

CHAPTER II.

PHYSIOGRAPHY.

§ 1. General Description of Australia.

1. *Geographical Position.*—(i) *General.* The Australian Commonwealth, which includes the island continent of Australia proper and the island of Tasmania, is situated in the Southern Hemisphere, and comprises in all an area of about 2,974,581 square miles, the mainland alone containing about 2,948,366 square miles. Bounded on the west and east by the Indian and Pacific Oceans respectively, it lies between longitudes 113° 9' E. and 153° 39' E., while its northern and southern limits are the parallels of latitude 10° 41' S. and 39° 8' S., or, including Tasmania, 43° 39' S. On its north are the Timor and Arafura Seas and Torres Strait—on its south the Southern Ocean and Bass Strait. The extreme points are “Steep Point” on the west, “Cape Byron” on the east, “Cape York” on the north, “Wilson’s Promontory” on the south, or, if Tasmania be included, “South-East Cape.”

(ii) *Tropical and Temperate Regions.* Of the total area of Australia nearly 40 per cent. lies within the tropics. Assuming, as is usual, that the latitude of the Tropic of Capricorn is 23° 30' S. (its mean value for 1928 is 23° 26' 55.14”), the areas within the tropical and temperate zones are approximately as follows :—

AUSTRALIA—AREAS OF TROPICAL AND TEMPERATE REGIONS.

(STATES AND TERRITORY PARTIALLY WITHIN TROPICS.)

| Area. | Queensland. | Western Australia. | Northern Territory. | Total. |
|---|-------------|--------------------|---------------------|------------|
| | Sq. Miles. | Sq. Miles. | Sq. Miles. | Sq. Miles. |
| Within Tropical Zone | 359,000 | 364,000 | 426,320 | 1,149,320 |
| Within Temperate Zone | 311,500 | 611,920 | 97,300 | 1,020,720 |
| Ratio of Tropical part to whole State .. | 0.535 | 0.373 | 0.814 | 0.530 |
| Ratio of Temperate part to whole State .. | 0.465 | 0.627 | 0.186 | 0.470 |

Thus the tropical part is roughly about one-half (0.530) of the three territories mentioned above, or about five-thirteenthths of the whole of Australia (0.386).

2. *Area of Australia compared with Areas of other Countries.*—It is not always realized that the area of Australia is nearly as great as that of the United States of America, that it is four-fifths of that of Canada, that it is over one-fifth of the area of the whole of the British Empire, that it is more than three-fourths of the whole area of Europe, and that it is about 25 times as large as Great Britain and Ireland or Italy. This great area, coupled with a limited population, renders the solution of the problem of Australian development a particularly difficult one. The areas of Australia and of other countries are given in the following table :—

AREA OF AUSTRALIA AND OF OTHER COUNTRIES.

| Country. | Area. | Country. | Area. |
|--|-------------------|--|-------------------|
| Continental Divisions— | Sq. miles. | Asia— | Sq. miles. |
| Europe | 3,729,321 | Russia | 6,618,403 |
| Asia | 16,946,094 | China and Dependencies .. | 4,279,170 |
| Africa | 11,921,155 | British India and Adminis- tered Territories .. | 1,094,300 |
| North and Central America and West Indies .. | 8,665,836 | Arabia and Autonomous States | 1,000,000 |
| South America | 7,070,284 | Feudatory Indian States .. | 711,032 |
| Australasia and Polynesia | 3,463,360 | Persia | 628,000 |
| Total, exclusive of Arctic and Antarctic Conts. | 51,796,050 | Dutch East Indies | 572,950 |
| | | Turkey | 486,353 |
| | | Japan (and Dependencies) | 260,252 |
| | | Afghanistan | 245,000 |
| | | Siam | 200,148 |
| | | Iraq (Mesopotamia) | 143,250 |
| | | Philippine Islands | 114,400 |
| | | Laos | 82,604 |
| Europe— | | British Borneo, Brunei, and Sarawak | 77,106 |
| Russia | 1,625,518 | Cambodia | 67,550 |
| France | 212,659 | Syria | 60,000 |
| Spain (inc. possessions) .. | 194,800 | Nepál | 54,000 |
| Germany | 181,714 | Tonking | 40,530 |
| Sweden | 173,154 | Annam | 39,758 |
| Poland | 149,958 | Federated Malay States .. | 27,506 |
| Finland | 132,642 | Cochin China | 26,476 |
| Norway | 124,964 | Ceylon | 25,332 |
| Rumania | 122,282 | Malay Protectorate (inc. Johore) | 23,007 |
| Italy | 119,710 | Bhután | 20,000 |
| Serb, Croat, and Slovene State | 96,134 | Trans-Jordan | 16,220 |
| Great Britain and Northern Ireland | 94,633 | Aden and Dependencies .. | 9,000 |
| Czecho-Slovakia | 54,207 | Palestine | 9,000 |
| Greece | 49,912 | Timor, etc. (Portuguese Indian Archipelago) .. | 7,330 |
| Bulgaria | 39,814 | Cyprus | 3,584 |
| Iceland | 39,709 | Goa, Damao, and Diu | 1,638 |
| Hungary | 35,911 | Straits Settlements | 1,600 |
| Portugal | 35,490 | Sheikh Said | 625 |
| Austria | 32,369 | Kwantung | 538 |
| Lithuania | 31,652 | Hong Kong and Dependen- cies | 391 |
| Irish Free State | 27,000 | Wei-hai-wei | 285 |
| Latvia | 25,000 | Bahrein Islands | 250 |
| Spitzbergen, Bear and adjacent islands | 25,000 | French India (Pondicherry, etc.) | 196 |
| Estonia | 18,362 | Kwang Chau Wan | 190 |
| Albania | 17,374 | Maldivo Islands | 115 |
| Denmark | 17,108 | Macao, etc. | 4 |
| Switzerland | 15,940 | Tientsin | 1 |
| Netherlands | 13,210 | Total, Asia | 16,946,094 |
| Belgium | 11,755 | | |
| Turkey | 8,185 | Africa— | |
| Luxemburg | 999 | French West Africa | 1,385,443 |
| Aegean Islands | 976 | Anglo-Egyptian Sudan | 1,014,400 |
| Danzig | 754 | French Equatorial Africa .. | 975,635 |
| Andorra | 191 | Belgian Congo | 918,000 |
| Malta | 122 | | |
| Liechtenstein | 65 | | |
| San Marino | 38 | | |
| Monaco | 8 | | |
| Gibraltar | 2 | | |
| Total, Europe | 3,729,321 | | |

AREA OF AUSTRALIA AND OF OTHER COUNTRIES—*continued.*

| Country. | Area. | Country. | Area. |
|---|------------|---|------------|
| <i>AFRICA—continued.</i> | Sq. miles. | <i>AFRICA—continued.</i> | Sq. miles. |
| Tripolitania | 900,000 | St. Helena | 47 |
| Algeria | 847,000 | Ascension | 34 |
| Angola | 484,800 | Tristan Da Cunha Is. .. | 12 |
| South African Union .. | 472,347 | | |
| Portuguese East Africa .. | 428,132 | Total, Africa | 11,921,155 |
| Egypt | 383,000 | | |
| Tanganyika Territory .. | 373,500 | | |
| Abyssinia | 350,000 | | |
| Nigeria and Protectorate .. | 335,700 | | |
| South-west Africa | 332,400 | <i>North and Central America</i> | |
| Northern Rhodesia | 287,950 | <i>and West Indies—</i> | |
| Cyrenaica | 285,640 | Canada | 3,797,123 |
| Bechuanaland Protectorate .. | 275,000 | United States | 3,026,789 |
| Madagascar | 241,094 | Mexico | 767,198 |
| Kenya Colony and Protec- torate | 225,100 | Alaska | 590,884 |
| Morocco (French) | 200,000 | Newfoundland and Labra- dor | 162,734 |
| Italian Somaliland | 190,000 | Nicaragua | 51,660 |
| Cameroon (French) | 166,489 | (a) Greenland | 46,740 |
| Southern Rhodesia | 149,000 | Honduras | 44,275 |
| Rio de Oro and Adrar | 109,200 | Cuba | 44,164 |
| Uganda Protectorate | 94,204 | Guatemala | 42,353 |
| Gold Coast Protectorate (with Nth. Territories) .. | 80,000 | Costa Rica | 23,000 |
| British Somaliland | 68,000 | Santo Domingo | 19,332 |
| Tunis | 48,300 | Salvador | 13,176 |
| Eritrea | 45,754 | Haiti | 10,204 |
| Liberia | 43,000 | British Honduras | 8,598 |
| Nyasaland Protectorate | 37,890 | Jamaica, inc. Turks, Caicos and Cayman Is. | 4,674 |
| Cameroon (British) | 31,000 | Bahamas | 4,404 |
| Sierra Leone and Protec- torate | 31,000 | Porto Rico | 3,435 |
| Togoland (French) | 21,100 | Trinidad and Tobago | 1,976 |
| Spanish Morocco | 18,300 | Leeward Islands | 715 |
| Portuguese Guinea | 13,940 | Guadeloupe and Depen- dencies | 688 |
| Togoland (British) | 12,600 | Windward Islands | 516 |
| Basutoland | 11,716 | Curaçao and Dependencies .. | 403 |
| Spanish Guinea (Rio Muni, etc.) | 10,036 | Martinique | 385 |
| Swaziland | 6,704 | Barbados | 166 |
| French Somali Coast | 5,790 | Virgin Islands of U.S.A. .. | 132 |
| Gambia and Protec- torate | 4,134 | St. Pierre and Miquelon .. | 93 |
| Cape Verde Islands | 1,475 | Bermudas | 19 |
| Sokotra | 1,382 | | |
| Zanzibar | 1,020 | Total, N. and C. America and W. Indies | 8,665,836 |
| Réunion | 970 | | |
| Comoro Islands, Mayotte, etc. | 837 | | |
| Mauritius and Dependen- cies | 809 | <i>South America—</i> | |
| Fernando Po, etc. | 795 | Brazil | 3,285,318 |
| St. Thomas and Principe Islands | 320 | Argentine Republic | 1,153,119 |
| Seychelles | 156 | Peru | 532,047 |
| | | Bolivia | 514,155 |
| | | Colombia (exc. of Panama) | 440,846 |

(a) Danish colony only. Total area has been estimated as between 827,000 and 850,000 square miles.

AREA OF AUSTRALIA AND OF OTHER COUNTRIES—*continued.*

| Country. | Area. | Country. | Area. |
|--|------------|----------------------------------|------------|
| SOUTH AMERICA—<i>continued.</i> | Sq. miles. | AUSTRALASIA AND POLYNESIA | Sq. miles. |
| Venezuela | 393,874 | — <i>continued.</i> | |
| Chile | 290,084 | New Caledonia and Depen- | |
| Ecuador | 109,978 | dencies | 9,446 |
| British Guiana | 89,480 | Fiji | 7,083 |
| Uruguay | 72,153 | Hawaii | 6,449 |
| Paraguay | 61,647 | New Hebrides | 5,700 |
| Dutch Guiana | 54,291 | French Establishments in | |
| French Guiana | 34,740 | Oceania | 1,520 |
| Panama | 32,380 | Territory of Western Samoa | 1,250 |
| Falkland Islands and | | Marianne, Caroline, and | |
| South Georgia | 5,618 | Marshall Islands | 830 |
| Panama Canal Zone | 554 | Gilbert and Ellice Islands | 457 |
| | | Tonga | 385 |
| Total, South America | 7,070,284 | Guam | 210 |
| | | Samoa (U.S.A. part) | 62 |
| Australasia and Polynesia— | | Phoenix Group | 16 |
| Commonwealth of Australia | 2,974,581 | Norfolk Island | 13 |
| Dutch New Guinea | 160,692 | Nauru Island | 10 |
| New Zealand and Depen- | | Pitcairn Island | 2 |
| dencies | 103,862 | | |
| Papua | 90,540 | Total, Australasia and | |
| Territory of New Guinea.. | 89,252 | Polynesia | 3,463,360 |
| British Solomon Islands .. | 11,000 | | |
| | | British Empire | 13,355,426 |

The figures quoted in the table have, in most cases, been extracted from the Statesman's Year Book for 1928.

3. Areas of Political Subdivisions.—As already stated, Australia consists of six States and the Northern and Federal Capital Territories. The areas of these, and their proportions of the total of Australia, are shown in the following table:—

AUSTRALIA—AREA OF STATES AND TERRITORIES.

| State or Territory. | Area. | Percentage on Total. |
|---------------------------------|------------|----------------------|
| | Sq. miles. | % |
| New South Wales | 309,432 | 10.40 |
| Victoria | 87,884 | 2.96 |
| Queensland | 670,500 | 22.54 |
| South Australia | 380,070 | 12.78 |
| Western Australia | 975,920 | 32.81 |
| Tasmania | 26,215 | 0.88 |
| Northern Territory | 523,620 | 17.60 |
| Federal Capital Territory | 940 | 0.03 |
| Total | 2,974,581 | 100.00 |

4. Coastal Configuration.—(i) *General.* There are no striking features in the configuration of the coast; the most remarkable indentations are the Gulf of Carpentaria on the north, and the Great Australian Bight on the south. The Cape York Peninsula on the extreme north is the only other remarkable feature in the outline. In Year Book No. 1, an enumeration of the features of the coast-line of Australia was given (see pp. 60 to 68).

(ii) *Coast-line.* The lengths of coast-line, exclusive of minor indentations, of each State and of the whole continent, and the area per mile of coast-line, are shown in the following table :—

AUSTRALIA—COAST-LINE AND AREA PER MILE THEREOF.

| State. | Coast-line. | | Area per Mile of Coast-line. | State. | Coast-line. | | Area per Mile of Coast-line. |
|--------------------|-------------|------------|------------------------------|-------------------|-------------|------------|------------------------------|
| | Miles. | Sq. miles. | | | Miles. | Sq. miles. | |
| New South Wales(a) | 700 | 443 | | South Australia.. | 1,540 | 247 | |
| Victoria | 680 | 129 | | Western Australia | 4,350 | 224 | |
| Queensland .. | 3,000 | 223 | | Continent (b) .. | 11,310 | 261 | |
| Northern Territory | 1,040 | 503 | | Tasmania .. | 900 | 29 | |

(a) Including Federal Capital Territory.

(b) Area 2,948,366 square miles.

For the entire Commonwealth of Australia 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.

(iii) *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 Nuyts' 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 recognized 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 of the earlier issues of this Year Book fairly complete information has been given concerning some special geographical element. The nature of this information and its position in the various Year Books can be readily ascertained on reference to the special index following the index to maps and graphs at the end of this work.

6. *Fauna, Flora, Geology, and Seismology of Australia.*—Special articles dealing with these features have appeared in previous Year Books, but limits of space naturally preclude their repetition in each volume. As pointed out in 5 *supra*, however, the nature and position of these articles can be readily ascertained from the special index.

7. *Changing of German Place Names in Australia.*—A list of German place and district names in Australia which were changed during the Great War appeared in Year Book No. 19, pages 50 and 51. Limitations of space, however, preclude its repetition in this issue.

§ 2. Climate and Meteorology of Australia.*

1. *Introductory.*—In preceding Year Books some account was given of the history of Australian meteorology, including reference to the development of magnetic observations and the equipment for the determination of various climatological records. (See Year Book No. 3, pp. 79, 80.) In Year Book No. 4, pp. 84 and 87, will be found a short sketch of the creation and organization of the Commonwealth Bureau of Meteorology, and a résumé of the subjects dealt with at the Meteorological Conference in 1907. Space will not permit of the inclusion of this matter in the present issue.

2. *Meteorological Publications.*—The following publications are issued daily from the Central Meteorological Bureau, viz. :—(i) Weather charts. (ii) Rainfall maps. (iii) Bulletins, Victorian and Interstate, showing pressure, temperature, wind, rain, cloud extent, and weather. Similar publications are also issued from the divisional offices in each of the State Capitals.

* Prepared from data supplied by the Commonwealth Meteorologist, H. A. Hunt, Esquire.

Commencing with January, 1910, the "Australian Monthly Weather Report," containing statistical records from representative selected stations, with rain maps and diagrams, etc., was published, but was suspended in September, 1913. Complete rainfall and other climatological data are published in volumes of meteorological statistics for each State separately.

The first text book of Australian meteorology, "Climate and Weather of Australia," was published in 1913.

In addition, seventeen Bulletins of Climatology have been published, particulars of which are given in preceding issues of the Official Year Book (see No. 13, page 53, and No. 19, page 51).

The following publications have since been issued :—

Instructions for Marine Meteorological Observers.

Annual Average Rainfall Map of Australia (revised to 1924).

Map showing Monthly Distribution of Rainfall over Australia (revised).

3. General Description of Australia.—A considerable portion (0.530) of three divisions of Australia is north of the tropic of Capricorn—that is to say, within the States of Queensland and Western Australia, and the Northern Territory, no less than 1,149,320 square miles belong to the tropical zone, and 1,020,720 to the temperate zone. The whole area of Australia within the temperate zone, however, is 1,825,261 square miles; thus the tropical part is about 0.386, or about five-thirteenthths of the whole, or the "temperate" region is half as large again as the "tropical" (more accurately 1.588). By reason of its insular geographical position, and the absence of striking physical features, Australia is, on the whole, less subject to extremes of weather than are regions of similar area in other parts of the globe, and latitude for latitude Australia is, on the whole, more temperate.

The altitudes of the surface of Australia range up to a little over 7,300 feet, hence its climate embraces a great many features, from the characteristically tropical to what is essentially alpine, a fact indicated in some measure by the name Australian Alps given to the southern portion of the great Dividing Range.

On the coast, the rainfall is often abundant and the atmosphere moist, but in some portions of the interior it is very limited, and the atmosphere dry. The distribution of forest, therefore, with its climatic influence, is very uneven. In the interior, in places, there are fine belts of trees, but there are large areas also which are treeless, and where the air is hot and parching in summer. Again, on the coast, even so far south as latitude 35°, the vegetation is tropical in its luxuriance, and to some extent also in character. Climatologically, therefore, Australia may be said to present a great variety of features.

4. Meteorological Divisions.—(i) *General.* The Commonwealth Meteorologist has divided Australia, for climatological and meteorological purposes, into five divisions. The boundaries between these may be thus defined:—(a) Between divisions I. and II., the boundary between South and Western Australia, viz., the 129th meridian of east longitude; (b) between divisions II. and III., a line starting at the Gulf of Carpentaria, along the Norman River to Normanton, thence a straight line to Wilcannia on the Darling River, New South Wales; (c) between divisions II. and IV., a line from Wilcannia along the Darling River to its junction with the Murray; (d) between divisions II. and V., a line from the junction of the Darling and Murray Rivers, along the latter to Encounter Bay; (e) between divisions III. and IV., a line starting at Wilcannia, along the Darling, Barwon, and Dumaresq Rivers to the Great Dividing Range, and along that range and along the watershed between the Clarence and Richmond Rivers to Evans Head on the east coast of Australia; (f) between divisions IV. and V., a line from the junction of the Darling and Murray Rivers along the latter to its junction with the Murrumbidgee, along the Murrumbidgee to the Tumut River, and along the Tumut River to Tumut, thence a straight line to Cape Howe; (g) Tasmania is included in division V.

The population included within these boundaries at the Census of the 4th April, 1921, was approximately as follows :—

| Division | I. | II. | III. | IV. | V. |
|------------|---------|---------|---------|-----------|-----------|
| Population | 332,000 | 500,000 | 824,000 | 1,915,000 | 1,866,000 |

In these divisions, the order in which the capitals occur is as follows :—(a) Perth, (b) Adelaide, (c) Brisbane, (d) Sydney, (e) Melbourne, and (f) Hobart; and the climatological and meteorological statistics relating to the capital cities are dealt with herein in accordance with that order.

