*	Geographical Position.	Geological Characteristics of Surrounding Country.	Type of Spring, Rate of Outflow, Temperature of Outflow.	Chemical Composition.	Character of Water and Facilities for Public Use.
38 Crystal Spring	On Deep Creek, and on Egan's Corinella Pre-emptive Right, about 38 chains N.W. from the S.E. corner of the Bullarook Public Gardens, Parish of Wombat	Issuing from Ordovician bedrock	Soda-Magnesia Spring Good flow	Grains per gal. $Ca CO_3$ ... 25.73 $Mg CO_3$ ... 35.72 $Na_2 CO_3$ ... 18.00 $Fe_2 CO_3$ ... 1.70 $Ca SO_4$ ... 0.47 $Na Cl$ ... 3.69 $Li Cl$ ... 1.50 $Si O_2$ ... 8.40 90.21	Private land Fitted for public use Water bottled by the Company
39	About four chains west of the southern corner of Section XXVII., Township of Daylesford, Parish of Wombat.	On alluvial flat Ordovician bedrock	Medium flow	—	Crown land Shelter shed fitted for public use
41 Sutton's Spring	About 23 chains west of Leggatt's Block, Section XXXVII., Township of Daylesford, Parish of Wombat.	On alluvial flat Ordovician bedrock	Medium flow	—	Crown lands, and fitted up for public use
42 Hard Hill Spring	About 11¾ chains west from the western boundary of Block west of Leggatt St., Sec. XXXVIII., Township of Daylesford, Parish of Wombat.	On alluvial flat Ordovician bedrock	Medium flow	—	Crown land Fitted for public use
48	On Sailor's Creek, 11 chains west from the western boundary of Allot. 10, Sec. A, Parish of Wombat.	Issuing from Ordovician bedrock	Small flow	—	Permanent reserve in State forest
49 Leitch's Creek Spring	On Leitch's Creek about 2½ chains S. of the S.W. angle of Allot. 27, Sec. VI, Parish of Glenlyon	On alluvial flat Ordovician bedrock	Large flow	—	Crown land Fitted for public use Water bottl'd by company
51 Jubilee Lake Spring	On Wombat Creek about ¾ chain E. of Allot. 4, Sec. 14A. Par. of Wombat	On alluvial flat Ordovician bedrock	Medium flow	—	Crown land Fitted for public use
56 Lyonville No. 2 Mineral	On the Loddon River about 16½ chains W. from the N.W. angle of Allot. 28, Sec. I, Parish of Bullarto	On alluvial flat Ordovician bedrock	Small flow 57° F.	Grains per Gal. $Na_2 CO_3$ ... 41.9 $Ca CO_3$ ... 22.2 $Mg CO_3$ ... 16.4 $Na Cl$ ... 0.9 $K Cl$ ... 1.5 $Li_2 CO_3$ ... trace $Si O_2$ ... 2.2 $Fe_2 O_3$, $Al_2 O_3$ ... 1.0 86.1 CO_2. Little gas	Permanent reserve in State forest

* The number given to each spring corresponds with the number on the list as furnished by the State Mines Department.

MINERAL SPRINGS IN VICTORIA—Continued.

