LIBRARY
NOAA
U S Dep. Commerce

8003—24/11/24—800

QC
994
.S6
M6
v. 5
(1924)

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. **JANUARY, 1924.** **No. 49.**

MEAN pressure practically normal over the central Cape and the Orange Free State, but higher than usual along the west and south coasts and over the Transvaal and Rhodesia; a monthly temperature about 1½ degree higher than the average; days and nights both warmer than usual: some exceptionally high temperatures, constituting record values at a number of stations; a cool spell towards the end of the second week; precipitation above normal in patches in the north and south-east of the Transvaal, the west, centre, and east of the Orange Free State, the western and higher portions of Natal, portions of the northern border, the southerly parts of the northern Karroo, and at stations in the south and east coastal areas; subnormal elsewhere; light local rains at intervals during the first three-fourths of the month, but heavier and more extensive between the 25th and 31st, breaking the drought over limited areas; frequent dry thunderstorms in the early part of the month: destructive hailstorms in all the Provinces: some heavy falls of rain, causing floods in some of the rivers of Natal and the Cape Province: a run of water in several others in the west of the Transvaal, part of the Cape Province, and the Vaal catchment; severe lightning causing destruction to property and stock; these were the principal features of the weather of January, 1924.

Pressure.—As shown in the accompanying map, the mean atmospheric pressure for the month was slightly above normal along the south and west coast, about half a tenth of an inch in excess of the average over the Transvaal, but practically normal over the central portions of the Union. The equatorial low pressure was prominent throughout the month, surging frequently to the south and south-east. High pressure areas were present on ten days of the month, viz., from south-west to south on 19th, 30th, and 31st; from south to south-east and east on 12th to 14th, 20th to 22nd, and 25th.

Temperature.—Mean temperature during January over the Union (72·8 degrees) was 1·5 degree in excess of the normal for this month. Two-thirds of this excess was due to the mean maximum (84·7 degrees) being 2 degrees, whilst the mean minimum (61 degrees) was only 1·1 degree in excess of the average. Supranormal mean temperatures were common to the Transvaal, Orange Free State, and Cape Provinces, the excess amounts decreasing in this

National Oceanic and Atmospheric Administration

Environmental Data Rescue Program

ERRATA NOTICE

One or more conditions of the original document may affect the quality of the image, such as:

Discolored pages
Faded or light ink
Binding intrudes into the text

This document has been imaged through the NOAA Environmental Data Rescue Program. To view the original document, please contact the NOAA Central Library in Silver Spring, MD at (301) 713-2607 x124 or www.reference@nodc.noaa.gov.

Lason, Inc.
Imaging Subcontractor
Beltsville, MD
December 20, 2000

same order. Thus, the Transvaal with a mean for this month of 73·6 degrees was 2·8 degrees, the Orange Free State with 72·3 degrees was 2 degrees, and the Cape Province with 71·8 degrees was 1·4 degree warmer than usual. Over all three Provinces both day and night temperatures were warmer than usual, although in different proportions. In the Transvaal four-fifths of the excess was owing to the mean maximum temperature (86·6 degrees) being 4·4 degrees, whereas the night temperature (60·6 degrees) was only 1·1 degree in excess of the corresponding normals. In the Orange Free State the mean day temperature (85·8 degrees) was 3 degrees and the mean night temperature (58·8 degrees) only 1 degree above the average, so that three-quarters of the excess in the mean monthly temperature was due to the unusually warm days. In the Cape Province the excess was almost equally divided between the day and night temperatures, the former (82·9 degrees) being 1·4 degree and the latter (60·7 degrees) being 1·3 degree higher than usual. In Natal, on the other hand, the temperature of the month (74·7) was 0·4 lower than usual, the deficiency in the day temperature (85·5 degrees) being 1·6 degree lower than normal, whilst the night temperature (63·9 degrees) was only half this amount or 0·8 degree higher than the average. A supranormal mean monthly temperature was common to the greater part of the Union, the exceptional areas consisting of the major portion of Natal, Zululand, and parts of the south-east and south of the Cape Province, as well as Port Nolloth on the west coast. In the Transvaal the excesses in mean temperature were mostly between 2 and 3 degrees, but varied from 0·9 degree at Ermelo to 6·3 degrees at Potchefstroom. In the Orange Free State the surplus ranged from 1·3 degree at Bethulie to 3·2 degrees at Bloemfontein. In the Cape Province the surplus in the mean of the month was generally between 2 and 4 degrees over the interior and the south-west, but decreased to about 1 degree in Kaffraria and towards the south-east, the departures from normal ultimately becoming subnormal over part of the south-east and to a less amount along the south coast and at Port Nolloth. The excesses ranged from 0·2 degree at East London to 5·2 degrees at O'okiep; whilst the deficits lay between 0·1 degree at Stutterheim and 2·1 degrees at Kingwilliamstown. Temperature was normal at Somerset East. In Natal the temperature of the month was mostly subnormal by less than 1 degree, but exceeded the average by a degree at Empangeni, half a degree at Estcourt and a tenth of a degree at Maritzburg. The signs of the deviations of the mean day and night temperatures from their normals, that is to say, were general plus, although departures from this general statement were met with in one or other and occasionally both in the east of the Transvaal, in Natal, and parts of the east, south-east, and south of the Cape Province, as well as at Port Nolloth on the west coast. Excesses in the mean maxima were general at all stations in the Transvaal and the Orange Free State. The surplus amounts were commonly between 4 and 5 degrees in these Provinces, but ranged in the Transvaal from 2·2 degrees at Pretoria to 7·2 degrees at Potchefstroom, and in the Orange Free State from 2 degrees at Bethulie and Ladybrand to 4·4 degrees at Bloemfontein. Over the Transvaal the excesses of the mean minima were in all cases less than those of the maxima, but showed considerable variation, from 0·3 degree at Rustenburg, Middelburg, and Komatipoort to 5·4 degrees at Potchefstroom. In the Orange Free State the excesses of the minima were generally small, ranging from 0·4 degree at Harrismith to 1·2 degree at Kroonstad. In Natal the mean day temperatures were mostly lower than usual by 2 to 4 degrees, but were above the average at Empangeni, Hlabisa, and Dundee by amounts lying between half a degree at the first and 2·1 degrees at the second of these stations. In the same Provinces the night temperatures were mostly about 2 degrees above normal, but were subnormal at Dundee and Hlabisa. In the Cape Province the mean maxima were above