(ii) *Special Climatological Stations.* The latitudes, longitudes, and altitudes of special stations, the climatological features of which are graphically represented hereinafter are as follows:—

SPECIAL CLIMATOLOGICAL STATIONS—AUSTRALIA.

| Locality. | Height above Sea Level. | Latitude. | | Longitude. | | Locality. | Height above Sea Level. | Latitude. | | Longitude. | |
|--------------|----------------------------------|-----------|-----------|------------|-----------|----------------|----------------------------------|-----------|-----------|------------|-----------|
| | | S. | E. | S. | E. | | | S. | E. | | |
| | Feet. | deg. min. | deg. min. | deg. min. | deg. min. | | Feet. | deg. min. | deg. min. | deg. min. | deg. min. |
| Perth .. | 197 | 31 57 | 115 50 | | | Darwin .. | 97 | 12 28 | 130 51 | | |
| Adelaide .. | 140 | 34 56 | 138 35 | | | Daly Waters .. | 691 | 16 16 | 133 23 | | |
| Brisbane .. | 137 | 27 28 | 153 2 | | | Alice Springs | 1,926 | 23 38 | 133 37 | | |
| Sydney .. | 138 | 33 52 | 151 12 | | | Dubbo .. | 870 | 32 18 | 148 35 | | |
| Melbourne .. | 115 | 37 49 | 144 58 | | | Laverton, W.A. | 1,530 | 28 40 | 122 23 | | |
| Hobart .. | 177 | 42 53 | 147 20 | | | Coolgardie .. | 1,389 | 30 57 | 121 10 | | |

5. *Temperatures.*—(i) *Comparisons with other Countries.* In respect of Australian temperatures generally, it may be pointed out that the isotherm for 70° Fahrenheit extends in South America and South Africa so far south as latitude 33°, while in Australia it reaches only so far south as latitude 30°, thus showing that, on the whole, Australia has latitude for latitude a more temperate climate than other places in the Southern Hemisphere.

The comparison is even more favourable when the Northern Hemisphere is included, for in the United States the 70° isotherm extends in several of the western States so far north as latitude 41°. In Europe, the same isotherm reaches almost to the southern shores of Spain, passing, however, afterwards along the northern shores of Africa till it reaches the Red Sea, when it bends northward along the eastern shore of the Mediterranean till it reaches Syria. In Asia, nearly the whole of the land area south of latitude 40° N. has a higher temperature than 70°.

The extreme range of shade temperatures in summer and winter in a very large part of Australia amounts to probably only 81°. In Siberia, in Asia, the similar range is no less than 171°, and in North America 153°, or approximately double the Australian range.

Along the northern shores of Australia the temperatures are very equable. At Darwin, for example, the difference in the means for the hottest and coldest months is only 8.4°, and the extreme readings for the year, or the highest maximum in the hottest month and the lowest reading in the coldest month, show a difference of under 50°.

Coming southward, the extreme range of temperature increases gradually on the coast, and in a more pronounced manner inland.

(ii) *Hottest and Coldest Parts.* A comparison of the temperatures recorded at coast and inland stations shows that, in Australia, as in other continents, the range increases with increasing distance from the coast.

In the interior of Australia, and during exceptionally dry summers, the temperature occasionally reaches or exceeds 120° in the shade, and during the dry winters the major portion of the country to the south of the tropics is subject to ground frosts. An exact knowledge of temperature disposition cannot be determined until the interior becomes more settled, but from data procurable it would appear that the hottest area of the continent is situated in the northern part of Western Australia about the Marble Bar and Nullagine goldfields, where the maximum shade temperature during the summer sometimes exceeds 100° continuously for days and weeks. The coldest part of Australia is the extreme south-east of New South Wales and extreme east of Victoria—the region of the Australian Alps. Here the temperature seldom, if ever, reaches 100° even in the hottest of seasons.

Tasmania as a whole enjoys a most moderate and equable range of temperature throughout the year, although occasionally hot winds may cross the Straits and cause the temperature to rise to 100° in the low-lying parts.

(iii) *Monthly Maximum and Minimum Temperatures.* The normal monthly maximum and minimum temperatures can be best shown by means of graphs, which exhibit the nature of the fluctuation of each for all available years. In the diagram herein for nine representative places in Australia, the upper heavy curves show the mean maximum, and the lower heavy curves the mean minimum temperatures based upon daily observations, while the other curves show the humidities.

6. *Humidity.*—After temperature, humidity is the most important element of climate, as regards its effect on human comfort, rainfall supply, and in connexion with engineering problems generally.

In this publication the *absolute humidity* has been graphically represented in the form of inches of vapour pressure (i.e., that portion of the barometric pressure due to vapour). It is this total quantity of moisture in the air which affects personal comfort, plays an important part in varying the density of the atmosphere, and in heating and refrigerating processes. The more commonly quoted value, called the *relative humidity*, refers to the ratio which the actual moisture contents of the air bear to the total amount possible if saturation existed at the given temperature, and is usually quoted as a percentage. The relative humidity is an important factor in all drying operations, but is much less important than the absolute humidity as affecting animal life.

The mean monthly vapour pressure has also been added to the tables of climatological data for the capital cities included herein.

The normal monthly values of vapour pressure, it should be noted, combine to make the annual curve for this element which is comparable with the maximum and minimum temperature curves, but the relative humidities consisting as they do of the extremes for each month, do not show the normal annual fluctuation which would be approximately midway between the extremes.

The order of stations in descending values of vapour pressure is Darwin, Daly Waters, Brisbane, Sydney, Perth, Adelaide, Melbourne, Hobart and Alice Springs, while the relative humidity diminishes in the order, Sydney, Hobart, Darwin, Brisbane, Melbourne, Perth, Adelaide, Daly Waters and Alice Springs.

7. *Evaporation.*—(i) *General.* The rate and quantity of evaporation in any territory is influenced by the prevailing temperature, and by atmospheric humidity, pressure, and movement. In Australia, the question is of perhaps more than ordinary importance, since in its drier regions water has often to be conserved in "tanks"* and dams. The magnitude of the economic loss by evaporation will be appreciated from the tabular records herein, which show that the yearly amount varies from about 32 inches at Hobart to 94 inches at Alice Springs in the centre of the Continent. Over the *inland* districts of the Continent it has been calculated that evaporation equals the rainfall where the annual totals are about 36 inches, the variations above and below this quantity being inverse.

(ii) *Monthly Evaporation Curves.* The curves showing the mean monthly evaporation in various parts of Australia disclose how characteristically different are the amounts for the several months in different localities. The evaporation for representative places is shown on the diagram herein.

(iii) *Loss by Evaporation.* In the interior of Australia the possible evaporation is greater than the actual rainfall. Since the loss by evaporation depends largely on the exposed area, tanks and dams so designed that the surface shall be a minimum are advantageous. Further, the more protected from the direct rays of the sun and from winds, by means of suitable tree planting, the less will be the loss by evaporation. These matters are naturally of more than ordinary concern in the drier districts of Australia.

8. *Rainfall.*—(i) *General.* As even a casual reference to climatological maps indicating the distribution of rainfall and prevailing direction of wind would clearly show, the rainfall of any region is determined mainly by the direction and route of the prevailing winds, by the varying temperatures of the earth's surface over which they blow, and by the physiographical features generally.

Australia lies within the zones of the south-east trades and prevailing westerly winds. The southern limit of the south-east trade strikes the eastern shores at about 30° south latitude, and, with very few exceptions, the heaviest rains of the Australian continent are precipitated along the Pacific slopes to the north of that latitude, the varying quantities

* In Australia, artificial storage ponds or reservoirs are called "tanks."

being more or less regulated by the differences in elevation of the shores and of the chain of mountains upon which the rain-laden winds blow from the New South Wales northern border to Thursday Island. The converse effect is exemplified on the north-west coast of Western Australia, where the prevailing winds, blowing from the interior of the continent instead of from the ocean, result in the lightest coastal rain in Australia.

The westerly winds, which skirt the southern shores, are responsible for the very reliable, although generally light to moderate, rains enjoyed by the south-western portion of Western Australia, by the south-eastern agricultural areas of South Australia, by a great part of Victoria, and by the whole of Tasmania.

(ii) *Factors determining Distribution and Intensity of Rainfall.* (iii) *Time of Rainfall.* In Official Year Book No. 6 (see pp. 72 to 74) some notes were given of the various factors governing the distribution, intensity, and period of Australian rainfall.

(iv) *Wettest and Driest Regions.* The wettest known part of Australia is on the north-east coast of Queensland, between Port Douglas and Cardwell, where three stations situated on, or adjacent to, the Johnstone and Russell Rivers have an average annual rainfall of between 144 and 165 inches. The maximum and minimum falls there are:—Goondi, 241.53 in 1894 and 67.88 inches in 1915, or a range of 173.65 inches; Innisfail, 211.24 in 1894 and 69.87 inches in 1902, or a range of 141.37 inches; Harvey Creek, 254.77 in 1921 and 80.47 inches in 1902, or a range of 174.30 inches.

On four occasions more than 200 inches have been recorded at Goondi, the last of these being in 1910, when 204.82 inches were registered. The record at this station covers a period of 34 years.

Harvey Creek, in the shorter period of 26 years, has three times exceeded 200 inches, the total for 1921 being 254.77 inches, and at the South Johnstone Sugar Experiment Station, where a gauge has recently been established, 202.52 inches were recorded in 1921.

In Tasmania the wettest part is in the West Coast region, the mean annual rainfall at Lake Margaret being 146.27, with a maximum of 175.12 in 1924.

The driest known part of the continent is in the Lake Eyre district in South Australia (the only part of the continent below sea level), where the annual average is only 5 inches, and where the fall rarely exceeds 10 inches for the twelve months.

The inland districts of Western Australia were at one time regarded as the driest part of Australia, but authentic observations in recent years over settled districts in the east of that State show that the annual average is from 10 to 12 inches.

(v) *Quantities and Distribution of Rainfall.* The departure from the normal rainfall increases progressively from the southern to the northern shores of the continent, and similarly also at all parts of the continent subject to capricious monsoonal rains, as the comparisons hereunder will show. The general distribution is best seen from the rainfall map herein, which shows the areas subject to average annual rainfalls lying between certain limits. The areas enjoying varying quantities of rainfall determined from the latest available information are shown in the following table:—

AVERAGE ANNUAL RAINFALL DISTRIBUTION.

| Average Annual Rainfall. | N.S.W. (a) | Victoria. | Queensland. | South Australia | Northern Territory | Western Australia. | Tasmania. (b) | Total. (b) |
|--------------------------|------------|-----------|-------------|-----------------|--------------------|--------------------|---------------|------------|
| | sqr. mls. | sqr. mls. | sqr. mls. | sqr. mls. | sqr. mls. | sqr. mls. | sqr. mls. | sqr. mls. |
| Under 10 inches | 48,749 | nil | 80,496 | 310,660 | 140,500 | 486,952 | nil | 1,067,357 |
| 10—15 " | 78,454 | 19,270 | 81,549 | 36,460 | 132,780 | 255,092 | nil | 603,605 |
| 15—20 " | 55,762 | 13,492 | 111,833 | 19,940 | 63,026 | 94,101 | 304 | 358,458 |
| 20—25 " | 45,140 | 14,170 | 143,610 | 8,620 | 49,157 | 44,340 | 3,844 | 308,881 |
| 25—30 " | 30,539 | 15,579 | 99,895 | 3,258 | 41,608 | 31,990 | 3,016 | 225,885 |
| 30—40 " | 33,557 | 14,450 | 61,963 | 1,036 | 37,642 | 59,520 | 5,027 | 213,195 |
| Over 40 " | 18,171 | 10,923 | 91,154 | 96 | 58,907 | 3,925 | 11,247 | 194,423 |
| Total area .. | 310,372 | 87,884 | 670,500 | 380,070 | 523,620 | 975,920 | 23,438 | 2,971,804 |

(a) Including Federal Capital Territory. (b) Over an area of 2,777 square miles no records are available.

Referring first to the capital cities, the records of which are given in the next table, it will be seen that Sydney, with a normal rainfall of 47.73 inches, occupies the chief place; Brisbane, Perth, Melbourne, Hobart and Adelaide following in that order, Adelaide with 21.16 inches being the driest. The extreme range from the wettest to the driest year is greatest at Brisbane (72.09 inches) and least at Adelaide (19.48 inches).

In order to show how the rainfall is distributed throughout the year in various parts of the continent, the figures for representative towns have been selected. (See map.) The figures for Darwin, typical of the Northern Territory, show that nearly the whole of the rainfall occurs there in the summer months, while little or none falls in the middle of the year. The figures for Perth, as representing the south-western part of the continent, are the reverse, for while the summer months are dry, the winter ones are very wet. In Melbourne and Hobart the rain is fairly well distributed throughout the twelve months, with a maximum in October for the former, and in November for the latter. The records at Alice Springs and Daly Waters indicate that in the central parts of Australia the wettest months are in the summer and autumn. In Queensland, as in the Northern Territory, the heaviest rains fall in the summer months, but good averages are also maintained during the other seasons.

On the coast of New South Wales, the first six months of the year are the wettest, with a maximum in the autumn; the averages during the last six months are fair, and moderately uniform. Generally it may be said that approximately one-third of the area of the continent, principally in the eastern and northern parts, enjoys an annual average rainfall of from 20 to 50 or more inches, the remaining two-thirds averaging from 5 to 20 inches.

(vi) *Curves of Rainfall and Evaporation.* The relative amounts of rainfall and evaporation at different times through the year are clearly indicated in the graphs herein. Inspection thereof will show how large is the evaporation when water is fully exposed to the direct rays of the sun and to wind.

(vii) *Tables of Rainfall.* The table of rainfall for a long period of years for each of the various Australian capitals affords information as to the variability of the fall in successive years, and the list of the more remarkable falls furnishes information as to what may be expected on particular occasions. As pointed out in 4 ante, the capitals are dealt with in the order in which they occur in the adopted meteorological divisions.

RAINFALL—AUSTRALIAN CAPITAL CITIES, 1901 TO 1928.

| Year. | PERTH. | | | ADELAIDE. | | | BRISBANE. | | | SYDNEY. | | | MELBOURNE. | | | HOBART. | | |
|-------------|---------|--------------|------------------|-----------|--------------|------------------|-----------|--------------|------------------|---------|--------------|------------------|------------|--------------|------------------|---------|--------------|------------------|
| | Amount. | No. of Days. | 10 Years' Means. | Amount. | No. of Days. | 10 Years' Means. | Amount. | No. of Days. | 10 Years' Means. | Amount. | No. of Days. | 10 Years' Means. | Amount. | No. of Days. | 10 Years' Means. | Amount. | No. of Days. | 10 Years' Means. |
| | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. |
| 1901 | 36.75 | 122 | | 18.01 | 124 | | 38.48 | 110 | | 40.10 | 149 | | 27.45 | 113 | | 25.11 | 149 | |
| 2 | 27.06 | 93 | | 16.02 | 123 | | 16.17 | 87 | | 43.07 | 180 | | 23.08 | 102 | | 21.85 | 150 | |
| 3 | 35.69 | 140 | | 25.47 | 134 | | 49.27 | 136 | | 38.62 | 173 | | 28.43 | 130 | | 25.86 | 139 | |
| 4 | 34.35 | 125 | | 20.31 | 117 | | 33.23 | 124 | | 45.93 | 158 | | 29.72 | 128 | | 22.41 | 139 | |
| 5 | 34.61 | 116 | | 22.28 | 131 | | 36.76 | 108 | | 35.03 | 145 | | 25.64 | 129 | | 32.09 | 168 | |
| 6 | 32.37 | 121 | | 26.51 | 127 | | 42.85 | 125 | | 31.89 | 160 | | 22.29 | 114 | | 23.31 | 155 | |
| 7 | 40.12 | 132 | | 17.78 | 125 | | 31.46 | 119 | | 81.32 | 132 | | 22.26 | 102 | | 25.92 | 166 | |
| 8 | 30.52 | 108 | 34.05 | 24.56 | 125 | 21.15 | 44.01 | 125 | 36.55 | 45.65 | 167 | 43.41 | 17.72 | 130 | 25.36 | 16.50 | 143 | 23.29 |
| 9 | 39.11 | 107 | | 27.69 | 138 | | 34.06 | 111 | | 32.45 | 177 | | 25.86 | 171 | | 27.29 | 170 | |
| 1910 | 37.02 | 135 | | 24.62 | 116 | | 49.00 | 133 | | 46.91 | 160 | | 24.61 | 167 | | 25.22 | 205 | |
| 11 | 23.38 | 108 | | 15.99 | 127 | | 35.21 | 128 | | 50.24 | 155 | | 36.61 | 168 | | 26.78 | 193 | |
| 12 | 27.85 | 123 | | 19.57 | 116 | | 41.30 | 114 | | 47.51 | 172 | | 20.37 | 157 | | 23.14 | 181 | |
| 13 | 38.28 | 141 | | 18.16 | 102 | | 40.81 | 115 | | 57.70 | 141 | | 21.17 | 157 | | 19.36 | 165 | |
| 14 | 20.21 | 128 | | 11.39 | 91 | | 33.99 | 141 | | 66.42 | 149 | | 18.57 | 129 | | 15.42 | 154 | |
| 15 | 43.61 | 164 | | 19.38 | 117 | | 25.66 | 93 | | 34.83 | 117 | | 20.95 | 167 | | 20.91 | 196 | |
| 16 | 35.16 | 128 | | 28.16 | 142 | | 52.80 | 136 | | 44.91 | 161 | | 38.04 | 170 | | 43.39 | 203 | |
| 17 | 45.64 | 146 | | 23.90 | 153 | | 40.92 | 127 | | 62.40 | 151 | | 30.57 | 171 | | 30.62 | 214 | |
| 18 | 39.58 | 138 | 34.98 | 17.41 | 107 | 21.13 | 24.95 | 121 | 37.87 | 42.99 | 149 | 46.64 | 27.13 | 160 | 26.39 | 26.04 | 179 | 25.82 |
| 19 | 30.66 | 120 | | 17.21 | 108 | | 19.36 | 96 | | 58.71 | 152 | | 24.89 | 141 | | 22.48 | 153 | |
| 20 | 40.35 | 124 | | 26.70 | 119 | | 39.72 | 122 | | 48.42 | 159 | | 28.27 | 162 | | 18.00 | 182 | |
| 21 | 41.09 | 135 | | 22.64 | 100 | | 54.31 | 167 | | 43.34 | 140 | | 29.76 | 154 | | 18.04 | 159 | |
| 22 | 31.86 | 135 | | 23.20 | 117 | | 35.82 | 109 | | 39.35 | 136 | | 25.02 | 151 | | 23.27 | 189 | |
| 23 | 44.47 | 134 | | 29.79 | 139 | | 23.27 | 93 | | 37.01 | 123 | | 22.64 | 158 | | 32.98 | 198 | |
| 24 | 33.79 | 116 | | 23.44 | 143 | | 41.07 | 114 | | 37.01 | 136 | | 36.43 | 171 | | 28.76 | 197 | |
| 25 | 31.79 | 126 | | 21.91 | 118 | | 53.10 | 139 | | 30.35 | 145 | | 17.57 | 144 | | 22.46 | 171 | |
| 26 | 40.22 | 167 | | 22.30 | 116 | | 30.82 | 111 | | 67.07 | 127 | | 20.81 | 149 | | 25.70 | 187 | |
| 27 | 36.59 | 133 | | 16.92 | 101 | | 62.08 | 130 | | 45.56 | 127 | | 17.98 | 135 | | 20.02 | 183 | |
| 28 | 44.88 | 140 | 38.43 | 19.43 | 107 | 22.34 | 52.64 | 145 | 41.22 | 40.07 | 130 | 43.49 | 24.09 | 151 | 24.75 | 30.23 | 205 | 24.69 |
| Aver. | 34.57 | 121 | .. | 21.16 | 123 | .. | 45.21 | 128 | .. | 47.73 | 153 | .. | 26.01 | 138 | .. | 23.84 | 151 | .. |
| No. of Yrs. | 53 | 53 | .. | 90 | 90 | .. | 79 | 69 | .. | 89 | 89 | .. | 85 | 73 | .. | 86 | 86 | .. |

NOTE.—The above average rainfall figures for Brisbane, Sydney, Melbourne and Hobart differ slightly from the mean annual falls given in the Climatological Tables, which are for a less number of years. Annual totals from 1860 to 1900 inclusive will be found in Official Year Book No. 15, page 53.