No. and Name of Spring.*	Geographical Position.	Geological Characteristics of Surrounding Country.	Type of Spring, Rate of Outflow, Temperature of Outflow.	Chemical Composition.	Character of Water and Facilities for Public Use.
57 Lyonville No. 1 Spring	On the Loddon River about 20 chains N.W. of the N.W. angle of the boundary of the Township of Lyonville, Sec. 1, Parish of Bullarto	On alluvial flat Ordovician bedrock	5½ gals. per hour 54° F.	Grains per Gal. Na_2CO_3 ... 94.3 $CaCO_3$ ... 32.8 $MgCO_3$ ... 25.6 NaCl ... nil KCl ... 1.6 Li_2CO_3 ... trace SiO_2 ... 2.2 Fe_2O_3, Al_2O_3 } 1.0 157.5 CO_2 50 ccs of gas per 100 ccs of water.	Crown lands Shelter shed erected
59 Bullarto Spring	In the N.W. of Allot. 16, Sec. III, Parish of Bullarto, and N.W. of the Township of North Bullarto	Issuing from Ordovician bedrock	Small spring	—	Permanent reserve in State forest
60 Sailor's Falls Spring	On Sailor's Creek about 6½ chains W. of the western boundary of Allot. 21A Sec. IVA, Parish of Wombat	Issuing from Ordovician bedrock	Small flow	—	Crown land
62	About 10 chains W. of the N.E. angle of Allot. 6 Sec. IVA, Parish of Wombat	From shaft issuing through basalt	Good flow	—	One of the best springs in the district
64 Blackwood Spring	Township of Blackwood on the north bank of the Lerderberg River at Tipperary Flat	Issuing from Ordovician bedrock	Soda water Good flow	Grains per Gal. $NaHCO_3$ 76.84 $Ca(HCO_3)_2$ 29.49 $Mg(HCO_3)_2$ 1.46 $Fe(HCO_3)_2$ trace NaCl 9.05 $CaCl_2$ trace $MgCl_2$ 1.08 K_2SO_4 trace Na_2SO_4 1.55 $CaSO_4$ trace Organic matter } trace 119.47 Large amount of gas.	Crown land Fitted for public use
65	On the Moorabool River about 20⅔ chains S.E. from the S.E. angle of Allot. 2 Sec. A, Parish of Korweinguboora	From Ordovician bedrock	Small flow	—	Permanent reserve in State forest
70	On the Moorabool River and in the western portion of Allot. 5 Sec. 14 Parish of Moorabool	From Ordovician bedrock	Soda water Good flow	Grains per Gal. $NaHCO_3$ 99.28 $Ca(HCO_3)_2$ 32.25 $Mg(HCO_3)_2$ 18.49 $Fe(HCO_3)_2$ trace $MgSO_4$ 13.82 K_2SO_4 2.74 $CaSO_4$ trace NaCl 5.21 SiO_2 2.56 Organic matter } trace 174.35	Private land Fitted for public use Cordial factory

* The number given to each spring corresponds with the number on the list as furnished by the State Mines Department.

MINERAL SPRINGS IN VICTORIA—Continued.

No. and Name of Spring.*	Geographical Position.	Geological Characteristics of Surrounding Country.	Type of Spring, Rate of Outflow, Temperature of Outflow.	Chemical Composition.	Character of Water and Facilities for Public Use.
73 Donnybrook Spring	On Merri Merri Creek in the N.E. portion of Allot. 23 Parish of Kalkallo and about ¾ mile N.E. from Donnybrook Ry. Station	Issuing from basalt	38 gals. per hour 58.5° F.	Grains per Gal. Na_2CO_3 44.3 $CaCO_3$ 30.2 $MgCO_3$ 79.2 Na_2SO_4 5.8 Na Cl 58.1 K Cl 2.7 Li_2CO_3 nil SiO_2 6.3 Fe_2O_3, Al_2O_3 0.7 227.3 CO_2 38 ccs of gas per 100 ccs of water	Private land Fitted with concrete chamber
74 Coimadai Spring	On the western boundary of allot. and on the eastern bank of Coimadai Creek Allot. 17 Sec. XXII. Parish of Merrimu	Issuing from Ordovician bedrock	—	Grains per Gal. Na Cl 101.40 $CaCl_2$ trace $MgCl_2$ „ $Mg(HCO_3)_2$ 66.30 $Ca(HCO_3)_2$ 46.05 $NaHCO_3$ 8.76 $Fe(HCO_3)_2$ 1.27 $MgSO_4$ 20.78 $CaSO_4$ trace K_2SO_4 3.65 SiO_2 1.92 Organic matter trace 250.13 Small amount of gas.	Private land
75 Clarendon Spring	About 3 chains N. of Williamson's Creek in the southern portion of Allot. A 2A Sec. 3, Par. Clarendon	On alluvial flat Ordovician bedrock	Good flow	—	Private land
76 Geelong Springs No. 1 Spring	Geelong. On beach a little N.W. of the N.W. corner of the Botanical Gardens, Parish of Corio	In Tertiary limestone about tide level	Saline 15½ gals. per hour	Grains per Gal. Na Cl 375.6 $MgCl_2$ 1.0 $MgSO_4$ 15.2 $Mg(HCO_3)_2$ 49.6 $Ca(HCO_3)_2$ 81.4 $Fe(HCO_3)_2$ 1.4 SiO_2 2.4 526.6 Ammonia (free) 2.4 „ (albuminoid) 0 11 Nitrogen as nitrates nil Nitrogen as nitrites nil Co_2 in ccs per 100 ccs of water 31.1 Note.—Ammonia and nitrogen figures calculated in parts per million	On Crown lands Fitted for public use
77 Geelong Springs No. 2 Spring	Geelong. On beach about 2 chains S.W. from No. 76 Spring, Parish of Corio	In Tertiary limestone about tide level	Saline 13½ gals. per hour	Grains per Gal. Na Cl 377.9 $MgCl_2$ 0.8 $MgSO_4$ 30.4 $Mg(HCO_3)_2$ 42.6 $Ca(HCO_3)_2$ 64.9 $Fe(HCO_3)_2$ 0.3 SiO_2 2.1 519.0	On Crown lands Fitted for public use