normal over the interior and the south-west, generally by 2 to 3 degrees, but were subnormal at most stations in the south-east and south, the deficits varying from 0·1 degree at Stutterheim and Port Elizabeth to 3·8 degrees at Kingwilliamstown. A larger proportion of the night temperatures were in excess of the average, mostly by less than a degree, the surplus rising, however, to between 3 and 4 degrees in the South-West and Bechuanaland, but rising to slightly under 5 degrees at Kimberley and O'okiep. Both day and night temperatures were less than usual at Grahamstown, Kingwilliamstown, Port Elizabeth, and Port Nolloth. The highest temperatures were recorded on fourteen days of the month, viz., 3rd to 5th, 8th, 10th, 11th, 17th, 18th, 21st to 23rd, 28th, 29th, and 31st, principally on the 17th and 18th over the Transvaal, Orange Free State, and Natal, and on the 22nd and 23rd at most stations in the Cape Province. Temperatures of 100 degrees or over were registered at several stations in the Transvaal and Orange Free State and at the majority of stations in Natal and the Cape Province. In the Transvaal the mean of the highest readings was 96·8 degrees, but varying from 88 degrees at Pigeonhole on the 17th to 109 degrees at Komatipoort on the 18th. In the Orange Free State the mean of these values was 96·2 degrees, ranging from 95 degrees at Ladybrand on the 17th to 101·5 degrees at Bethulie on the 4th. In Natal the mean of the extreme maxima for the month was greatest, 100·2 degrees, but varied from 85·6 degrees at Durban on the 17th to 105 degrees at Weenen on the 17th and 18th, and at Maritzburg on the 4th. In the Cape Province the mean was 97·2 degrees, ranging from 72 degrees at Port Nolloth on the 21st to 109 degrees at Kenhardt on the 3rd. The lowest readings at the various stations were recorded on twelve days of the month, 1st, 12th to 15th, 18th to 21st, 23rd, 28th, and 29th, affecting stations in all four Provinces on the 13th and 14th. In the Transvaal the mean of the lowest readings was 52 degrees, but varying from 60 degrees on the 14th at Komatipoort to 42 degrees on the 14th and 23rd at Belfast. In the Orange Free State the similar readings ranged from 52·3 degrees at Kroonstad on the 13th to 43 degrees on the same date at Harrismith. In Natal the mean of the extreme minima was highest, 54·8 degrees, but varied from 50 degrees on the 12th at Estcourt to 62·6 on the 13th at Durban. In the Cape Province this mean was 50·2 degrees, ranging from 60 degrees on the 12th and 13th at Port St. Johns to 42 degrees at Bedford on the latter date. The mean warmest station was Komatipoort with a temperature of 83 degrees for the month, whilst the mean coolest was Port Nolloth with 59·1 degrees, a difference of 23·9 degrees. The highest mean maximum was 97·8 degrees at Kenhardt, and the lowest mean minimum 50·5 degrees at Belfast. The extreme readings were 109 degrees at Kenhardt on the 3rd and Komatipoort on the 18th, and 42 degrees at Belfast on the 14th and 23rd and at Bedford on the 13th, yielding an extreme range of 67 degrees during the month over the Union. Some unusually warm days, particularly the 3rd and 22nd, in the south-west of the Cape Province played havoc with fruit, scorching grapes and certain kinds of export fruits. It was reported that as the result of the unusually high temperature at Klaver (District Van Rhynsdorp) on the 4th, fowls died, also fish in the river. The unusually high maxima recorded during this month on several instances constituted a record for the periods during which observations have been taken.