9. Remarkable Falls of Rain.—The following are the more remarkable falls of rain in the various States and in the Northern Territory, which have occurred within a period of twenty-four hours. In New South Wales and Queensland falls of less than 15 inches in the twenty-four hours are not included. Reference, however, to them may be found in preceding Official Year Books (see No. 14, pp. 60-63):—

HEAVY RAINFALLS—NEW SOUTH WALES, UP TO 1928, INCLUSIVE.

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|---------------|-------|---------------------------|---------------|-------|
| | | ins. | | | ins. |
| Anthony | 28 Mar., 1887 | 17.14 | Dapto | 11 May, 1925 | 15.00 |
| Araluen | 27 May, 1925 | 15.83 | Kembla Heights .. | 13 Jan., 1911 | 17.46 |
| Bega | 27 Feb., 1919 | 17.88 | Madden's Creek .. | 13 " " | 18.68 |
| Broger's Creek .. | 14 " 1898 | 20.05 | Morpeth | 9 Mar., 1893 | 21.52 |
| " " | 13 Jan., 1911 | 20.83 | Mount Kembla .. | 13 Jan., 1911 | 18.25 |
| Bulli Mountain .. | 13 Dec., 1898 | 17.14 | Numbugga | 27 Feb., 1919 | 17.87 |
| Bulah Delah | 16 Apr., 1927 | 19.80 | Tongara Farm .. | 14 " 1898 | 15.12 |
| Burragate | 27 Dec., 1919 | 16.38 | Towamba | 5 Mar., 1893 | 20.00 |
| Candelo | 27 Feb., " " | 18.58 | South Head (near | | |
| Condong | 27 Mar., 1887 | 18.66 | Sydney) | 29 Apr., 1841 | 20.12 |
| Cordeaux River .. | 14 Feb., 1898 | 22.58 | " " | 16 Oct., 1844 | 20.41 |

HEAVY RAINFALLS—QUEENSLAND, UP TO 1928, INCLUSIVE.

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|---------------|-------|---------------------------|---------------|-------|
| | | ins. | | | ins. |
| Anglesey | 26 Dec., 1909 | 18.20 | Flying Fish Point | 7 Apr., 1912 | 16.06 |
| Atherton (Cairns) .. | 31 Jan., 1913 | 16.69 | " " " | 31 Jan., 1913 | 16.10 |
| Babinda (Cairns) .. | 1 Feb., " " | 20.51 | Gadgarra | 10 Feb., 1927 | 15.00 |
| " " | 24 Jan., 1916 | 22.30 | Gladstone | 4 Feb., 1911 | 18.83 |
| " " | 21 Apr., 1920 | 16.05 | Glen Boughton .. | 5 Apr., 1894 | 18.50 |
| Babinda | 25 Mar., 1921 | 15.76 | Goldsborough | | |
| " " | 14 Feb., 1927 | 15.20 | (Cairns) | 31 Jan., 1913 | 19.92 |
| Banyan | 1 Mar., 1925 | 16.43 | Goondi Mill (Innis- | | |
| Bloomsbury | 14 Feb., 1893 | 17.40 | fail) | 6 Apr., 1894 | 15.69 |
| " " | 10 Jan., 1901 | 16.62 | " " " | 29 Dec., 1903 | 17.83 |
| Brisbane | 21 " 1887 | 18.31 | " " " | 10 Feb., 1911 | 17.68 |
| Buderim Mountain .. | 11 " 1898 | 26.20 | " " " | 6 Apr., 1912 | 15.55 |
| Bundaberg | 16 " 1913 | 16.94 | Goondi | 30 Jan., 1913 | 24.10 |
| Burnett Heads | | | Goorganga | 23 " 1918 | 18.17 |
| (Bundaberg) | 16 " 1913 | 15.22 | Gracemere | 21 Apr., 1928 | 16.95 |
| Cairns | 11 Feb., 1911 | 15.17 | Halifax | 5 Feb., 1899 | 15.37 |
| " " | 2 Apr., " " | 20.16 | " " " | 6 Jan., 1901 | 15.68 |
| Carbrook | 23 Jan., 1918 | 22.66 | Hambledon Mill .. | 2 " 1911 | 18.61 |
| " " | 24 " " " | 15.77 | " " " | 1 Apr., " " | 19.62 |
| Cardwell | 18 Mar., 1904 | 18.24 | " " " | 30 Jan., 1913 | 17.32 |
| " " | 11 " 1918 | 16.65 | Hampden | 23 Apr., 1918 | 17.30 |
| Carmila | 23 Jan., " " | 15.92 | " " " | 24 " " " | 17.19 |
| Clare | 26 " 1896 | 15.30 | Harvey Creek .. | 8 Mar., 1899 | 17.72 |
| Clump Point | 12 Feb., 1927 | 15.79 | " " " | 11 Jan., 1905 | 16.96 |
| Collaroy | 23 Jan., 1918 | 18.06 | " " " | 3 " 1911 | 27.75 |
| Crohamhurst | | | " " " | 2 Apr., " " | 16.46 |
| (Blackall Range) | 2 Feb., 1893 | 35.71 | " " " | 31 Jan., 1913 | 24.72 |
| " " " | 9 Jan., 1898 | 19.55 | " " " | 25 Mar., 1921 | 15.80 |
| " " " | 6 Mar., " " | 16.01 | " " " | 12 " 1924 | 16.50 |
| Croydon | 29 Jan., 1908 | 15.00 | " " " | 13 " " " | 15.78 |
| Danbulla | 13 Feb., 1927 | 17.09 | Haughton Valley .. | 26 Jan., 1896 | 18.10 |
| Dungeness | 16 Mar., 1893 | 22.17 | Holmwood (Wood- | | |
| Dunira | 9 Jan., 1898 | 18.45 | ford) | 2 Feb., 1893 | 16.19 |
| " " | 6 Mar., " " | 15.95 | Howard | 15 Jan., 1905 | 19.55 |
| Dunwich | 8 May, 1925 | 15.46 | Huntley | 27 Dec., 1916 | 18.94 |
| Fairymead Planta- | | | Innisfail (formerly | | |
| tion (Bundaberg) | 16 Jan., 1913 | 15.32 | Geraldton) .. | 11 Feb., 1889 | 17.13 |

HEAVY RAINFALLS—QUEENSLAND—*continued.*

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|------------------------------------|---------------|--------------------|---|---------------|-------|
| | | ins. | | | ins. |
| Innisfail (formerly Geraldton) .. | 6 Apr., 1894 | 16.02 | Mourilyan .. | 11 Feb., 1911 | 17.40 |
| " " .. | 24 Jan., 1900 | 15.22 | " " .. | 7 Apr., 1912 | 18.97 |
| " " .. | 29 Dec., 1903 | 21.22 | " " .. | 31 Jan., 1913 | 15.05 |
| " " .. | 2 Apr., 1911 | 15.00 | Mundoolun .. | 21 " 1887 | 17.95 |
| " " .. | 7 " 1912 | 20.50 | Nambour .. | 9 " 1898 | 21.00 |
| " " .. | 31 Jan., 1913 | 20.91 | " " .. | 27 Dec., 1909 | 16.80 |
| Inskip Pt. .. | 24 Apr., 1928 | 15.20 | Netherdale .. | 22 Jan., 1918 | 19.50 |
| Kamerunga (Cairns) | 2 " 1911 | 21.00 | Oxenford .. | 14 Mar., 1908 | 15.65 |
| " " .. | 31 Jan., 1913 | 16.00 | Palmwoods .. | 10 Jan., 1898 | 15.85 |
| Koumala .. | 23 " 1918 | 22.31 | " " .. | 25 Dec., 1909 | 17.75 |
| " " .. | 24 " " | 20.65 | Pialba (Marybor'gh) Plane Creek (Mackay) .. | 16 Jan., 1913 | 17.22 |
| Kuranda (Cairns) .. | 11 Feb., 1911 | 16.30 | " " .. | 26 Feb., " | 27.73 |
| " " .. | 17 Mar., " | 15.10 | Port Douglas .. | 10 Mar., 1904 | 16.34 |
| " " .. | 31 " " | 18.60 | " " .. | 17 " 1911 | 16.10 |
| " " .. | 1 Apr., " | 24.30 | " " .. | 1 Apr., " | 31.53 |
| " " .. | 2 " " | 28.80 | Proserpine .. | 23 Jan., 1918 | 18.17 |
| " " .. | 31 Jan., 1913 | 16.34 | Ravenswood .. | 24 Mar., 1890 | 17.00 |
| Landsborough .. | 2 Feb., 1893 | 15.15 | Redcliffe .. | 16 Feb., 1893 | 17.35 |
| Long Pocket .. | 28 Mar., 1928 | 16.46 | Rosedale .. | 16 Jan., 1913 | 18.90 |
| Low Island .. | 10 " 1904 | 15.07 | Sarina .. | 23 " 1918 | 22.60 |
| " " .. | 1 Apr., 1911 | 15.30 | St. Lawrence .. | 30 " 1896 | 15.00 |
| Lyndon (via Brixton) | 3 " 1917 | 17.00 ^a | The Hollow (Mackay) .. | 23 Feb., 1888 | 15.12 |
| Mackay .. | 21 Jan., 1918 | 24.70 ^b | Thornborough .. | 20 Apr., 1903 | 18.07 |
| " " .. | 22 " " | 17.25 ^c | Townsville .. | 24 Jan., 1892 | 19.20 |
| Sugar Experimental Farm, Mackay .. | 21 " " | 16.80 | " " .. | 28 Dec., 1903 | 15.00 |
| " " .. | 22 " " | 17.20 | Tully .. | 10 Feb., 1927 | 15.06 |
| Macnade Mill .. | 5 Feb., 1899 | 15.20 | " " .. | 12 " " | 23.86 |
| " " .. | 6 Jan., 1901 | 23.33 | Victoria Mill .. | 6 Jan., 1901 | 16.67 |
| " " .. | 4 Mar., 1915 | 22.00 | Woodlands (Yepp'n) .. | 31 " 1893 | 23.07 |
| Maleny .. | 24 Apr., 1928 | 15.50 | Wootha .. | 10 Feb., 1915 | 15.93 |
| Mapleton .. | 26 Dec., 1909 | 15.72 | Yandina .. | 1 " 1893 | 20.08 |
| Mirani .. | 12 Jan., 1901 | 16.59 | " " .. | 9 Jan., 1898 | 19.25 |
| Miriam Vale (B'berg) | 17 " 1913 | 15.80 | " " .. | 28 Dec., 1909 | 15.80 |
| Mooloolah .. | 13 Mar., 1892 | 21.53 | Yarrabah .. | 2 Apr., 1911 | 30.65 |
| " " .. | 2 Feb., 1893 | 19.11 | " " .. | 24 Jan., 1916 | 27.20 |
| Mossman .. | 14 " 1927 | 15.75 | " " .. | 25 " " | 18.60 |
| Mount Cuthbert .. | 8 Jan., 1911 | 18.00 | Yeppoon .. | 31 " 1893 | 20.05 |
| Mount Molloy .. | 31 Mar., " | 20.00 | " " .. | 8 " 1898 | 18.05 |
| " " .. | 1 Apr., " | 20.00 | " " .. | 8 Oct., 1914 | 21.70 |
| " " .. | 2 " " | 20.00 | | | |

HEAVY RAINFALLS—WESTERN AUSTRALIA, UP To 1928, INCLUSIVE.

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|---------------|-------|---------------------------|---------------|-------|
| | | ins. | | | ins. |
| Alice Downs .. | 15 Mar., 1922 | 10.58 | Derby .. | 29 Dec., 1898 | 13.09 |
| Balla Balla .. | 21 " 1899 | 14.40 | " " .. | 7 Jan., 1917 | 16.47 |
| Bamboo Creek .. | 22 " " | 10.10 | Exmouth Gulf .. | 2 Feb., 1918 | 12.50 |
| Boodarie .. | 3 Jan., 1896 | 10.03 | Fortescue .. | 3 May, 1890 | 23.36 |
| " " .. | 21 " " | 14.53 | Frazier Downs .. | 3 Mar., 1916 | 11.25 |
| Booloogoeroo .. | 17 " 1923 | 10.96 | Gnaraloo .. | 20 " 1923 | 11.00 |
| Broome .. | 6 " 1917 | 14.00 | Kerdiadary .. | 7 Feb., 1901 | 12.00 |
| Carlton .. | 11 " 1903 | 10.64 | Meda .. | 2 Mar., 1916 | 10.55 |
| Cossack .. | 3 Apr., 1898 | 12.82 | Millstream .. | 5 " 1900 | 10.00 |
| " " .. | 16 " 1900 | 13.23 | Minilya .. | 15 Jan., 1923 | 11.50 |
| Croydon .. | 3 Mar., 1903 | 12.00 | Obagama .. | 28 Feb., 1910 | 12.00 |

^a Mr. Jas. Laidlaw, of Lyndon, states that this fell in 4 hours. ^b 37½ hours. ^c 22½ hours.

HEAVY RAINFALLS, WESTERN AUSTRALIA—*continued.*

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|----------------|-------|---------------------------|---------------|-------|
| | | ins. | | | ins. |
| Obagama .. | 24 Dec., 1920 | 13.02 | Thangoc .. | 28 Dec., 1898 | 11.15 |
| Pilbara .. | 2 Apr., 1898 | 14.04 | Whim Creek .. | 3 Apr., 1898 | 29.41 |
| Point Cloates .. | 20 Jan., 1909 | 10.87 | " .. | 21 Mar., 1899 | 18.17 |
| Point Torment .. | 17 Dec., 1906 | 11.86 | " .. | 6 .. 1900 | 10.03 |
| Port George IV. .. | 17 Jan., 1915 | 11.24 | " .. | 3 .. 1903 | 10.44 |
| Roebourne .. | 3 Apr., 1898 | 11.44 | Winderrie .. | 17 Jan., 1923 | 14.23 |
| " .. | 6 Mar., 1900 | 10.32 | Woodstock .. | 21 .. 1912 | 13.00 |
| Roebuck Plains .. | 5 Jan., 1917 | 14.01 | Wyndham .. | 27 Jan., 1890 | 11.60 |
| " .. | 6 .. 1922 | 22.36 | " .. | 4 Mar., 1919 | 12.50 |
| Springvale .. | 14 Mar., '92 | 12.25 | Yardie Creek .. | 3 Feb., 1918 | 10.00 |
| Tambray .. | 6 .. 1900 | 11.00 | Yeeda .. | 2 Mar., 1916 | 10.70 |
| " .. | 3 .. 1903 | 10.47 | " .. | 6 Jan., 1917 | 10.20 |
| Thangoc .. | 17-19 Feb. '96 | 24.18 | " .. | 7 .. " | 11.75 |

HEAVY RAINFALLS—NORTHERN TERRITORY, UP TO 1928, INCLUSIVE.

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|---------------|-------|---------------------------|-----------------|----------------|
| | | ins. | | | ins. |
| Bathurst Island .. | 7 Apr., 1925 | 11.85 | Cosmopolitan Gold Mine .. | 24 Dec., 1915 | 10.60 |
| Bonrook .. | 24 Dec., 1915 | 10.60 | Darwin .. | 7 .. " | 11.67 |
| Borroloola .. | 14 Mar., 1899 | 14.00 | Groote Eylandt .. | 30-31 Mar., '23 | 12.00 α |
| Brock's Creek .. | 4 Jan., 1914 | 10.68 | Lake Nash .. | 21 Mar., 1901 | 10.25 |
| " .. | 24 Dec., 1915 | 14.33 | Pine Creek .. | 8 Jan., 1897 | 10.35 |
| Burrundie .. | 4 Jan., 1914 | 11.61 | | | |

(a) Approximate only, as gauge was washed away.

HEAVY RAINFALLS—SOUTH AUSTRALIA, UP TO 1928, INCLUSIVE.

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|---------------|-------|---------------------------|--------------|-------|
| | | ins. | | | ins. |
| Wilmington .. | 28 Feb., 1921 | 3.97 | Wilmington .. | 1 Mar., 1921 | 7.12 |

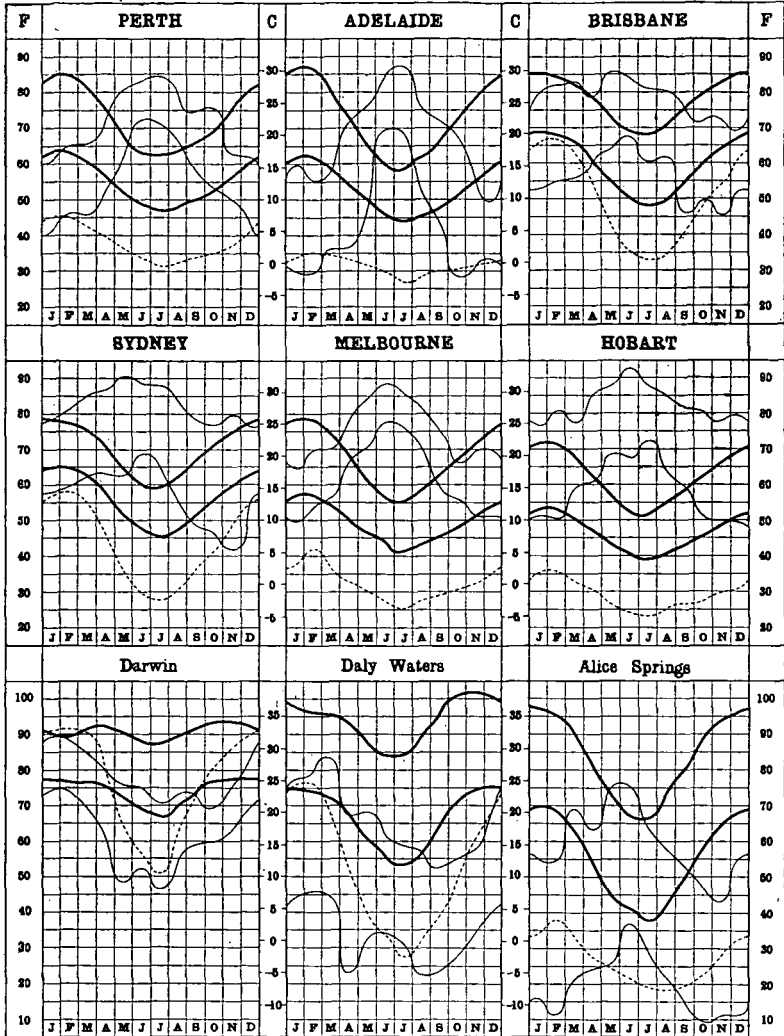
HEAVY RAINFALLS—VICTORIA, UP TO 1928, INCLUSIVE.

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|----------------|-------|---------------------------|---------------|-------|
| | | ins. | | | ins. |
| Balook .. | 26 Sept., 1917 | 5.32 | Kerang .. | 18 Jan., 1928 | 4.93 |
| " .. | 27 .. " | 7.23 | Mt. Buffalo .. | 6 June, 1917 | 8.53 |
| " .. | 28 .. " | 2.08 | " .. | 7 .. " | 6.56 |

HEAVY RAINFALLS—TASMANIA, UP TO 1928, INCLUSIVE.

| Name of Town or Locality. | Date. | Amnt. | Name of Town or Locality. | Date. | Amnt. |
|---------------------------|----------------|-------|---------------------------|-----------------|-------|
| | | ins. | | | ins. |
| Cullenswood .. | 5 June, 1923 | 10.50 | Riversdale .. | 27 Apr., 1928 | 5.90 |
| Gould's Country .. | 8-10 Mar., '11 | 15.33 | The Springs .. | 30-31 Jan., '16 | 10.75 |
| Lottah .. | 8-10 .. " | 18.10 | Triabunna .. | 5 June, 1923 | 10.20 |
| Mathinna .. | 8-10 .. " | 15.79 | | | |

ANNUAL FLUCTUATIONS OF NORMAL MAXIMUM AND MINIMUM TEMPERATURE AND HUMIDITY.