* The number given to each spring corresponds with the number on the list as furnished by the State Mines Department.

MINERAL SPRINGS IN VICTORIA—Continued.

No. and Name of Spring.	Geographical Position.	Geological Characteristics of Surrounding Country.	Type of Spring, Rate of Outflow, Temperature of Outflow.	Chemical Composition.	Character of Water and Facilities for Public Use.
77 (contd.)				Ammonia (free) 0.06 „ (albuminoid) trace Nitrogen as nitrates 0.075 „ „ nitrites nil CO_2 in ccs per 100 ccs of water 13.3 Note.—The nitrogen and ammonia figures calculated in parts per milli'n	
78 Geelong Springs No. 3 Spring	Geelong. On beach about 1¼ chains S.W. of No. 77 Spring, Parish of Corio	In Tertiary limestone about tide level	Saline 36 gals. per hour	Grains per Gal. Na Cl 341.2 Mg Cl_2 0.6 Mg SO_4 13.6 Mg $(HCO_3)_2$ 50.4 Ca $(HCO_3)_2$ 59.1 Fe $(HCO_3)_2$ 1.3 Li O_2 2.4 468.6 Ammonia (free) 2.4 „ (albuminoid) 0.11 Nitrogen as nitrates trace „ „ nitrites nil CO_2 in ccs per 100 ccs of water 22.1 Note.—The nitrogen and ammonia figures are calculated in parts per million	
79 Clifton Springs No. 1 Spring	Bellarine. In N.E. corner of Allot. 6 Sec. 11 Parish of Bellarine, near Clifton Springs Hotel. On coast	Issuing from Tertiary beds	Sulphur spring Small flow	Grains per Gal. Na Cl 338.22 Ca Cl_2 trace Mg Cl_2 50.35 Mg $(HCO_3)_2$ 44.77 Ca $(HCO_3)_2$ 41.47 Na $(HCO_3)_2$ 5.07 Fe $(HCO_3)_2$ trace Mg SO_4 19.78 Ca SO_4 trace K_2 SO_4 trace Silica 6.40 Organic matter trace 506.06 CO_2. Gas present. This analysis is not from No. 1 Spring, but is given as a typical analysis of the Clifton Springs water	Spring protected and fitted with pump On private property Hot mineral water baths provided at Clifton Spgs. Hotel
80 Clifton Springs No. 2 Spring	Bellarine. On coast about 1½ chains S.W. of No. 79 Spring, Allot. 6 Sec. 2, Par. of Bellarine	Issuing from Tertiary beds	Magnesia spring Small flow	See No. 79.	Do.
81 Clifton Springs No. 3 Spring	Bellarine, 1¾ chs. S.W. of No. 80 Spring, Allot. 6 Sec. 2 Parish of Bellarine. On coast	Issuing from Tertiary beds	Seltzer spring Small flow	See No. 79.	Do.
82 Clifton Spring No. 4	Bellarine, 6¾ chs. S.W. of No. 81 Spring, Allot. 6 Sec. 2 Parish of Bellarine. On coast	Issuing from Tertiary beds	Iron spring Small flow	See No. 79.	Do.