EXPLANATION.—The upper and lower heavy lines in each graph represent the maximum and minimum temperatures respectively. The Fahrenheit temperature scales are shown on the outer edge of the sheet under "F" and the centigrade scales in the two inner columns under "C."

The broken line shows the normal absolute humidity in the form of 9 a.m. vapour pressures for which the figures in the outer "F" columns represent hundredths of an inch of barometric pressure.

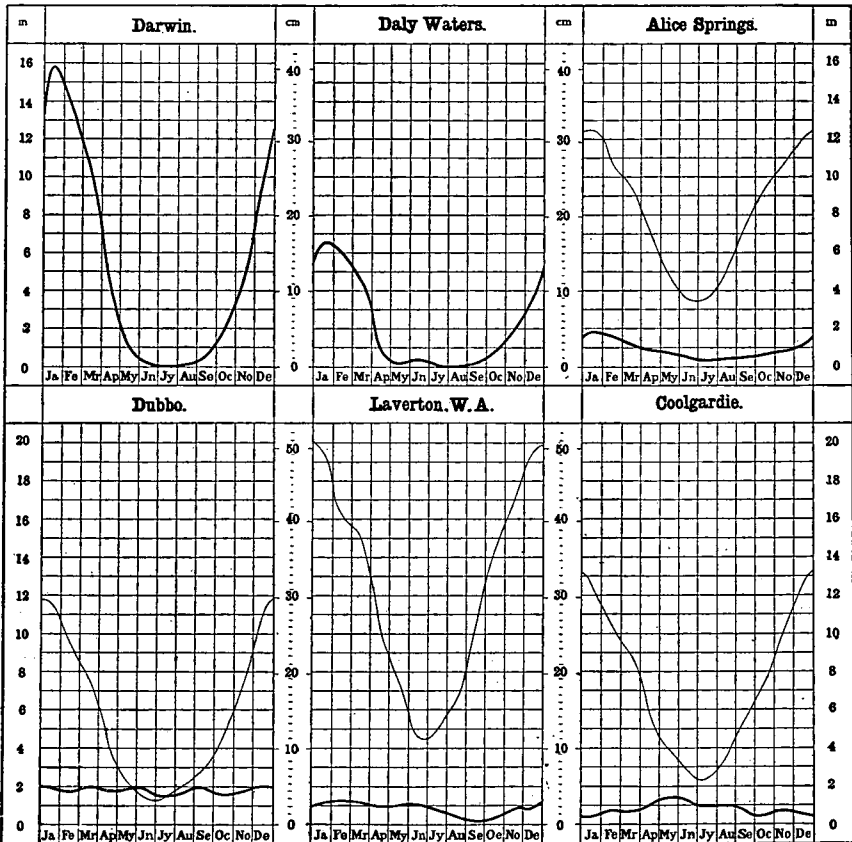
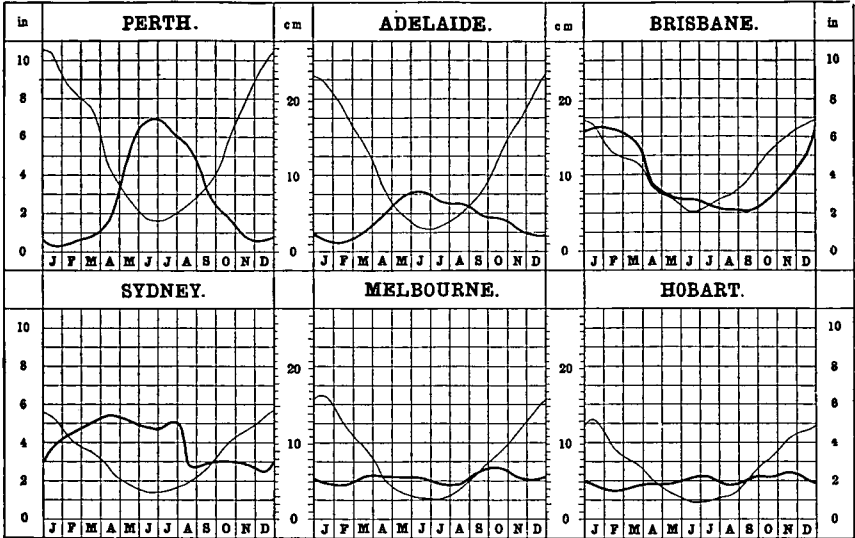
The upper and lower fine lines join the greatest and the least monthly means of relative humidity respectively, the figures under the outer columns "F" indicating percentage values.

The curves for temperature and vapour pressure joining the mean monthly values serve to show the annual fluctuation of these elements, but the relative humidity graphs joining the extreme values for each month do not indicate any normal annual variation.

Comparison of the maximum and minimum temperature curves affords a measure of the mean diurnal range of temperature. At Perth in the middle of January, for instance, there is normally a range of 21° from 63° F. to 84° F., but in June it is only 15° from 48° F. to 63° F.

The relative humidity curves illustrate the extreme range of the mean monthly humidity over a number of years.

MEAN MONTHLY RAINFALL AND EVAPORATION.



EXPLANATION.—On the preceding graphs thick lines denote rainfall, and thin lines evaporation, and show the fluctuation of the mean rate of fall *per month* throughout the year. The results, plotted from the Climatological Tables herein are shown in inches (see the outer columns), and the corresponding metric scale (centimetres) is shown in the two inner columns. The evaporation is not given for Darwin and Daly Waters.

At Perth, Adelaide, Brisbane, Melbourne, Hobart, Alice Springs, and Coolgardie the results have been obtained from jacketed tanks sunk in the ground. At Sydney and Dubbo sunken tanks without water jackets are used, whilst at Laverton (W.A.) the records are taken from a small portable jacket evaporation dish of 8 inches in diameter.

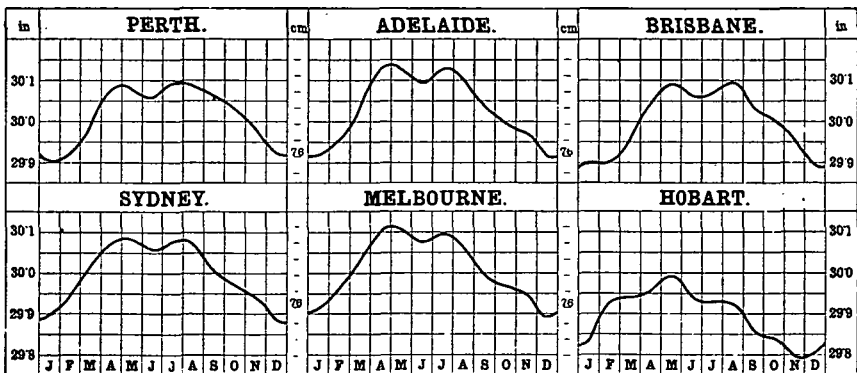
The distance for any date from the zero line to the curve represents the average number of inches, reckoned as per month, of rainfall at that date. Thus, taking the curves for Adelaide in the middle of January, the rain falls on the average at the rate of about three-fourths of an inch per month, or, say, at the rate of about 9 inches per year. In the middle of June it falls at the rate of a little over 3 inches per month, or, say, at the rate of about 37 inches per year. At Dubbo, the evaporation is at the rate of nearly 11½ inches per month about the middle of January, and only about 1½ inches at the middle of June.

The mean annual rainfall and evaporation at the places indicated are given in the appended table.

MEAN ANNUAL RAINFALL AND EVAPORATION.

| Place. | Rainfall. | Evapora- tion. | Place. | Rainfall. | Evapora- tion. |
|--------------|-----------|-------------------|-------------------|-----------|-------------------|
| | In. | In. | | In. | In. |
| Perth .. | 34.57 | 65.91 | Darwin .. | 61.67 | — |
| Adelaide .. | 21.18 | 54.69 | Daly Waters .. | 26.63 | — |
| Brisbane .. | 45.21 | 55.37 | Alice Springs .. | 11.10 | 94.24 |
| Sydney .. | 47.73 | 38.89 | Dubbo .. | 22.11 | 66.37 |
| Melbourne .. | 26.01 | 39.16 | Laverton, W.A. .. | 9.67 | 142.17 |
| Hobart .. | 23.84 | 32.08 | Coolgardie .. | 10.06 | 84.41 |

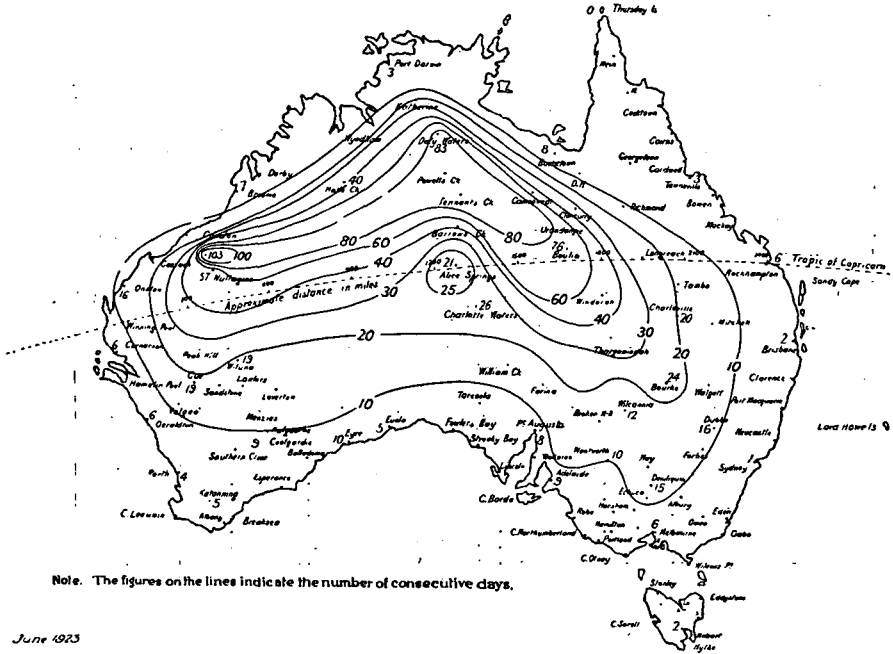
MEAN BAROMETRIC PRESSURE.—CAPITAL CITIES.



EXPLANATION.—The lines representing the yearly fluctuations of barometric pressure at the State capital cities are means for long periods, and are plotted from the Climatological Tables herein. The pressures are shown in inches on about 2½ times the natural scale, and the corresponding pressures in centimetres are also shown in the two inner columns, in which each division represents one millimetre.

INTERPRETATION.—Taking the Brisbane graph for purposes of illustration, it will be seen that the mean pressure in the middle of January is about 29.87 inches, and there are maxima in the middle of May and August of about 30.09 inches.

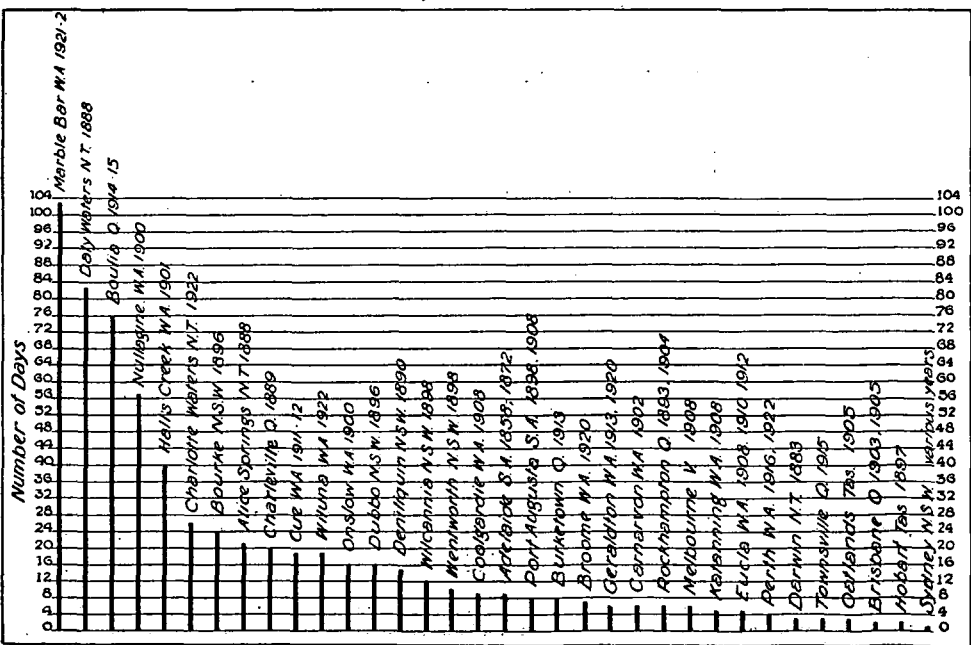
Area affected and period of duration of the Longest Heat Waves when the Maximum Temperature for consecutive 24 hours reached or exceeded 100° Fah.

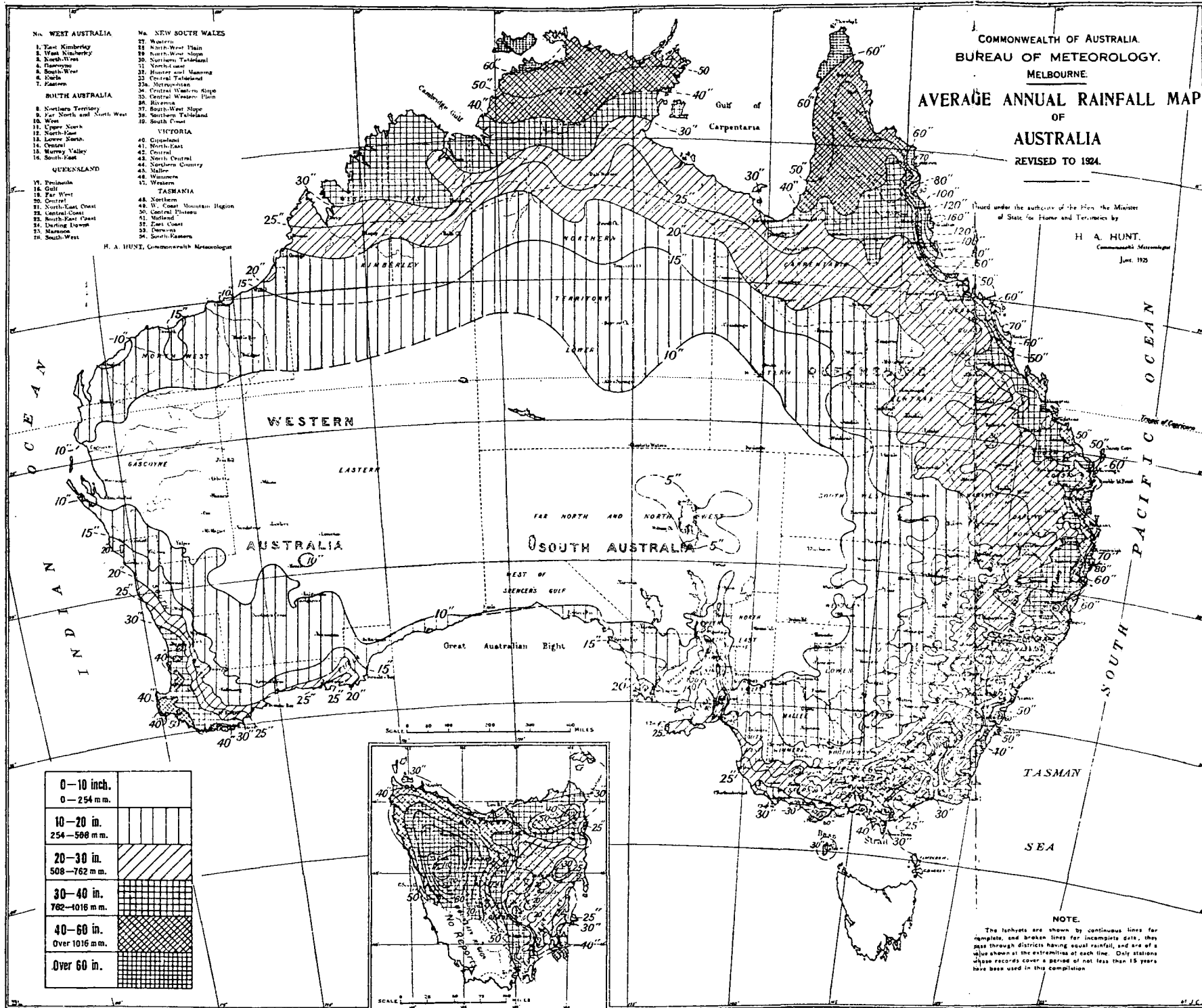


Note. The figures on the lines indicate the number of consecutive days.

June 1923

Greatest number of consecutive days on which the Shade Temperature was over 100° Fah. at the places indicated.





WEST AUSTRALIA

1. East Kimberley
2. West Kimberley
3. North-West
4. Flinders
5. South-West
6. Marda
7. Eastern

SOUTH AUSTRALIA

8. Northern Territory
9. Far North and North West
10. West
11. Upper North
12. North-East
13. Lower North
14. Central
15. Murray Valley
16. South-East

QUEENSLAND

17. Peninsula
18. Gulf
19. Far West
20. Central
21. North-East Coast
22. Central Coast
23. South-East Coast
24. Darling Downs
25. Maranoa
26. South-West

NEW SOUTH WALES

27. Western
28. North-West Plain
29. North-West Slopes
30. Northern Tableland
31. North-east
32. Hunter and Manning
33. Central Tableland
34. New England
35. Central Western Slopes
36. Central Western Plain
37. South-West Slopes
38. Northern Tableland
39. South Coast

VICTORIA

40. Gippsland
41. North-East
42. Central
43. North Central
44. Northern Country
45. Mallee
46. Wimmera
47. Western

TASMANIA

48. Northern
49. U. Coast Mountain Region
50. Central Tassie
51. Midland
52. East Coast
53. Derwent
54. South-Eastern

H. A. HUNT, Commonwealth Meteorologist

COMMONWEALTH OF AUSTRALIA.
BUREAU OF METEOROLOGY.
MELBOURNE.

AVERAGE ANNUAL RAINFALL MAP OF AUSTRALIA
REVISED TO 1924.

Prepared under the authority of the Hon. the Minister of State for Home and Territories by

H. A. HUNT,
Commonwealth Meteorologist
June 1925

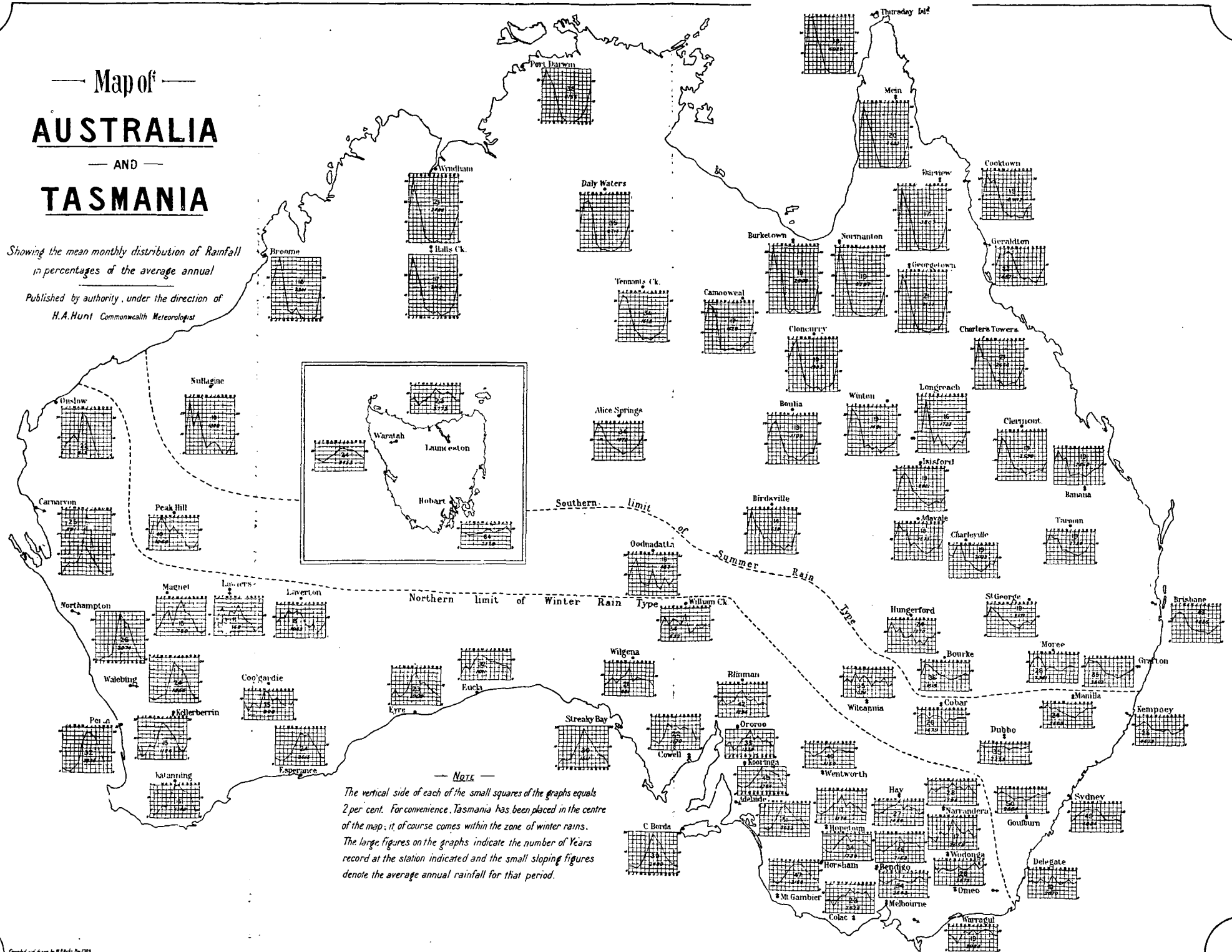
| | |
|-------------|--------------|
| 0-10 in. | 0-254 m. |
| 10-20 in. | 254-508 m. |
| 20-30 in. | 508-762 m. |
| 30-40 in. | 762-1016 m. |
| 40-60 in. | Over 1016 m. |
| Over 60 in. | |

NOTE:
The isohyets are shown by continuous lines for complete, and broken lines for incomplete data, they pass through districts having equal rainfall, and are of a value shown at the extremities of each line. Only stations whose records cover a period of not less than 15 years have been used in this compilation.

— Map of —
AUSTRALIA
 — AND —
TASMANIA

Showing the mean monthly distribution of Rainfall
 in percentages of the average annual

Published by authority, under the direction of
 H.A. Hunt Commonwealth Meteorologist



NOTE
 The vertical side of each of the small squares of the graphs equals 2 per cent. For convenience, Tasmania has been placed in the centre of the map; it of course comes within the zone of winter rains. The large figures on the graphs indicate the number of Years record at the station indicated and the small sloping figures denote the average annual rainfall for that period.

10. **Snowfall.**—Light snow has been known to fall occasionally so far north as latitude 31° S., and from the western to the eastern shores of the continent. During exceptional seasons, it has fallen simultaneously over two-thirds of the State of New South Wales, and has extended at times along the whole of the Great Dividing Range, from its southern extremity in Victoria so far north as Toowoomba in Queensland. During the winter, for several months, snow covers the ground to a great extent on the Australian Alps, where also the temperature falls below zero Fahrenheit during the night. In the ravines around Kosciusko and similar localities the snow never entirely disappears.

The antarctic "V"-shaped disturbances are always associated with the most pronounced and extensive snowfalls. The barometric gradients are very steep where the "trough line" extends northward, and the apexes are unusually sharp-pointed, and protrude into very low latitudes, sometimes even to the tropics.

11. **Hail.**—Hail falls most frequently along the southern shores of the continent in the winter, and over south-eastern Australia during the summer months. The size of the hailstones generally increases with distance from the coast, a fact which lends strong support to the theory that hail is brought about by ascending currents. A summer rarely passes without some station experiencing a fall of stones exceeding in size an ordinary hen-egg, and many riddled sheets of light-gauge galvanized iron bear evidence of the weight and penetrating power of the stones.

The hailstorms occur most frequently when the barometric readings indicate a flat and unstable condition of pressure. They are almost invariably associated with tornadoes or tornadic tendencies, and on the east coast the clouds from which the stones fall are generally of a remarkable sepia-coloured tint.

12. **Barometric Pressures.**—The mean annual barometric pressure (corrected to sea-level and standard gravity) in Australia varies from 29.80 inches on the north coast to 29.92 inches over the central and 30.03 inches in the southern parts of the continent. In January, the mean pressure ranges from 29.70 inches in the northern and central areas to 29.95 inches in the southern. The July mean pressure ranges from 29.90 inches at Darwin to 30.12 inches at Alice Springs. Barometer readings corrected to mean sea-level and standard gravity have, under anticyclonic conditions in the interior of the continent, ranged as high as 30.77 inches (at Kalgoorlie on the 28th July, 1901) and have fallen as low as 27.55 inches. This lowest record was registered at Mackay during a tropical hurricane on the 21st January, 1918. An almost equally abnormal reading of 27.88 inches was recorded at Innisfail during a similar storm on the 10th March, 1918. The mean annual fluctuations of barometric pressure for the capitals of Australia are shown on the graph herein.

13. **Wind.**—Notes on the distinctive wind currents in Australia were given in preceding Year Books (see No. 6, page 83), but, owing to limitations of space, have not been included herein.

14. **Cyclones and Storms.**—The "elements" in Australia are ordinarily peaceful, and while destructive cyclones have visited various parts, more especially coastal areas, such visitations are rare, and may be properly described as erratic.

During the winter months, the southern shores of the continent are subject to cyclonic storms, evolved from the V-shaped depressions of the southern low-pressure belt. They are felt most severely over the south-western parts of Western Australia, to the south-east of South Australia, in Bass Strait, including the coast line of Victoria, and on the west coast of Tasmania. Apparently the more violent wind pressures from these cyclones are experienced in their northern half, or in that part of them which has a north-westerly to a south-westerly circulation.

The north-east coast of Queensland is occasionally visited by hurricanes from the north-east tropics. During the first four months of the year, these hurricanes appear to have their origin in the neighbourhood of the South Pacific Islands, their path being a parabolic curve first to the S.W. and finally towards the S.E. Only a small percentage, however, reach Australia, the majority recurring in their path to the east of New Caledonia.

Very severe cyclones, locally known as "willy willies," are peculiar to the north-west coast of Western Australia from the months of November to April inclusive. They apparently originate in the ocean in the vicinity of Cambridge Gulf, and travel in a south-westerly direction with continually increasing force, displaying their greatest energy near Cossack and Onslow, between latitudes 20° and 22° South. The winds in these

storms, like those from the north-east tropics, are very violent and destructive, and cause great havoc amongst the pearl-fishers. The greatest velocities are usually to be found in the south-eastern quadrant of the cyclones, with north-east to east winds. After leaving the north-west coast, these storms either travel southwards, following the coastline, or cross the continent to the Great Australian Bight. When they take the latter course, their track is marked by torrential rains, as much as 29.41 inches, for example, being recorded in 24 hours at Whim Creek from one such occurrence. Falls of 10 inches and over have frequently been recorded in the northern interior of Western Australia from similar storms.

Some further notes on severe cyclones and on "southerly bursters," a characteristic feature of the eastern part of Australia, will be found in previous issues of the Official Year Book (see No. 6, pp. 84, 85, 86).

A special article dealing with "Australian Hurricanes and Related Storms" appeared in Official Year Book No. 16, pp. 80-84.

15. Influences affecting Australian Climate.—(i) *General*. Australian history does not cover a sufficient period, nor is the country sufficiently occupied, to ascertain whether or not the advance of settlement has materially affected the climate as a whole. Local changes have, however, taken place, a fact which suggests that settlement and the treatment of the land have a distinct effect on local conditions. For example, the mean temperature of Sydney shows a rise of two-tenths of a degree during the last twenty years, a change probably brought about by the great increase of residential and manufacturing buildings within the city and in the surrounding suburbs. Again, low-lying lands on the north coast of New South Wales, which originally were seldom subject to frosts, have, with the denudation of the surrounding hills from forests, experienced annual visitations, the probable explanation being that through the absence of trees the cold air of the high lands now flows unchecked and untempered down the sides of the hills to the valleys and lower lands.

(ii) *Influence of Forests on Climate*. As already indicated, forests doubtless exercise a great influence on local climate, and hence, to the extent that forestal undertakings will allow, the weather can be controlled by human agency. The direct action of forests is an equalizing one; thus, especially in equatorial regions, and during the warmest portion of the year, they considerably reduce the mean temperature of the air. They also reduce the diurnal extremes of shade temperatures by altering the extent of radiating surface by evaporation, and by checking the movement of air, and while decreasing evaporation from the ground, they increase the relative humidity. Vegetation greatly diminishes the rate of flow-off of rain and the washing away of surface soil, and when a region is protected by trees, a steadier water supply is ensured, and the rainfall is better conserved. In regions of snowfall, the supply of water to rivers is similarly regulated, and without this and the sheltering influence of ravines and "gullies," watercourses supplied mainly by melting snow would be subject to alternate periods of flooding and dryness. This is borne out in the case of the inland rivers, the River Murray, for example, which has never been known to become dry, deriving its steadiness of flow mainly through the causes indicated.

(iii) *Direct Influence of Forests on Rainfall*. Whether forests have a direct influence on rainfall is a debatable question, some authorities alleging that precipitation is undoubtedly induced by forests, while others take the opposite view.

Sufficient evidence exists, however, to prove that, even if the rainfall has not increased, the beneficial climatic effect of forest lands more than warrants their protection and extension. Rapid rate of evaporation, induced by both hot and cold winds, injures crops and makes life uncomfortable on the plains, and, while it may be doubted that the forest aids in increasing precipitation, it must be admitted that it does check winds and the rapid evaporation due to them. Trees as wind-breaks have been successfully planted in central parts of the United States, and there is no reason why similar experiments should not be successful in many parts of the treeless interior of Australia. The belts should be planted at right angles to the direction of the prevailing parching winds, and if not more than half a mile apart will afford shelter to the enclosed areas.

In previous issues some notes on observations made in other countries were added (see Official Year Book No. 6, pp. 86 and 95).

16. *Rainfall and Temperatures, Various Cities*.—The following table shows rainfall and temperature for various important cities throughout the world, for the Federal capital, and for the capitals of the Australian States.

RAINFALL AND TEMPERATURE—VARIOUS CITIES.

| Place. | Height above M.S.L. | Annual Rainfall. | | | Temperature. | | | | | |
|-------------------|---------------------|------------------|----------|---------|------------------|------------------|--------------------|-------------------|------------------------|------------------------|
| | | Average. | Highest. | Lowest. | (a) Mean Summer. | (b) Mean Winter. | Highest on Record. | Lowest on Record. | Average Hottest Month. | Average Coldest Month. |
| | | Ins. | Ins. | Ins. | Fahr. | Fahr. | Fahr. | Fahr. | Fahr. | Fahr. |
| Amsterdam | 6 | 27.29 | 40.59 | 17.60 | 63.2 | 36.8 | 90.0 | 4.1 | 64.4 | 35.4 |
| Auckland | 125 | 43.88 | 74.15 | 26.32 | 66.2 | 52.5 | 91.0 | 31.9 | 67.1 | 51.8 |
| Athens | 351 | 15.48 | 33.33 | 4.56 | 79.12 | 49.1 | 109.4 | 19.6 | 81.0 | 47.4 |
| Bergen | 72 | 77.09 | 111.58 | 44.49 | 56.8 | 34.2 | 88.5 | 4.8 | 57.9 | 33.6 |
| Berlin | 161 | 22.72 | 30.04 | 14.25 | 64.8 | 33.0 | 98.6 | -13.0 | 66.0 | 31.8 |
| Berne | 1,877 | 36.30 | 58.23 | 24.69 | 62.2 | 30.1 | 91.4 | -3.6 | 64.4 | 28.0 |
| Bombay | 37 | 71.15 | 114.89 | 33.41 | 83.5 | 75.1 | 100.0 | 55.9 | 84.8 | 74.2 |
| Breslau | 482 | 22.52 | 32.56 | 16.50 | 64.1 | 33.5 | 100.0 | -23.4 | 65.5 | 29.3 |
| Brussels | 328 | 28.35 | 41.18 | 17.73 | 62.6 | 36.0 | 95.5 | -4.4 | 63.7 | 34.5 |
| Budapest | 500 | 25.20 | 35.28 | 16.79 | 68.6 | 30.2 | 98.6 | -5.1 | 70.4 | 28.2 |
| Buenos Ayres | 82 | 38.78 | 79.72 | 20.04 | 72.7 | 50.9 | 103.1 | 22.3 | 73.8 | 60.0 |
| Calcutta | 21 | 61.82 | 98.48 | 38.43 | 85.6 | 68.0 | 108.2 | 44.2 | 86.0 | 66.4 |
| Capetown | 40 | 25.50 | 36.72 | 17.71 | 68.1 | 54.7 | 102.0 | 34.0 | 68.8 | 53.9 |
| Caracas | 3,420 | 30.03 | 47.36 | 23.70 | 68.3 | 65.3 | 87.8 | 48.2 | 69.2 | 63.7 |
| Chicago | 823 | 33.28 | 45.86 | 24.52 | 70.0 | 26.1 | 103.0 | -23.0 | 72.4 | 23.7 |
| Christchurch | 25 | 25.16 | 35.30 | 13.64 | 61.3 | 43.3 | 95.7 | 21.3 | 61.6 | 42.4 |
| Christiana (Oslo) | 75 | 23.23 | 32.21 | 16.26 | 61.0 | 24.5 | 95.0 | -21.1 | 62.6 | 23.9 |
| Colombo | 40 | 83.83 | 139.70 | 51.60 | 81.5 | 79.9 | 95.8 | 65.0 | 82.6 | 79.1 |
| Constantinople | 245 | 28.75 | 42.74 | 14.78 | 74.0 | 43.5 | 103.6 | 13.0 | 75.7 | 42.0 |
| Copenhagen | 10 | 20.79 | 25.83 | 15.47 | 60.4 | 33.3 | 85.5 | -3.3 | 61.9 | 32.4 |
| Dresden | 115 | 26.80 | 34.49 | 17.72 | 62.9 | 32.4 | 93.4 | -15.3 | 64.4 | 31.6 |
| Dublin | 47 | 27.66 | 35.56 | 16.60 | 59.4 | 42.0 | 87.2 | 13.3 | 60.5 | 41.7 |
| Dunedin | 300 | 36.96 | 54.51 | 22.15 | 56.3 | 42.6 | 94.0 | 23.0 | 57.0 | 41.5 |
| Durban | 260 | 40.79 | 71.27 | 27.24 | 75.6 | 64.4 | 110.6 | 41.1 | 76.7 | 63.8 |
| Edinburgh | 441 | 25.21 | 32.05 | 16.44 | 55.8 | 38.8 | 87.7 | 5.0 | 57.2 | 38.3 |
| Geneva | 1,328 | 33.48 | 46.89 | 21.14 | 64.4 | 33.7 | 94.5 | 6.6 | 66.2 | 32.2 |
| Genoa | 157 | 51.29 | 108.22 | 28.21 | 73.8 | 46.8 | 94.5 | 16.7 | 75.4 | 45.5 |
| Glasgow | 184 | 38.49 | 56.18 | 29.05 | 52.7 | 41.0 | 84.9 | 6.6 | 58.0 | 38.4 |
| Greenwich | 149 | 23.50 | 35.54 | 16.38 | 62.0 | 39.5 | 100.0 | 6.9 | 63.5 | 38.5 |
| Hong Kong | 109 | 84.28 | 119.72 | 45.84 | 86.2 | 64.8 | 97.0 | 32.0 | 86.7 | 62.9 |
| Johannesburg | 5,750 | 31.63 | 50.00 | 21.66 | 65.4 | 54.4 | 94.0 | 23.3 | 68.2 | 48.9 |
| Leipzig | 384 | 24.69 | 31.37 | 17.10 | 63.1 | 31.5 | 97.3 | -14.8 | 64.8 | 30.6 |
| Leningrad | 16 | 21.30 | 29.52 | 13.75 | 61.1 | 17.4 | 97.0 | -38.2 | 63.7 | 15.2 |
| Lisbon | 312 | 29.18 | 52.79 | 17.32 | 69.6 | 51.3 | 94.1 | 32.5 | 70.2 | 49.3 |
| London (Kew) | 18 | 23.80 | 38.20 | 16.64 | 61.2 | 39.8 | 94.0 | 9.4 | 62.7 | 38.9 |
| Madras | 22 | 49.85 | 88.41 | 18.45 | 89.0 | 76.8 | 113.0 | 57.5 | 89.9 | 76.1 |
| Madrid | 2,149 | 16.23 | 27.48 | 9.13 | 73.0 | 41.2 | 107.1 | 10.5 | 75.7 | 39.7 |
| Marseilles | 246 | 22.24 | 43.03 | 12.28 | 70.5 | 45.3 | 100.4 | 11.7 | 72.3 | 44.6 |
| Moscow | 526 | 18.94 | 29.28 | 12.07 | 63.4 | 14.7 | 99.5 | -44.5 | 66.1 | 11.9 |
| Naples | 489 | 34.00 | 56.58 | 21.75 | 73.6 | 48.0 | 99.1 | 23.9 | 75.4 | 46.8 |
| New York | 314 | 44.63 | 58.63 | 33.17 | 71.4 | 31.8 | 102.0 | -13.0 | 73.5 | 30.2 |
| Ottawa | 236 | 33.40 | 53.79 | 25.63 | 67.2 | 14.1 | 95.0 | -33.0 | 69.7 | 12.0 |
| Paris | 164 | 22.64 | 29.57 | 16.46 | 63.5 | 37.2 | 101.1 | -14.1 | 64.9 | 36.1 |
| Pekin | 143 | 24.40 | 36.00 | 18.00 | 77.7 | 26.6 | 114.0 | -5.0 | 79.2 | 23.6 |
| Quebec | 296 | 40.50 | 53.79 | 32.12 | 63.5 | 12.4 | 96.0 | -34.0 | 66.3 | 10.1 |
| Rome | 166 | 32.57 | 57.89 | 12.72 | 74.3 | 46.0 | 104.2 | 17.2 | 76.1 | 44.6 |
| San Francisco | 155 | 22.27 | 38.82 | 9.00 | 58.8 | 50.5 | 101.0 | 29.0 | 59.3 | 49.5 |
| Shanghai | 21 | 45.00 | 62.52 | 27.92 | 78.9 | 41.1 | 102.9 | 10.2 | 80.4 | 37.8 |
| Singapore | 8 | 91.99 | 158.68 | 32.71 | 81.9 | 78.6 | 94.2 | 63.4 | 81.5 | 78.3 |
| Stockholm | 144 | 19.09 | 28.87 | 11.81 | 59.5 | 27.3 | 96.8 | -25.6 | 61.9 | 26.4 |
| Tokio | 65 | 61.45 | 88.37 | 45.72 | 74.8 | 39.2 | 87.5 | 17.2 | 77.7 | 37.5 |
| Trieste | 65 | 42.94 | 63.14 | 26.57 | 73.9 | 41.3 | 99.5 | 14.0 | 75.3 | 39.9 |
| Vienna | 603 | 24.50 | 33.60 | 16.50 | 63.9 | 30.4 | 97.7 | -8.0 | 67.1 | 28.0 |
| Vladivostok | 55 | 19.54 | 33.60 | 9.39 | 65.7 | 11.0 | 85.7 | -21.8 | 69.4 | 6.1 |
| Washington | 112 | 43.50 | 61.33 | 30.85 | 74.7 | 34.5 | 106.0 | -15.0 | 76.8 | 32.0 |
| Wellington (N.Z.) | 10 | 48.65 | 67.68 | 27.83 | 61.8 | 45.6 | 88.0 | 28.6 | 62.5 | 47.7 |
| Zürich | 1,542 | 45.15 | 78.27 | 29.02 | 63.3 | 31.3 | 94.1 | -0.8 | 65.1 | 29.5 |

FEDERAL CAPITAL.

| | | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | |
|----------|-------|-------|-------|-------|------|------|-------|------|------|------|
| Canberra | 1,837 | 22.91 | 33.71 | 16.31 | 67.8 | 44.1 | 102.6 | 14.0 | 68.4 | 42.8 |

STATE CAPITALS.

| | | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) | |
|-----------|-----|-------|-------|-------|------|------|-------|------|------|------|
| Perth | 197 | 34.57 | 49.22 | 20.21 | 73.0 | 58.0 | 108.4 | 34.2 | 74.0 | 55.2 |
| Adelaide | 140 | 21.16 | 30.87 | 11.39 | 73.0 | 53.7 | 116.3 | 32.0 | 74.0 | 61.8 |
| Brisbane | 137 | 45.39 | 88.26 | 16.17 | 76.8 | 59.7 | 108.9 | 34.1 | 77.0 | 68.5 |
| Sydney | 138 | 47.37 | 82.76 | 21.49 | 71.0 | 54.2 | 108.5 | 35.9 | 71.6 | 62.7 |
| Melbourne | 115 | 25.45 | 44.25 | 15.61 | 68.6 | 50.0 | 111.2 | 27.0 | 67.6 | 48.7 |
| Hobart | 177 | 23.87 | 43.39 | 18.43 | 61.5 | 46.9 | 105.2 | 27.0 | 62.3 | 45.7 |

(a) Mean of the three hottest months. (b) Mean of the three coldest months.