* The number given to each spring corresponds with the number on the list as furnished by the State Mines Department,

MINERAL SPRINGS IN VICTORIA—Continued.

No. and Name of Spring.	Geographical Position.	Geological Characteristics of Surrounding Country.	Type of Spring, Rate of Outflow, Temperature of Outflow.	Chemical Composition.	Character of Water and Facilities for Public Use.
83 Frankston Spring No. 1	Township of Frankston, S. of Public Gardens, Sec. 10, Parish of Frankston	—	Sulphur spring	Parts per 100,000 $Fe SO_4$ 2.2419 $Ca SO_4$ 4.0000 $Mg SO_4$ 1.2247 Na Cl 9.3200 $Ca Cl_2$ 0.4320 $Fe CO_3$ 0.5400 $Ca CO_3$ 1.4200 Phosphates trace Arsenic trace $Si O_2$ 1.2600 Na Br trace $H_2 S$ 2.55 grs. Total solids inorganic 19.852	
84 Frankston Spring No. 2	Township of Frankston, near No. 83	—	Chalybeate spring	Parts per 100,000 $Fe SO_4$ 6.0151 $Mg SO_4$ 2.1620 $Ca SO_4$ 4.6420 Na Cl 18.3200 $Ca Cl_2$ 1.0200 $Fe CO_3$ 0.6890 $Ca CO_3$ 1.7320 Phosphates trace Arsenic trace $Si O_2$ 0.1988 $H_2 S$ 0.1500 Total solids inorganic 30.2143	

4. **Queensland.**—Particulars regarding the mineral springs of Queensland will be found in the tabular statement given below, which has been compiled from particulars supplied by the State Mines Department. In addition to those mentioned in the list, there are some springs on the Walsh River to the north of the Chillagoe railway line, but beyond the fact that the water is cold and potable, little is known of these springs, as they are seldom visited.

MINERAL SPRINGS IN QUEENSLAND.

Name of Spring.	Geographical Position.	Geological Characteristics of surrounding Country, and Type of Spring, &c.	Temperature of Outflow.	Chemical Constituents of Water. Grains per gallon.	Facilities for Public use, and Medical or Remedial Properties
Innot Hot Springs.	8 miles E. by N. of Mount Garnet railway station (Chillagoe line), North Queensland.	The outlets of the springs are in the bed of Innots or Nettles Creek about 1900 ft. above sea level. The prevailing rock in the vicinity is granite, with dykes of felsite traversing slates, schists, &c. On the banks of the creek extensive siliceous sinter deposits are to be found.*	158° to 168° Fahr.	Total Solids 41.6 Iron with Alumina .8 Calcium Carbonate 2.6 Sodium Carbonate 8.6 Sodium Sulphate 3.3 Sodium Chloride 19.1 Silica 7.2 Sulphates as SO_4 3.3	Rheumatic complaints. Table use. Bath houses erected, and hotel accommodation.

MINERAL SPRINGS IN QUEENSLAND—Continued.