17. Climatological Tables.—The means, averages, extremes, totals, etc., for a number of climatological elements have been determined from long series of observations at the Australian capitals up to and including the year 1928. These are given in the following tables:—

CLIMATOLOGICAL DATA—PERTH, WESTERN AUSTRALIA.

LAT. 31° 57' S., LONG. 115° 50' E. HEIGHT ABOVE M.S.L. 197 FT.

BAROMETER, WIND, EVAPORATION, LIGHTNING, CLOUDS, AND CLEAR DAYS.

| Month. | Bar. corrected to sea level and standard gravity, and from 9 a.m. and 3 p.m. readings. | Wind. | | | | Mean Amount of Evaporation (inches). | No. of Days Lightning. | | | No. of Clear Days. |
|--|--|--------------------------------------|-----------------------------|--------------|-----------------------|--------------------------------------|------------------------|---------|---------|--------------------|
| | | Greatest Number of Miles in One Day. | Mean Hourly Pressure (lbs.) | Total Miles. | Prevailing Direction. | | Mean | Maximum | Minimum | |
| No. of yrs. over which observation extends | 44 | 31 | 30 | 31 | 31 | 30 | 31 | 32 | 32 | |
| January | 29.006 | 797 27/98 | 0.68 | 11,177 | E S E S S W | 10.39 | 1.5 | 2.8 | 13.9 | |
| February | 29.924 | 650 6/08 | 0.64 | 9,911 | E S E S S W | 8.58 | 1.4 | 3.0 | 11.8 | |
| March | 29.985 | 651 6/13 | 0.52 | 9,752 | E S S W | 7.57 | 1.4 | 3.3 | 11.6 | |
| April | 30.074 | 955 25/00 | 0.40 | 8,269 | E N E S S W | 4.73 | 1.5 | 4.3 | 7.3 | |
| May | 30.072 | 768 5/12 | 0.35 | 7,803 | N E W S W | 2.76 | 2.3 | 5.3 | 5.4 | |
| June | 30.058 | 914 19/27 | 0.36 | 7,916 | N N E W | 1.76 | 2.2 | 5.3 | 5.4 | |
| July | 30.090 | 1,015 20/26 | 0.40 | 8,612 | N N E W | 1.75 | 2.2 | 5.5 | 5.0 | |
| August | 30.086 | 966 15/03 | 0.42 | 8,788 | N N E W S W | 2.35 | 1.6 | 5.4 | 5.7 | |
| September | 30.059 | 864 11/05 | 0.46 | 8,944 | N N E W S W | 3.33 | 1.3 | 6.0 | 5.8 | |
| October | 30.028 | 809 6/16 | 0.53 | 9,379 | S S E S W | 5.23 | 1.1 | 4.9 | 5.2 | |
| November | 29.991 | 777 18/97 | 0.58 | 10,038 | S E S W | 7.63 | 1.3 | 3.8 | 5.4 | |
| December | 29.925 | 776 6/22 | 0.64 | 10,589 | S E S S W | 9.33 | 1.7 | 3.0 | 12.4 | |
| Year { Totals | — | — | — | — | — | 65.91 | 19.5 | — | 96.6 | |
| Year { Averages | 30.016 | — | 0.50 | 9,356 | E — S W | — | — | 4.4 | — | |
| Year { Extremes | — | 1,015 20/7/26 | — | — | — | — | — | — | — | |

TEMPERATURE AND SUNSHINE.

| Month. | Mean Temperature (Fahr.). | | | Extreme Shade Temperature (Fahr.). | | Extreme Range. | Extreme Temperature (Fahr.). | | Mean Hours of Sunshine. |
|--|---------------------------|-----------|------|------------------------------------|-------------|----------------|------------------------------|------------------|-------------------------|
| | Mean Max. | Mean Min. | Mean | Highest. | Lowest. | | Highest in Sun. | Lowest on Grass. | |
| No. of yrs. over which observation extends | 32 | 32 | 32 | 32 | 32 | — | 30 | 30 | 31 |
| January | 84.4 | 63.1 | 73.8 | 108.4 23/21 | 48.6 20/25 | 59.8 | 177.3 22/14 | 39.5 20/25 | 319.2 |
| February | 84.7 | 63.2 | 74.0 | 107.4 7/23 | 47.7 1/02 | 59.7 | 166.0 4/99 | 39.3 1/13 | 271.6 |
| March | 81.2 | 61.0 | 71.1 | 106.4 14/22 | 45.8 8/03 | 60.6 | 167.0 19/16 | 36.7 8/03 | 266.8 |
| April | 76.3 | 57.3 | 66.8 | 99.7 9/10 | 39.3 20/14 | 60.4 | 157.0 8/16 | 31.0 20/14 | 217.1 |
| May | 68.8 | 52.6 | 60.7 | 90.4 2/07 | 34.3 11/14 | 56.1 | 146.0 4/25 | 25.3 11/14 | 176.5 |
| June | 64.1 | 49.6 | 56.8 | 81.7 2/14 | 35.0 30/20 | 46.7 | 135.5 9/14 | 26.5 30/20 | 143.2 |
| July | 62.7 | 47.8 | 55.2 | 76.4 21/21 | 34.2 7/16 | 42.2 | 133.2 13/15 | 25.1 30/20 | 164.6 |
| August | 63.8 | 48.2 | 56.0 | 81.0 12/14 | 35.3 31/08 | 45.7 | 145.1 29/21 | 27.9 10/11 | 185.2 |
| September | 66.3 | 50.3 | 58.3 | 90.9 30/18 | 33.0 17/13 | 52.0 | 153.6 29/16 | 29.2 21/16 | 204.2 |
| October | 68.3 | 52.5 | 60.6 | 95.3 30/22 | 40.5 5/24 | 54.8 | 154.0 29/14 | 30.5 4/17 | 234.9 |
| November | 75.5 | 56.7 | 66.1 | 104.6 24/13 | 42.0 1/04 | 62.6 | 167.0 30/25 | 35.4 6/10 | 287.1 |
| December | 81.0 | 60.7 | 70.8 | 107.9 20/04 | 48.0 2/10 | 59.9 | 168.8 11/27 | 39.0 (c) | 322.6 |
| Year { Averages | 73.1 | 55.3 | 64.2 | — | — | — | — | — | 2793.0 |
| Year { Extremes | — | — | — | 108.4 23/21 | 34.2 7/7/16 | 74.2 | 177.3 22/1/14 | 25.1 30/7/20 | (a) |

(a) Total for year.

HUMIDITY, RAINFALL, AND DEW.

| Month. | Vapour Pressure (inches). | Rel. Hum. (%) | | | | Rainfall (inches). | | | | Dew. |
|--|---------------------------|---------------|-------------|---------------|--------------|--------------------|------------------------|-------------------|----------------|------|
| | | Mean 9 a.m. | Mean 9 a.m. | Highest Mean. | Lowest Mean. | Mean Monthly. | Mean No. of Days Rain. | Greatest Monthly. | Least Monthly. | |
| No. of yrs. over which observation extends | 32 | 32 | 32 | 32 | 53 | 53 | 53 | 53 | 32 | |
| January | 0.445 | 62 | 61 | 42 | 0.35 | 3 | 2.17 1879 | 0.00 (a) | 1.74 28/79 | 2.3 |
| February | 0.448 | 53 | 65 | 46 | 0.44 | 3 | 2.98 1915 | 0.00 (a) | 1.63 28/15 | 3.5 |
| March | 0.435 | 57 | 66 | 46 | 0.80 | 5 | 4.50 1896 | 0.00 (a) | 2.06 26/23 | 5.7 |
| April | 0.400 | 63 | 72 | 51 | 1.64 | 7 | 5.85 1928 | 0.00 1920 | 2.62 30/04 | 9.3 |
| May | 0.372 | 72 | 81 | 61 | 4.97 | 14 | 12.13 1879 | 0.98 1903 | 2.80 20/79 | 12.5 |
| June | 0.341 | 78 | 83 | 68 | 6.92 | 17 | 12.80 1923 | 2.18 1877 | 3.00 10/20 | 12.2 |
| July | 0.323 | 76 | 84 | 69 | 6.68 | 17 | 12.25 1928 | 2.42 1876 | 3.00 4/91 | 13.1 |
| August | 0.329 | 74 | 79 | 63 | 5.77 | 18 | 12.21 1928 | 0.46 1902 | 2.79 7/03 | 11.5 |
| September | 0.345 | 68 | 78 | 58 | 3.45 | 15 | 7.84 1923 | 0.34 1916 | 1.73 23/09 | 10.0 |
| October | 0.352 | 61 | 75 | 54 | 2.21 | 12 | 7.87 1890 | 0.49 1892 | 1.38 15/10 | 5.4 |
| November | 0.391 | 55 | 63 | 46 | 0.79 | 6 | 2.78 1916 | 0.00 1891 | 1.11 30/03 | 3.8 |
| December | 0.418 | 51 | 62 | 44 | 0.57 | 4 | 3.05 1888 | 0.00 1896 | 1.72 1/88 | 2.8 |
| Year { Totals | — | — | — | — | 34.57 | 121 | — | — | — | 92.1 |
| Year { Averages | 0.371 | 62 | — | — | — | — | — | — | — | — |
| Year { Extremes | — | — | 84 | 42 | — | — | 12.80 1923 | Nil (b) | 3.90 10/6/20 | — |

(a) Various years.

(b) Jan., Feb., March, April, Nov., Dec., various years. (c) 3/1910 and 12/1920.

CLIMATOLOGICAL DATA—ADELAIDE, SOUTH AUSTRALIA.

LAT. 34° 56' S., LONG. 138° 35' E. HEIGHT ABOVE M.S.L. 140 FT.

BAROMETER, WIND, EVAPORATION, LIGHTNING, CLOUDS, AND CLEAR DAYS.

| Month. | Bar. corrected to 32° F. Min. Sea Level and Standard Gravity from 9 a.m. and 3 p.m. readings. | Wind. | | | | Mean Amount of Evaporation (Inches). | No. of Days Lightning. | Mean Amount of Clouds, 9 a.m. to 3 p.m., & 9 p.m. to 3 p.m. | No. of Clear Days. |
|--|---|--------------------------------------|------------------------------|--------------|---|--------------------------------------|------------------------|---|--------------------|
| | | Greatest Number of Miles in One Day. | Mean Hourly Pressure. (lbs.) | Total Miles. | Prevailing Direction. 9 a.m. 3 p.m. | | | | |
| No. of yrs. over which observation extends | 72 | 51 | 51 | 51 | 51 | 59 | 57 | 61 | 47 |
| January .. | 29.917 | 758 19/99 | 0.34 | 7,879 | S & W S W | 8.98 | 2.3 | 3.5 | 8.5 |
| February .. | 29.951 | 691 22/96 | 0.29 | 6,689 | S E & E S W & S | 7.30 | 2.1 | 3.5 | 7.2 |
| March .. | 30.037 | 628 9/12 | 0.24 | 6,634 | S E & E S W | 5.84 | 2.2 | 3.9 | 7.2 |
| April .. | 30.120 | 773 10/96 | 0.22 | 6,100 | E & N W S W | 3.48 | 1.5 | 5.0 | 4.3 |
| May .. | 30.121 | 760 9/80 | 0.21 | 6,280 | N E & N W & N | 2.02 | 1.7 | 5.8 | 2.2 |
| June .. | 30.097 | 750 12/78 | 0.24 | 6,506 | N N E W & W | 1.23 | 2.0 | 6.1 | 1.8 |
| July .. | 30.125 | 674 25/82 | 0.25 | 6,726 | N N E W & W | 1.29 | 1.6 | 5.8 | 1.8 |
| August .. | 30.098 | 773 31/97 | 0.28 | 7,125 | N & E W N W | 1.88 | 2.2 | 5.5 | 2.6 |
| September .. | 30.039 | 720 2/87 | 0.31 | 7,281 | N W | 2.86 | 2.4 | 5.2 | 3.3 |
| October .. | 29.993 | 768 23/98 | 0.34 | 7,893 | N N W W S W | 4.77 | 3.4 | 5.0 | 4.0 |
| November .. | 29.977 | 677 2/04 | 0.33 | 7,508 | W & S S W & W | 6.60 | 3.5 | 4.5 | 5.6 |
| December .. | 29.919 | 675 12/91 | 0.34 | 7,905 | S W & W S W | 8.44 | 2.7 | 3.8 | 7.3 |
| Year { Totals .. | — | — | — | — | — | 54.69 | 27.6 | — | 55.8 |
| Year { Averages .. | 30.033 | — | 0.28 | 7,044 | N E & N W S W | — | — | 4.8 | — |
| Year { Extremes .. | — | 773 (a) | — | — | — | — | — | — | — |

(a) 10/4/96 and 31/8/97.

TEMPERATURE AND SUNSHINE.

| Month. | Mean Temperature (Fahr.). | | | Extreme Shade Temperature (Fahr.). | | Extreme Range. | Extreme Temperature (Fahr.). | | Mean Hour of Sunshine. |
|--|---------------------------|-----------|-------|------------------------------------|-----------------|----------------|------------------------------|-------------------|------------------------|
| | Mean Max. | Mean Min. | Mean. | Highest. | Lowest. | | Highest in Sun. | Lowest on Grass. | |
| No. of yrs. over which observation extends | 72 | 72 | 72 | 72 | 72 | 72 | 51 | 68 | 47 |
| January .. | 86.1 | 61.5 | 73.8 | 116.3 26/58 | 45.1 21/84 | 71.2 | 180.0 18/82 | 36.5 14/79 | 310.2 |
| February .. | 86.0 | 62.0 | 74.0 | 113.6 12/99 | 45.5 23/18 | 68.1 | 170.5 10/00 | 35.8 23/26 | 262.3 |
| March .. | 80.8 | 58.8 | 69.8 | 105.0 12/61 | 44.8 —/57 | 63.2 | 174.0 17/83 | 33.8 27/80 | 240.4 |
| April .. | 73.3 | 54.6 | 64.0 | 98.0 10/66 | 39.6 15/59 | 58.4 | 155.0 1/83 | 30.2 16/17 | 180.2 |
| May .. | 65.6 | 50.2 | 57.9 | 89.5 4/21 | 36.9 (a) | 52.6 | 148.2 12/79 | 25.6 19/28 | 148.9 |
| June .. | 60.3 | 46.7 | 53.5 | 76.0 23/65 | 32.5 27/76 | 43.5 | 138.8 18/79 | 22.9 12/13 | 122.6 |
| July .. | 58.9 | 44.6 | 51.8 | 74.0 11/06 | 32.0 24/08 | 42.0 | 134.5 26/90 | 23.3 25/11 | 138.0 |
| August .. | 62.0 | 45.9 | 54.0 | 85.0 31/11 | 32.3 17/59 | 52.7 | 140.0 31/92 | 23.5 7/88 | 165.0 |
| September .. | 66.3 | 47.9 | 57.1 | 90.7 23/82 | 32.7 4/58 | 58.0 | 160.5 23/82 | 25.0 25/27 | 183.8 |
| October .. | 72.4 | 51.4 | 61.9 | 102.9 21/22 | 36.0 —/57 | 66.9 | 162.0 30/21 | 27.8 2/18 | 227.6 |
| November .. | 78.7 | 55.4 | 67.0 | 113.5 21/65 | 40.8 2/09 | 72.7 | 166.9 20/78 | 31.5 2/09 | 265.3 |
| December .. | 83.3 | 58.9 | 71.1 | 114.2 14/76 | 43.0 (b) | 71.2 | 175.7 7/99 | 32.5 4/84 | 303.3 |
| Year { Averages .. | 72.8 | 53.2 | 63.0 | — | — | — | — | — | 2547.6 |
| Year { Extremes .. | — | — | — | 116.3 26/1/58 | 32.0 24/7/08 | 84.3 | 180.0 18/1/82 | 22.9 12/6/1913 | (c) |

(a) 26/1895 and 24/1904. (b) 16/1861 and 4/1906. (c) Total for year.

HUMIDITY, RAINFALL, AND DEW.

| Month. | Vapour Pressure (inches). | Rel. Hum. (%) | | | Rainfall (Inches). | | | | Dew. Mean No. Days Dew. | |
|--|---------------------------|---------------|---------------|--------------|--------------------|------------------------|-------------------|----------------|-------------------------|----------------------|
| | | Mean 9 a.m. | Highest Mean. | Lowest Mean. | Mean Monthly. | Mean No. of Days Rain. | Greatest Monthly. | Least Monthly. | | Greatest In One Day. |
| No. of yrs. over which observation extends | 61 | 61 | 61 | 61 | 90 | 90 | 99 | 90 | 90 | 57 |
| January .. | 0.340 | 38 | 59 | 30 | 0.72 | 4 | 4.00 1850 | Nil (a) | 2.30 2/89 | 3.9 |
| February .. | 0.357 | 41 | 56 | 30 | 0.74 | 4 | 6.09 1925 | Nil (b) | 5.57 7/25 | 5.6 |
| March .. | 0.345 | 46 | 58 | 36 | 1.03 | 6 | 4.60 1878 | Nil (c) | 3.50 5/78 | 10.8 |
| April .. | 0.336 | 56 | 72 | 37 | 1.73 | 9 | 6.78 1853 | 0.03 1923 | 3.15 5/60 | 13.8 |
| May .. | 0.317 | 67 | 76 | 49 | 2.77 | 14 | 7.75 1875 | 0.20 1891 | 2.75 1/53 | 15.8 |
| June .. | 0.298 | 76 | 84 | 67 | 3.11 | 16 | 8.58 1916 | 0.42 1886 | 2.11 1/20 | 15.9 |
| July .. | 1.276 | 76 | 87 | 68 | 2.64 | 16 | 5.38 1865 | 0.37 1899 | 1.75 10/65 | 17.1 |
| August .. | 0.286 | 69 | 77 | 54 | 2.51 | 16 | 6.24 1852 | 0.35 1914 | 2.23 19/51 | 16.6 |
| September .. | 0.297 | 61 | 72 | 44 | 2.05 | 14 | 5.83 1923 | 0.45 1896 | 1.59 20/23 | 15.6 |
| October .. | 0.298 | 51 | 67 | 29 | 1.73 | 11 | 3.83 1870 | 0.17 1914 | 2.24 16/08 | 12.6 |
| November .. | 0.310 | 43 | 57 | 31 | 1.14 | 7 | 3.55 1851 | 0.04 1885 | 1.88 28/58 | 6.8 |
| December .. | 0.322 | 39 | 50 | 33 | 0.99 | 6 | 3.98 1861 | Nil 1904 | 2.42 23/13 | 4.6 |
| Year { Totals .. | — | — | — | — | 21.16 | 123 | — | — | — | 139.1 |
| Year { Averages .. | 0.311 | 53 | — | — | — | — | — | — | — | — |
| Year { Extremes .. | — | — | 87 | 29 | — | — | 8.58 6/16 | Nil (d) | 5.57 7/2/25 | — |

(a) 1848, etc. (b) 1848, etc. (c) 1859, etc. (d) January, February, March, December, various years.