Name of Spring.	Geographical Position.	Geological Characteristics of surrounding Country, and Type of Spring, &c.	Temperature of Outflow.	Chemical Constituents of Water. Grains per gallon	Facilities for Public use, and Medicinal or Remedial Properties.
Einasleigh Hot Springs.	102 miles (by rail), S.S.W. of Almaden railway station (Etheridge line), North Queensland.	The springs have formed several sinter-terraced pools. Basalt forms the bed of the Einasleigh R. and surrounding country, and it has been suggested that the volcanic forces which produced the outbursts of basalt still possess sufficient vitality to give rise to thermal springs.*	...	Total Solids 57.60 Carbonate of Cal. and Magnesium 6.25 Carbonates of Sod. and Potassium 15.94 Chlorides of Sod. and Potassium 32.61 Volatile matter 2.80 Sulphuric Acid Trace Sulphuretted Hydrogen 2.19	Chlorinated sulphuretted water, possessing certain medicinal properties. Rheumatic complaints.
Petford (Oakvale) Mineral Springs.	2 miles S. of Petford railway station (Chillagoe line), North Queensland.	The prevailing rock in the vicinity is granite, with slates belonging to the Gympie formation. The outlet of the spring is a few inches in diameter with sinter surrounding it.*	Normal	Total Solids 104.80 Silica 6.57 Iron (Fe_2O_3), with Alumina 0.53 Cal. Carb. 25.95 Mag. Carb. 3.97 Sod. Carb. 54.10 Sodium Chloride 11.37 Potassium Sulphate 1.01 Potassium Chloride 1.12 Lithia Trace	Table use.
Maria Creek Bore.	4 miles W. of Tolmies railway station (central line), 133 miles (by rail and road) W. of Rockhampton.	Bore passed through shales and sandstones belonging to the Upper Bowen formation (Permo-Carboniferous), to a depth of 1002 ft. Water met with at 400 ft. Artesian.†		Total Solids 864.50 Silica 2.55 Iron (Fe_2O_3) with Alumina 1.45 Cal. Carb. 15.20 Mag. Carb. 45.45 Sod. Carb. 576.00 Sod. Chloride 223.85	Table use
Sandersons (Stanwell Bore).	Stony Creek, 2 miles S.S.W. of Stanwell railway station (central line), 18 miles (by rail and road) S.W. of Rockhampton.	Bore sunk in Coal Measures (Permo-Carboniferous). Flow of 10,000 gallons per diem at 200 ft., increasing to 15,000 gallons on sinking deeper. Artesian.		Total Solids 33.50 Silica 1.00 Cal. Carb. 7.00 Mag. Carb. 8.50 Sod. Chloride 15.00 Sod. Sulphate 2.00 Free Carbonic Acid 4.40	
The Springs, "Helidon Spa" Water.	Near Helidon, 72 miles (by rail) S.W. of Brisbane.	Water is charged with carbonic acid gas, and is obtained from a natural spring in alluvium, which rests on sandstone belonging to the Ipswich Coal Measures (Trias Jura). Basalt occurs about 1 mile to the south. Artesian.		Total Solids 233.01 Silica 0.29 Iron (Fe_2O_3) with Alumina Trace Cal. Carb. 7.35 Mag. Carb. 3.39 Sod. Carb. 2 12.14 Sod. Chloride 2.99 Lithium Carb. 2.68	Table use.
Muckadilla Bore.	334 miles (by rail) W. of Brisbane.	The rocks in the vicinity of the bore belong to the Rolling Downs formation (lower cretaceous). Basalt occurs about 8 miles to the north. Artesian. The flow uncontrolled is 23,000 gallons daily.		Total Solids 32.85 Silica 3.00 Iron (Fe_2O_3) with Alumina 0.50 Cal. Carb. 3.30 Mag. Carb. 1.51 Sod. Carb. 15.99 Sod. Chloride 6.90 Sod. Sulphate 1.55	Rheumatic complaints. Bath houses erected and hotel accommodation.

* Suggested origin, Geyser. † Flow of 10,000 gallons and more at brief intervals produced by pneumo-dynamic or gas pressure. Water saturated with carbonic anhydride, which under ordinary pressure shows the presence of 32.8 grains per gallon.

5. **South Australia.**—According to the Government Geologist of South Australia there is a large number of springs in that State from which issue mineralised waters of such a character that they may be applied to medicinal uses. Although individual cases have been reported of the application of these mineral waters to such ends, no general recourse to the springs by that section of the community likely to derive benefit from them can be stated to exist.

The areas in which these springs are found occur in parts of the State in which the annual rainfall is low and vegetation is correspondingly sparse. The surroundings are not, as a rule, picturesque in the conventional way, but have a certain weird fascination of their own. The summer climate is trying, but during the winter months the general climatic conditions are pleasant and bracing.

The great majority of the springs are distributed along a zone which fringes the Great Australian Artesian Water Basin. The artesian water appears at the natural springs, where the hydraulic pressure existing in this great depression is sufficient to force it to the surface of the ground through any naturally occurring channel, or where the impermeable rock masses of the margin of the basin arrest the subterranean circulation of the water. Many of these mineral springs build up a mound at the surface by the deposition of mineral material brought up in solution and precipitated as evaporation proceeds. They are consequently often referred to as "mound springs."