CLIMATOLOGICAL DATA—BRISBANE, QUEENSLAND.

LAT. 27° 28' S., LONG. 153° 2' E. HEIGHT ABOVE M.S.L. 137 FT.

BAROMETER, WIND, EVAPORATION, LIGHTNING, CLOUDS, AND CLEAR DAYS.

| Month. | Bar. corrected to 32° F. Min. Sea Level and Standard Gravity from 9 a.m. and 3 p.m. readings. | Wind. | | | | Mean Amount of Evaporation (inches). | No. of Days Lightning. | Mean Amount of Clouds, 9 a.m. 3 p.m. & 9 p.m. | No. of Clear Days. | |
|--|---|--------------------------------------|------------------------------|--------------|-----------------------|--------------------------------------|------------------------|---|--------------------|------|
| | | Greatest Number of Miles in One Day. | Mean Hourly Pressure. (lbs.) | Total Miles. | Prevailing Direction. | | | | | |
| No. of yrs. over which observation extends | 42 | 15 | 17 | 17 | 42 | 19 | 42 | 37 | 20 | |
| January .. | 29.869 | 361 | 1/22 | 0.13 | 4,821 | E | 6.679 | 6.6 | 5.7 | 3.2 |
| February .. | 29.903 | 352 | 14/28 | 0.14 | 4,682 | S E | 5.390 | 5.5 | 5.8 | 2.1 |
| March .. | 29.960 | 348 | 10/25 | 0.11 | 4,452 | S E | 5.018 | 4.5 | 5.3 | 5.4 |
| April .. | 30.047 | 400 | 3/25 | 0.10 | 4,186 | S & S E | 3.935 | 3.3 | 4.5 | 7.9 |
| May .. | 30.081 | 363 | 7/16 | 0.08 | 3,899 | S | 3,058 | 3.2 | 4.3 | 9.4 |
| June .. | 30.068 | 455 | 14/28 | 0.09 | 3,922 | S W | 2,601 | 2.3 | 4.2 | 9.0 |
| July .. | 30.071 | 359 | 2/23 | 0.08 | 3,936 | S W | 2,600 | 2.6 | 3.7 | 12.6 |
| August .. | 30.097 | 331 | 6/23 | 0.09 | 4,144 | S W | 3,308 | 3.7 | 3.4 | 12.7 |
| September .. | 30.040 | 322 | 14/23 | 0.09 | 3,939 | N E & S | 4,200 | 5.9 | 3.4 | 13.0 |
| October .. | 30.000 | 325 | 25/18 | 0.11 | 4,460 | N E | 5,527 | 6.8 | 4.0 | 9.2 |
| November .. | 29.960 | 371 | 10/28 | 0.12 | 4,633 | N E | 6,225 | 8.7 | 4.7 | 6.3 |
| December .. | 29.889 | 467 | 15/26 | 0.13 | 4,984 | N E | 6,828 | 9.3 | 5.3 | 3.4 |
| Year { Totals .. | — | — | — | — | — | — | 55,369 | 62.4 | — | 94.2 |
| Year { Averages .. | 29.999 | — | — | 0.10 | 4,334 | S & E | — | — | 4.5 | — |
| Year { Extremes .. | — | 467 | 15/12/26 | — | — | — | — | — | — | — |

TEMPERATURE AND SUNSHINE.

| Month. | Mean Temperature (Fahr.). | | | Extreme Shade Temperature (Fahr.). | | Extreme Range. | Extreme Temperature (Fahr.). | | Mean Hours of Sunshine. | | | | |
|--|---------------------------|-----------|-------|------------------------------------|---------|----------------|------------------------------|------------------|-------------------------|-------|---------|-------|--------|
| | Mean Max. | Mean Min. | Mean. | Highest. | Lowest. | | Highest in Sun. | Lowest on Grass. | | | | | |
| No. of yrs. over which observation extends | 42 | 42 | 42 | 42 | 42 | 42 | 41 | 42 | 20 | | | | |
| January .. | 85.3 | 68.8 | 77.0 | 198.9 | 14/02 | 58.8 | 4/93 | 50.1 | 166.4 | 10/17 | 49.9 | 4/93 | 221.9 |
| February .. | 84.5 | 68.6 | 76.5 | 105.7 | 21/25 | 58.7 | (a) | 47.0 | 165.2 | 6/10 | 49.3 | 9/89 | 203.9 |
| March .. | 82.3 | 66.3 | 74.3 | 99.4 | 5/19 | 52.4 | 29/13 | 47.0 | 161.7 | 4/25 | 45.4 | 29/13 | 208.4 |
| April .. | 79.1 | 61.6 | 70.3 | 95.2 | (b) | 44.4 | 25/25 | 50.8 | 153.8 | 11/16 | 36.7 | 24/25 | 207.5 |
| May .. | 73.6 | 55.3 | 64.4 | 90.3 | 21/23 | 41.3 | 24/99 | 49.0 | 147.0 | 1/10 | 29.8 | 8/97 | 202.8 |
| June .. | 69.4 | 51.0 | 60.2 | 88.9 | 19/18 | 36.3 | 29/08 | 52.6 | 136.0 | 3/18 | 25.4 | 23/88 | 176.7 |
| July .. | 68.5 | 48.5 | 58.5 | 83.4 | 28/98 | 36.1 | (c) | 47.3 | 146.1 | 20/15 | 23.9 | 11/90 | 206.8 |
| August .. | 71.2 | 49.8 | 60.5 | 88.5 | 25/28 | 37.4 | 6/87 | 51.1 | 141.9 | 20/17 | 27.1 | 9/99 | 232.9 |
| September .. | 75.7 | 54.8 | 65.3 | 95.2 | 16/12 | 40.7 | 1/96 | 54.5 | 155.5 | 26/08 | 30.4 | 1/89 | 236.4 |
| October .. | 79.7 | 60.0 | 69.9 | 101.4 | 18/93 | 43.3 | 3/99 | 53.1 | 157.4 | 31/18 | 34.9 | 8/89 | 260.0 |
| November .. | 82.8 | 64.2 | 73.5 | 106.1 | 18/13 | 48.5 | 2/05 | 57.6 | 162.3 | 7/89 | 38.8 | 1/05 | 245.8 |
| December .. | 85.0 | 67.5 | 76.3 | 105.9 | 26/93 | 56.4 | 13/12 | 49.5 | 161.7 | 27/26 | 49.1 | 3/94 | 239.7 |
| Year { Averages .. | 78.1 | 59.7 | 68.9 | — | — | — | — | — | — | — | — | — | 2644.8 |
| Year { Extremes .. | — | — | — | 108.9 | — | 36.1 | (d) | 72.8 | 166.4 | — | 23.9 | — | (e) |
| | | | | 14/1/02 | | | | | 10/1/17 | | 11/7/90 | | |

(a) 10 and 11/04. (b) 9/96 and 5/03. (c) 12/94 and 2/96. (d) 12/7/94 and 2/7/96. (e) Total for year.

HUMIDITY, RAINFALL, AND DEW.

| Month. | Vapour Pressure (inches). | Rel. Hum. (%) | | | | Rainfall (inches). | | | | | Dew. Mean No. Days Dew. | | |
|--|---------------------------|---------------|-------------|---------------|--------------|--------------------|------------------------|-------------------|----------------|----------------------|-------------------------|-------|-------|
| | | Mean 9 a.m. | Mean 9 a.m. | Highest Mean. | Lowest Mean. | Mean Monthly. | Mean No. of Days Rain. | Greatest Monthly. | Least Monthly. | Greatest In One Day. | | | |
| No. of yrs. over which observation extends | 42 | 42 | 42 | 42 | 77 | 69 | 77 | 77 | 59 | 42 | | | |
| January .. | 0.638 | 66 | 79 | 53 | 6.50 | 14 | 27.72 | 1895 | 0.32 | 1919 | 18.31 | 21/87 | 7.7 |
| February .. | 0.648 | 69 | 82 | 55 | 6.31 | 14 | 40.39 | 1893 | 0.58 | 1849 | 8.36 | 16/93 | 7.6 |
| March .. | 0.615 | 72 | 85 | 56 | 5.73 | 15 | 34.04 | 1870 | Nil | 1849 | 11.18 | 14/08 | 10.8 |
| April .. | 0.526 | 72 | 80 | 60 | 3.69 | 12 | 15.28 | 1867 | 0.05 | 1897 | 4.97 | 19/28 | 13.4 |
| May .. | 0.425 | 73 | 85 | 61 | 2.80 | 10 | 13.85 | 1876 | Nil | 1846 | 5.62 | 9/79 | 14.6 |
| June .. | 0.360 | 74 | 84 | 67 | 2.76 | 8 | 14.03 | 1873 | Nil | 1847 | 6.01 | 9/93 | 12.6 |
| July .. | 0.329 | 73 | 81 | 61 | 2.26 | 8 | 8.46 | 1889 | Nil | 1841 | 3.54 | (c) | 14.0 |
| August .. | 0.350 | 69 | 80 | 56 | 2.06 | 7 | 14.67 | 1879 | Nil | (a) | 4.89 | 12/87 | 12.5 |
| September .. | 0.413 | 64 | 76 | 47 | 2.03 | 8 | 5.43 | 1886 | 0.10 | 1907 | 2.46 | 2/94 | 12.0 |
| October .. | 0.476 | 60 | 72 | 48 | 2.57 | 9 | 9.99 | 1882 | 0.14 | 1900 | 3.75 | 3/27 | 10.7 |
| November .. | 0.551 | 60 | 72 | 45 | 3.74 | 10 | 12.41 | 1917 | Nil | 1842 | 4.46 | 16/86 | 7.2 |
| December .. | 0.601 | 62 | 69 | 52 | 4.94 | 12 | 13.99 | 1910 | 0.35 | 1865 | 6.60 | 28/71 | 6.5 |
| Year { Totals .. | — | — | — | — | 45.39 | 127 | — | — | — | — | — | — | 129.6 |
| Year { Averages .. | 0.494 | 68 | — | — | — | — | — | — | — | — | — | — | — |
| Year { Extremes .. | — | — | 85 | 45 | — | — | 40.39 | 2/93 | Nil | (b) | 18.31 | — | — |
| | | | | | | | | | | | 21/1/87 | | |

(a) 1862, 1869, 1880. (b) March, May, June, July, August, and November, various years. (c) 15/76 and 16/89.

CLIMATOLOGICAL DATA—SYDNEY, NEW SOUTH WALES.

LAT. 33° 52' S., LONG. 151° 12' E. HEIGHT ABOVE M.S.L., 138 FT.

BAROMETER, WIND, EVAPORATION, LIGHTNING, CLOUDS, AND CLEAR DAYS.

| Month. | Bar. corrected to 32° F. Mm. Sea Level and Standard Gravity from 9 a.m. and 3 p.m. readings. | Wind. | | | | Mean Amount of Evaporation (inches). | No. of Days Lightning. | Mean Amount of Clouds, 9 a.m. to 3 p.m. & 9 p.m. | No. of Clear Days. |
|--|--|--------------------------------------|------------------------------|--------------|-------------------------------------|--------------------------------------|------------------------|--|--------------------|
| | | Greatest Number of Miles in One Day. | Mean Hourly Pressure. (lbs.) | Total Miles. | Prevailing Direction. 9 a.m. 3 p.m. | | | | |
| No. of yrs. over which observation extends | 70 | 62 | 62 | 62 | 62 | 49 | 69 | 67 | 18 |
| January .. | 29.897 | 721 1/71 | 0.34 | 7,969 | E N E | 5.307 | 4.8 | 5.8 | 5.1 |
| February .. | 29.942 | 871 12/69 | 0.31 | 6,847 | E N E | 4.192 | 4.3 | 5.9 | 5.4 |
| March .. | 30.012 | 943 20/70 | 0.24 | 6,639 | E N E | 3.600 | 4.1 | 5.5 | 6.0 |
| April .. | 30.072 | 803 6/82 | 0.21 | 6,030 | W | 2.570 | 3.8 | 6.0 | 7.2 |
| May .. | 30.078 | 758 6/98 | 0.21 | 6,255 | W | 1.818 | 3.1 | 4.8 | 7.4 |
| June .. | 30.060 | 712 7/00 | 0.26 | 6,723 | W | 1.424 | 2.2 | 4.8 | 8.8 |
| July .. | 30.071 | 930 17/79 | 0.26 | 6,951 | W | 1.526 | 2.3 | 4.4 | 10.0 |
| August .. | 30.070 | 756 22/72 | 0.24 | 6,702 | W | 1.913 | 3.1 | 4.0 | 10.6 |
| September .. | 30.007 | 964 6/74 | 0.28 | 6,971 | W | 2.685 | 4.0 | 4.3 | 9.5 |
| October .. | 29.965 | 926 4/72 | 0.31 | 7,614 | E N E | 3.894 | 4.9 | 4.9 | 7.4 |
| November .. | 29.941 | 720 13/68 | 0.32 | 7,445 | E N E | 4.606 | 5.4 | 5.5 | 6.3 |
| December .. | 29.883 | 938 3/84 | 0.33 | 7,851 | E N E | 5.356 | 5.6 | 5.6 | 5.2 |
| Year { Totals .. | — | — | — | — | — | 38.891 | 47.6 | — | 88.9 |
| Year { Averages .. | 30.000 | — | 0.28 | 7,000 | W | — | — | 5.6 | — |
| Year { Extremes .. | — | 964 6/9/74 | — | — | — | — | — | — | — |

TEMPERATURE AND SUNSHINE.

| Month. | Mean Temperature (Fahr.). | | | Extreme Shade Temperature (Fahr.). | | Extreme Range. | Extreme Temperature (Fahr.). | | Mean Hours of Sunshine. |
|--|---------------------------|-----------|-------|------------------------------------|--------------|----------------|------------------------------|------------------|-------------------------|
| | Mean Max. | Mean Min. | Mean. | Highest. | Lowest. | | Highest in Sun. | Lowest on Grass. | |
| No. of yrs. over which observation extends | 70 | 70 | 70 | 70 | 70 | 70 | 67 | 70 | 18 |
| January .. | 78.4 | 64.8 | 71.6 | 108.5 13/96 | 51.2 14/65 | 57.3 | 164.3 | 43.7 | 211.3 |
| February .. | 77.7 | 65.0 | 71.3 | 107.8 8/26 | 49.3 28/63 | 58.5 | 161.2 | 43.4 | 186.5 |
| March .. | 75.7 | 62.9 | 69.3 | 102.6 3/69 | 48.8 14/86 | 53.8 | 158.3 | 39.9 | 192.5 |
| April .. | 71.3 | 58.1 | 64.7 | 91.0 20/22 | 44.6 27/64 | 46.4 | 144.1 | 33.3 | 157.2 |
| May .. | 65.4 | 52.1 | 58.8 | 86.0 1/19 | 40.2 22/59 | 45.8 | 129.7 | 29.3 | 147.3 |
| June .. | 61.0 | 48.3 | 54.7 | 79.8 2/23 | 38.0 5/20 | 41.8 | 125.5 | 28.1 | 131.4 |
| July .. | 59.6 | 45.9 | 52.7 | 78.3 22/26 | 35.9 12/90 | 42.4 | 124.7 | 24.0 | 152.7 |
| August .. | 62.7 | 47.5 | 55.1 | 82.0 31/84 | 36.8 3/72 | 45.2 | 149.0 | 26.1 | 192.4 |
| September .. | 67.0 | 51.4 | 59.2 | 92.3 27/19 | 40.8 18/64 | 51.5 | 142.2 | 30.1 | 197.3 |
| October .. | 71.4 | 55.8 | 63.6 | 98.9 19/98 | 42.2 6/27 | 56.7 | 151.9 | 32.7 | 216.2 |
| November .. | 74.5 | 59.6 | 67.0 | 102.7 21/78 | 45.8 1/05 | 56.9 | 158.5 | 36.0 | 208.1 |
| December .. | 77.2 | 62.9 | 70.1 | 107.5 31/04 | 48.4 3/24 | 59.1 | 164.5 | 41.4 | 205.6 |
| Year { Averages .. | 70.2 | 56.2 | 63.2 | — | — | — | — | — | 2198.5 |
| Year { Extremes .. | — | — | — | 108.5 13/1/96 | 35.9 12/7/90 | 72.6 | 164.5 | 24.0 | (a) |

(a) Total for year.

HUMIDITY, RAINFALL, AND DEW.

| Month. | Vapour Pressure (inches). | Rel. Hum. (%) | | | | Rainfall (inches). | | | | | Dew. Mean No. of Days Dew. |
|--|---------------------------|---------------|-------------|---------------|--------------|--------------------|------------------------|-------------------|----------------|----------------------|----------------------------|
| | | Mean 9 a.m. | Mean 9 a.m. | Highest Mean. | Lowest Mean. | Mean Monthly. | Mean No. of Days Rain. | Greatest Monthly. | Least Monthly. | Greatest in One Day. | |
| No. of yrs. over which observation extends | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |
| January .. | 0.546 | 67 | 78 | 58 | 3.65 | 14 | 15.26 1911 | 0.42 1888 | 7.08 13/11 | 1.2 | |
| February .. | 0.560 | 71 | 81 | 59 | 4.24 | 14 | 18.56 1873 | 0.34 1902 | 8.90 25/73 | 2.3 | |
| March .. | 0.531 | 73 | 85 | 62 | 4.97 | 15 | 18.70 1870 | 0.42 1876 | 6.52 9/13 | 3.8 | |
| April .. | 0.447 | 76 | 87 | 63 | 5.52 | 14 | 24.49 1861 | 0.06 1868 | 7.52 29/60 | 6.1 | |
| May .. | 0.356 | 78 | 90 | 63 | 5.15 | 15 | 23.03 1919 | 0.18 1860 | 8.36 28/89 | 6.7 | |
| June .. | 0.299 | 78 | 89 | 68 | 4.78 | 13 | 16.30 1885 | 0.19 1904 | 5.17 16/84 | 5.9 | |
| July .. | 0.276 | 76 | 88 | 63 | 4.82 | 12 | 13.21 1900 | 0.12 1862 | 5.72 28/08 | 6.1 | |
| August .. | 0.291 | 72 | 84 | 56 | 2.95 | 11 | 14.89 1899 | 0.04 1885 | 5.33 2/60 | 5.6 | |
| September .. | 0.333 | 66 | 79 | 49 | 2.82 | 12 | 14.05 1879 | 0.08 1882 | 5.69 10/79 | 4.0 | |
| October .. | 0.379 | 62 | 77 | 46 | 2.83 | 12 | 11.14 1916 | 0.21 1867 | 6.37 13/02 | 3.0 | |
| November .. | 0.444 | 63 | 79 | 42 | 2.81 | 12 | 9.89 1865 | 0.07 1915 | 4.23 19/00 | 2.5 | |
| December .. | 0.503 | 64 | 77 | 52 | 2.83 | 13 | 15.82 1920 | 0.23 1913 | 4.75 13/10 | 1.8 | |
| Year { Totals .. | — | — | — | — | 47.37 | 157 | — | — | — | 49.0 | |
| Year { Averages .. | 0.400 | 69 | — | 42 | — | — | — | — | — | — | |
| Year { Extremes .. | — | — | 90 | — | — | — | 24.49 4/1861 | 0.04 8/1885 | 8.90 25/2/73 | — | |

CLIMATOLOGICAL DATA—MELBOURNE, VICTORIA.

LAT. 37° 49' S., LONG. 144° 58' E. HEIGHT ABOVE M.S.L., 115 FT.

BAROMETER, WIND, EVAPORATION, LIGHTNING, CLOUDS, AND CLEAR DAYS.

| Month. | Bar. corrected to 32° F. M.n. Sea Level and Standard Gravity from 9 a.m. and 3 p.m. readings. | Wind. | | | | Mean Amount of Evaporation (inches). | No. of Days Lightning. | Mean Amount of Clouds, 9 a.m. to 9 p.m. | No. of Clear Days. | |
|--|---|--------------------------------------|------------------------------|--------------|-----------------------|--------------------------------------|------------------------|---|--------------------|------|
| | | Greatest Number of Miles in One Day. | Mean Hourly Pressure. (lbs.) | Total Miles. | Prevailing Direction. | | | | | |
| No. of yrs. over which observation extends | 71 | 55 | 55 | 55 | 55 | 56 | 21 | 71 | 21 | |
| January .. | 29.912 | 583 | 10/97 | 0.28 | 7,159 | S W S E | 6.444 | 2.0 | 5.0 | 7.4 |
| February .. | 29.959 | 566 | 8/68 | 0.25 | 6,209 | S W S E | 5.064 | 2.5 | 5.0 | 7.0 |
| March .. | 30.033 | 677 | 9/81 | 0.21 | 6,179 | S W S E | 4.001 | 1.6 | 5.5 | 5.3 |
| April .. | 30.105 | 597 | 7/68 | 0.18 | 5,595 | S W N W | 2.405 | 0.9 | 5.8 | 4.9 |
| May .. | 30.102 | 693 | 12/65 | 0.18 | 5,756 | N W N E | 1.482 | 0.6 | 6.5 | 3.3 |
| June .. | 30.077 | 761 | 13/76 | 0.22 | 6,163 | N W N E | 1.094 | 0.6 | 6.7 | 2.3 |
| July .. | 30.089 | 755 | 8/74 | 0.21 | 6,227 | N W N E | 1.068 | 0.5 | 6.4 | 3.0 |
| August .. | 30.065 | 637 | 14/75 | 0.24 | 6,699 | N W N E | 1.484 | 1.1 | 6.3 | 3.0 |
| September .. | 29.994 | 617 | 11/72 | 0.27 | 6,799 | N W S W | 2.321 | 1.4 | 6.1 | 3.3 |
| October .. | 29.962 | 899 | 5/66 | 0.27 | 7,121 | S W N W | 3.379 | 2.1 | 5.9 | 3.5 |
| November .. | 29.951 | 734 | 13/66 | 0.27 | 6,853 | S W S E | 4.692 | 2.4 | 5.9 | 3.8 |
| December .. | 29.898 | 655 | 1/75 | 0.29 | 7,299 | S W S E | 5.821 | 1.7 | 5.5 | 4.2 |
| Year { Totals .. | — | — | — | — | — | — | — | — | — | — |
| Year { Averages .. | 30.012 | — | — | 0.24 | 6,505 | S W N W | 39.155 | 17.4 | — | 51.0 |
| Year { Extremes .. | — | 899 | 5/10/66 | — | — | — | — | — | 5.9 | — |

TEMPERATURE AND SUNSHINE.

| Month. | Mean Temperature (Fahr.). | | | Extreme Shade Temperature (Fahr.). | | Extreme Range. | Extreme Temperature (Fahr.). | | Mean Hours of Sunshine. | | | | |
|--|---------------------------|-----------|------|------------------------------------|---------|----------------|------------------------------|------------------|-------------------------|---------|------|---------|--------|
| | Mean Max. | Mean Min. | Mean | Highest. | Lowest. | | Highest in Sun. | Lowest on Grass. | | | | | |
| | | | | | | | | | | 73 | 73 | 69 | 69 |
| No. of yrs. over which observation extends | 73 | 73 | 73 | 73 | 73 | 73 | 69 | 69 | 47 | | | | |
| January .. | 78.1 | 56.8 | 67.4 | 111.2 | 14/62 | 42.0 | 28/85 | 89.2 | 178.5 | 14/62 | 30.2 | 28/65 | 264.2 |
| February .. | 78.0 | 57.2 | 67.6 | 109.5 | 7/01 | 40.2 | 24/24 | 69.3 | 167.5 | 15/70 | 30.9 | 6/91 | 241.4 |
| March .. | 74.4 | 54.7 | 64.5 | 105.5 | 2/93 | 37.1 | 17/84 | 68.4 | 164.5 | 1/68 | 28.9 | (b) | 206.6 |
| April .. | 68.3 | 50.7 | 59.4 | 94.0 | (a) | 34.8 | 24/88 | 59.2 | 152.0 | 8/61 | 25.0 | 23/97 | 163.4 |
| May .. | 61.4 | 46.7 | 54.1 | 83.7 | 7/05 | 29.9 | 29/16 | 53.8 | 129.0 | 2/59 | 21.1 | 26/16 | 136.6 |
| June .. | 56.8 | 44.0 | 50.4 | 72.2 | 1/07 | 25.0 | 11/66 | 44.2 | 129.0 | 11/61 | 20.4 | 17/95 | 113.3 |
| July .. | 55.6 | 41.8 | 48.7 | 69.3 | 22/26 | 27.0 | 21/69 | 42.3 | 125.8 | 27/80 | 20.5 | 12/03 | 107.8 |
| August .. | 58.7 | 43.4 | 51.0 | 77.0 | 20/85 | 28.3 | 11/83 | 48.7 | 137.4 | 29/69 | 21.3 | 14/02 | 156.0 |
| September .. | 62.6 | 45.7 | 54.2 | 88.6 | 28/28 | 31.1 | 16/08 | 53.9 | 142.0 | 20/67 | 22.3 | 8/18 | 172.2 |
| October .. | 67.1 | 48.3 | 57.7 | 98.4 | 24/14 | 32.1 | 3/71 | 66.2 | 154.3 | 28/68 | 24.8 | 22/18 | 205.3 |
| November .. | 71.4 | 51.3 | 61.3 | 105.7 | 27/94 | 36.5 | 2/96 | 69.2 | 159.6 | 20/65 | 24.6 | 2/96 | 241.7 |
| December .. | 75.4 | 54.3 | 64.9 | 110.7 | 15/76 | 40.0 | 4/70 | 70.7 | 170.3 | 20/69 | 33.3 | 1/04 | 253.5 |
| Year { Averages .. | 67.3 | 49.6 | 58.4 | — | — | — | — | — | — | — | — | — | 2262.0 |
| Year { Extremes .. | — | — | — | 111.2 | 14/1/62 | 27.0 | 21/7/69 | 84.2 | 178.5 | 14/1/62 | 20.4 | 17/6/95 | (c) |

(a) 6/1885 and 17/1922. (b) 17/1884 and 20/1897. (c) Total for year.

HUMIDITY, RAINFALL, AND DEW.

| Month. | Vapour Pressure (inches). | Rel. Hum. (%) | | | | Rainfall (inches). | | | | | Dew Mean No. of Days Dew. | | |
|--|---------------------------|---------------|-------------|---------------|--------------|--------------------|------------------------|-------------------|----------------|----------------------|---------------------------|----------|------|
| | | Mean 9 a.m. | Mean 9 a.m. | Highest Mean. | Lowest Mean. | Mean Monthly. | Mean No. of Days Rain. | Greatest Monthly. | Least Monthly. | Greatest in One Day. | | | |
| | | | | | | | | | | | | 73 | 73 |
| No. of yrs. over which observation extends | 21 | 21 | 21 | 21 | 73 | 73 | 73 | 73 | 70 | 21 | | | |
| January .. | 0.382 | 68 | 65 | 50 | 1.92 | 8 | 5.68 | 1904 | 0.04 | 1878 | 2.97 | 9/97 | 2.6 |
| February .. | 0.416 | 62 | 69 | 48 | 1.74 | 7 | 6.24 | 1904 | 0.03 | 1870 | 3.37 | 18/19 | 3.4 |
| March .. | 0.371 | 64 | 71 | 57 | 2.21 | 10 | 7.50 | 1911 | 0.18 | 1859 | 3.55 | 5/19 | 7.1 |
| April .. | 0.357 | 71 | 78 | 66 | 2.15 | 11 | 6.71 | 1901 | Nil | 1923 | 2.28 | 22/01 | 8.7 |
| May .. | 0.312 | 78 | 89 | 71 | 2.17 | 13 | 4.31 | 1892 | 0.45 | 1897 | 1.85 | 7/91 | 8.9 |
| June .. | 0.278 | 83 | 89 | 77 | 2.06 | 14 | 4.51 | 1869 | 0.73 | 1897 | 1.74 | 21/04 | 8.8 |
| July .. | 0.263 | 82 | 86 | 70 | 1.84 | 14 | 7.02 | 1891 | 0.57 | 1902 | 2.71 | 12/91 | 9.3 |
| August .. | 0.289 | 78 | 82 | 70 | 1.85 | 14 | 4.04 | 1924 | 0.48 | 1903 | 1.94 | 26/24 | 8.3 |
| September .. | 0.289 | 68 | 78 | 60 | 2.41 | 14 | 7.93 | 1916 | 0.52 | 1907 | 2.82 | 12/80 | 8.3 |
| October .. | 0.310 | 62 | 67 | 53 | 2.62 | 13 | 7.61 | 1869 | 0.29 | 1914 | 3.00 | 17/69 | 5.8 |
| November .. | 0.326 | 69 | 69 | 52 | 2.21 | 11 | 6.71 | 1916 | 0.25 | 1895 | 2.57 | 16/76 | 1.8 |
| December .. | 0.365 | 57 | 69 | 51 | 2.26 | 9 | 7.18 | 1863 | 0.11 | 1904 | 2.62 | 28/07 | 1.8 |
| Year { Totals .. | — | — | — | — | 25.45 | 138 | — | — | — | — | — | — | 72.8 |
| Year { Averages .. | 0.326 | 68 | — | — | — | — | — | — | — | — | — | — | — |
| Year { Extremes .. | — | — | 89 | 48 | — | — | 7.93 | 9/1916 | Nil | 4/1923 | 3.55 | 5/3/1919 | — |

CLIMATOLOGICAL DATA—HOBART, TASMANIA.

LAT. 42° 53' S., LONG. 147 20' E. HEIGHT ABOVE M.S.L., 177 FT.

BAROMETER, WIND, EVAPORATION, LIGHTNING, CLOUDS, AND CLEAR DAYS.

| Month. | Bar. corrected to 32° F. M.S. Sea Level and Standard Gravity from 9 a.m. and 3 p.m. readings. | Wind. | | | | Mean Amount of Evaporation (Inches). | No. of Days Lightning. | Mean Amount of Cloud, 9 a.m., 3 p.m. & 9 p.m. | No. of Clear Days. |
|--|---|--------------------------------------|------------------------------|--------------|--|--------------------------------------|------------------------|---|--------------------|
| | | Greatest Number of Miles in One Day. | Mean Hourly Pressure. (lbs.) | Total Miles. | Prevailing Direction. 9 a.m. 3 p.m. | | | | |
| No. of yrs. over which observation extends | 44 | 18 | 18 | 18 | 23 | 18 | 21 | 66 | 22 |
| January .. | 29.834 | 500 30/16 | 0.19 | 5,954 | N N W & N S E | 4.877 | 0.9 | 6.0 | 2.6 |
| February .. | 29.916 | 605 4/27 | 0.15 | 4,779 | N & N W S E | 3.703 | 1.2 | 6.0 | 2.4 |
| March .. | 29.942 | 443 19/27 | 0.13 | 4,930 | N & N W S E | 3.034 | 1.4 | 5.9 | 2.3 |
| April .. | 29.966 | 533 37/26 | 0.14 | 4,890 | N W to N N W & S E | 2.046 | 0.7 | 6.1 | 1.7 |
| May .. | 29.984 | 423 15/27 | 0.12 | 4,792 | N W to N N to N W | 1.413 | 0.5 | 6.1 | 2.2 |
| June .. | 29.954 | 569 27/20 | 0.13 | 4,621 | N W & N W N to N W | 0.913 | 0.6 | 6.1 | 2.2 |
| July .. | 29.927 | 425 16/21 | 0.13 | 4,853 | N N W & N N to N W | 0.931 | 0.5 | 5.8 | 2.3 |
| August .. | 29.923 | 612 19/26 | 0.14 | 5,104 | N & N W N & N W | 1.325 | 0.6 | 6.0 | 2.1 |
| September .. | 29.844 | 516 26/15 | 0.13 | 5,650 | N N W & N N W & S E | 2.012 | 0.8 | 6.1 | 1.5 |
| October .. | 29.822 | 461 8/12 | 0.20 | 6,043 | N S E | 3.148 | 0.3 | 6.3 | 1.4 |
| November .. | 29.806 | 508 18/15 | 0.20 | 5,825 | N S E | 4.066 | 0.9 | 6.3 | 1.5 |
| December .. | 29.809 | 486 30/20 | 0.18 | 5,729 | N S E | 4.612 | 1.1 | 6.3 | 1.2 |
| Year { Totals .. | — | — | — | — | — | 32.080 | 10.0 | — | 23.4 |
| Year { Averages .. | 29.894 | — | 0.16 | 5,264 | N to N W S E & N W | — | — | 6.0 | — |
| Year { Extremes .. | — | 612 19/8/26 | — | — | — | — | — | — | — |

TEMPERATURE AND SUNSHINE.

| Month. | Mean Temperature (Fahr.). | | | Extreme Shade Temperature (Fahr.). | | | Extreme Range. | Extreme Temperature (Fahr.). | | Mean Hours of Sunshine. |
|--|---------------------------|-----------|------|------------------------------------|--------------|-----------------|----------------|------------------------------|--------|-------------------------|
| | Mean Max. | Mean Min. | Mean | Highest. | Lowest. | Highest in Sun. | | Lowest on Grass. | | |
| No. of yrs. over which observation extends | 58 | 58 | 58 | 82 | 82 | 82 | 41 | 61 | 34 | |
| January .. | 71.2 | 52.9 | 62.1 | 105.0 (a) | 40.0 3/72 | 65.0 | 160.0 (b) | 30.6 19/97 | 213.4 | |
| February .. | 71.3 | 53.3 | 62.3 | 104.4 12/99 | 39.0 20/87 | 65.4 | 165.0 24/98 | 28.3 -/87 | 179.4 | |
| March .. | 67.9 | 50.8 | 59.4 | 99.0 -/61 | 35.2 31/26 | 63.8 | 150.0 3/05 | 27.5 30/02 | 176.0 | |
| April .. | 62.7 | 47.7 | 55.2 | 90.0 1/56 | 30.0 25/56 | 60.0 | 142.0 18/93 | 25.0 -/86 | 141.9 | |
| May .. | 57.3 | 43.7 | 50.5 | 77.8 5/21 | 29.2 20/02 | 48.6 | 128.0 (c) | 20.0 19/02 | 132.1 | |
| June .. | 52.8 | 41.1 | 47.0 | 75.0 7/74 | 28.0 22/79 | 47.0 | 122.0 12/94 | 21.0 6/87 | 104.3 | |
| July .. | 52.0 | 39.4 | 45.7 | 72.0 22/77 | 27.0 18/66 | 45.0 | 121.0 12/93 | 18.7 16/86 | 124.2 | |
| August .. | 55.0 | 41.1 | 48.0 | 77.0 3/76 | 30.0 10/73 | 47.0 | 129.0 -/87 | 20.1 7/09 | 145.9 | |
| September .. | 58.8 | 43.2 | 51.0 | 81.7 23/26 | 30.0 12/41 | 51.7 | 138.0 23/93 | 18.3 16/26 | 148.1 | |
| October .. | 62.7 | 45.4 | 54.0 | 92.0 24/14 | 32.0 12/89 | 60.0 | 156.0 9/93 | 23.8 (d) | 172.2 | |
| November .. | 66.1 | 48.2 | 57.2 | 98.0 23/88 | 35.2 5/13 | 62.8 | 154.0 19/92 | 26.0 1/08 | 203.1 | |
| December .. | 69.3 | 51.2 | 60.2 | 105.2 30/97 | 38.0 13/06 | 67.2 | 157.0 30/18 | 27.2 -/86 | 201.4 | |
| Year { Averages .. | 62.3 | 46.5 | 54.4 | 105.2 | — | 78.2 | 165.0 | 18.3 | 1942.0 | |
| Year { Extremes .. | — | — | — | 80/12/97 | 27.0 18/7/66 | — | — | 16/9/26 | (e) | |

(a) 27/49 and 1/00. (b) 5/86 and 13/05. (c) -/89 and -/93. (d) 1/86 and -/99. (e) Total for year.

HUMIDITY, RAINFALL, AND DEW.

| Month. | Vapour Pressure (Inches) | Rel. Hum. (%) | | | | Rainfall (Inches). | | | | Dew. |
|--|--------------------------|---------------|-------------|---------------|--------------|--------------------|------------------------|-------------------|----------------|------|
| | | Mean 9 a.m. | Mean 9 p.m. | Highest Mean. | Lowest Mean. | Mean Monthly. | Mean No. of Days Rain. | Greatest Monthly. | Least Monthly. | |
| No. of yrs. over which observation extends | 42 | 42 | 42 | 42 | 86 | 85 | 86 | 86 | 62 | 19 |
| January .. | 0.336 | 59 | 72 | 47 | 1.86 | 10 | 5.91 1893 | 0.03 1841 | 2.96 30/16 | 0.7 |
| February .. | 0.356 | 63 | 77 | 53 | 1.48 | 9 | 9.15 1854 | 0.07 1847 | 4.50 25/54a | 1.6 |
| March .. | 0.332 | 67 | 77 | 58 | 1.89 | 10 | 7.60 1854 | 0.02 1843 | 2.79 5/19 | 4.8 |
| April .. | 0.300 | 72 | 84 | 58 | 1.88 | 11 | 6.50 1909 | 0.07 1904 | 5.02 20/09 | 9.6 |
| May .. | 0.268 | 77 | 89 | 65 | 1.90 | 13 | 6.37 1905 | 0.10 1843 | 3.22 14/58 | 12.6 |
| June .. | 0.243 | 81 | 91 | 68 | 2.23 | 14 | 8.15 1889 | 0.22 1852 | 4.11 13/89 | 8.8 |
| July .. | 0.230 | 80 | 94 | 72 | 2.17 | 14 | 6.02 1922 | 0.30 1850 | 2.51 18/22 | 8.4 |
| August .. | 0.240 | 76 | 92 | 64 | 1.83 | 14 | 10.16 1858 | 0.23 1854 | 4.35 12/58 | 8.7 |
| September .. | 0.259 | 69 | 85 | 60 | 2.10 | 15 | 7.14 1844 | 0.39 1847 | 3.50 29/44 | 4.6 |
| October .. | 0.273 | 64 | 73 | 51 | 2.29 | 15 | 6.67 1906 | 0.26 1850 | 2.58 4/06 | 2.8 |
| November .. | 0.296 | 60 | 72 | 50 | 2.46 | 14 | 8.92 1849 | 0.16 1868 | 3.97 6/49 | 1.2 |
| December .. | 0.316 | 57 | 67 | 45 | 1.98 | 11 | 9.00 1875 | 0.11 1842 | 2.48 13/16 | 0.8 |
| Year { Totals .. | — | — | — | — | 23.87 | 150 | — | — | — | 64.6 |
| Year { Averages .. | 0.284 | 67 | — | — | — | — | — | — | — | — |
| Year { Extremes .. | — | — | 94 | 45 | — | — | 10.16 8/1858 | 0.02 3/1843 | 5.02 20/4/09 | — |

(a) 4.18 on 26/54 also.