The composition of the mineral waters varies from point to point, as may be seen from the analyses. The salts most abundantly present in solution are sodium carbonate, calcium carbonate, sodium chloride, and sulphates of magnesium and sodium. The total amount of solids in solution varies between one-quarter and three-quarters of an ounce to the gallon.

The temperature of the issuing water rises in the case of Paralana Springs to 130° F., but is usually much lower.

The railway line between Oodnadatta and Hergott Springs follows the zone of the mound springs and gives ready access to many of them, but others are more difficult to approach. Dalhousie Springs, a large important group, lie 75 miles to the north of Oodnadatta, and other springs are found at similar distance to the east of Hergott Springs.

The water which issues from these springs is also tapped by a large number of artesian bores. Advantage can be therefore taken of any natural facilities within the limits of the area in which flowing bores are situated to arrange for a supply of uncontaminated water and to control its distribution. Should a sufficiently great demand arise for the mineral waters for medicinal purposes, this method of exploitation will probably be followed.

In addition to the mound springs which are connected with the Great Australian Artesian Basin there are others which are less well known and the origin of which is undetermined. Such are the Indulkana and Arcoeillinna springs, distant 120 miles from Oodnadatta in a west-north-westerly direction, and enclosed within the limits of primary rocks.

6. **Western Australia.**—So far as is yet known there are no mineral springs in this State.

7. **Tasmania.**—The accompanying information regarding the mineral springs of Tasmania has been compiled from particulars supplied by the State Government Geologist.

MINERAL SPRINGS IN TASMANIA.

Name of Spring.	Geographical Position.	Geological Characteristics of surrounding Country and Type of Spring.	Suggested Origin.	Temperature of Outflow.	Chemical Constituents of Water.	Facilities for Public use.
Kimberley	Warm spring at Kimberley, Northern Tasmania	In Quaternary beds Carbonate	Meteoric water probably issuing from a fissure dividing Permo - Carboniferous beds from Pre-cambrian quartzite	74° F.	Solid matter, chiefly Carbonate of Lime. 20 grns. per gal. Chlorine 1.4 grns. per gal.	On private land near railway station.
Southport	Warm spring near Southport, Southern Tasmania	Permo - Carboniferous	...	85° F.	Not known.	...
Duck River	Springs in country on both sides of Deep Creek, near Duck Bay, North West Coast	No outcrops of rock near Chloride	...	Temperature not ascertained.	Chlorine in Chlorides 10.9 grns. per gal. Total solid matter 81.0 grns. per gal. The solids consist chiefly of Sodium Chloride with Carbonates of Lime and Magnesia, the latter Carbonate in larger proportion.	Exclusive control could probably be acquired

1. *(a) Kimberley Spring.* This spring is situated at about 200 yards N.W. of the Kimberley Hotel, on the Mersey and Deloraine Tramway Co.'s land, east of the Mersey, and 20 feet above the present banks of that river. It forms a pool about 130 feet long by 60 feet wide. This pond has a basin-shaped outline a few feet above the present rim, suggestive of a shrinkage in supply of water. The depth of water is from 3 to 6 feet. In one corner of the pool gas bubbles are continually rising to the surface, and this is the part in which the spring is situate. The water escapes at the lowest point and forms a permanent creek. The temperature is constant at 74° F. The composition of the water is shown in the preceding table. The ground surrounding the spring is a pebbly drift of Quarternary age, compacted with a ferruginous cement. The bed rock is conjectural, but Pre-Cambrian quartzite borders the flat in which the spring is situate, and probably junctions with concealed Permo-Carboniferous beds.

(b) Southport. Near Southport, up the Lune River, a warm spring (85° F.) bubbles up in the bed of a small tributary stream. The country is level and timbered, though open button grass marshes also exist. The ground is strewn in places with boulders of Mesozoic diabase, and the strata in which the springs occurs are supposed to be of Permo-Carboniferous age.

(c) Duck River. On the Mowbray swamp, half mile west of Smithton, are springs issuing from small crateriform mounds of peat 10 to 30 feet high, from which decomposition gas bubbles constantly rise. The water is cold and apparently iron, salt, and lime bearing. The age of the strata is Quarternary. It was in this swamp that the skeleton of the giant Marsupial Nototherium Tasmanicum was found in 1910.