Precipitation.—During the first two-thirds of the month the rainfall was very erratic, the thunderstorms being very local, although some stations in the north of the Orange Free State and in the northern and west central Karroos experienced some good showers during this period. From the 21st onwards the rains became more general, affecting the major portion of the

Transvaal, Orange Free State, Natal, and portions of the east of the Cape Province, particularly the north-east. Between the 25th and 27th, and on the last days of the month, some very heavy rains occurred over the areas mentioned, particularly in Natal, where several rivers came down in heavy flood. As examples of the occasionally intense rains may be mentioned the following :—From Winkelhook, in the Standerton District, it is reported that the rains from the 26th were simply in floods, so that the lands were too wet to plough. At Moorside, in the Klip River Division of Natal, 4·20 inches fell in 1 hour 50 minutes, spruits overflowed, fences came down, and washaways occurred. At Hillside (Bergville) 0·54 inch fell in 12 minutes, causing a considerable amount of damage. At Durban 2·11 inches fell in 35 minutes on the 27th, a statement confirmed to a certain extent by The Point, where 2·47 inches are reported to have fallen in three-quarters of an hour on the same day. Four inches are said to have fallen at Dewdrop on the 30th as against 1·02 inch at Ladysmith, 15 miles to the east. Seven hundred and fifty sheep were washed away at Rietpoort, in the Murraysburg District (see also under *Thunderstorms* and *Hail*). A similar irregular distribution is exhibited by the rainfall in its relation to the normal. Thus, although a deficient rainfall was the prevailing feature over the greater part of the Union, small excesses were met with in the north of the Transvaal at Pietersburg, and at Standerton in the south-east, in the east, south, centre, and west of the Orange Free State, and in parts of the northern border, of the south and south-west of the northern Karroo, of the east central and southern Karroo, at Piquetberg in the south-west, parts of the south and south-east coasts. In these parts the excesses were less than an inch, but in the more easterly parts of Kaffraria, the middle west of Natal, and at Durban on the east the surplus exceeded 1 inch, rising to 3·40 inches at the last mentioned station. The deficits in the Transvaal were mostly between 1 and 2 inches in the west and south, increasing to 3 to 5 inches in the north and east, varying, however, from 0·04 inch at Middelburg to 12·21 inches or 73 per cent. at Woodbush ; in the Orange Free State they varied between 1 and 2 inches in the south and north ; in Natal, including Zululand, they ranged from 0·03 inch at Howick to 5·28 inches at Hlabisa, being greatest in Zululand ; in the Cape Province, precipitation was subnormal, generally by amounts of less than an inch, but exceeding this amount at stations in the north-east, south-east, the northern border, and Bechuanaland, where Vryburg had a total for the month 2·26 inches under the average. In Basutoland, Mafeteng showed a shortage of 2·99 inches. Thunderstorms, although frequent, were highly localized, particularly during the first three quarters of the month. Although these storms were usually comparatively light in character several accidents due to lightning were reported. Thus, at White Hills, in the Barberton District a severe loss was sustained owing to a tobacco shed, 50 feet by 20 feet, being burned to the ground as the result of lightning on the 9th ; three oxen were killed by lightning on the 25th between Nooitgedacht and Warmbaths. Several fatalities from lightning are stated to have occurred in the neighbourhood of Mid-Illovo during the month. A considerable amount of damage was done to roads, etc., in Durban as the result of heavy thunderstorm rains, 1·23 inch on the 11th and 2·47 inches falling in three-quarters of an hour on the 27th ; another observer in Durban states that 2·11 inches fell in 35 minutes, a rate of 3·62 inches per hour. A number of these storms was accompanied by *Hail*. This meteor seems to have been of frequent occurrence during the month round Piet Retief and in the district, causing much damage to tobacco crops ; also at Middelburg, in the Transvaal, where but little damage was done owing to the absence of strong winds ; at Ladybrand, in the Orange Free State, and in the District of

Richmond, in the Cape Province. Hailstorms were also reported from Ladysmith, Dundee, and Newcastle, as having caused considerable damage in the surrounding districts, the towns escaping in all three cases. Turning to specific instances, a storm of this nature occurred at Vaalbank No. 66, in the District of Bethal, on the 6th, when hail but no rain fell to a depth of 0·28 inch between 3.40 and 3.55 p.m., cutting down mealies and potatoes and knocking teff-grass into the ground. On the 7th crops and trees were damaged considerably by hail at Ballengeich (Division Newcastle); on the 9th much damage was caused to tobacco at White Hills (District Barberton); also to crops at Noodshulp (District Waterberg); a terrific hailstorm also occurred at Tredegar Farm (Klip River Division) on the same date. Hail, with a very strong wind, occurred at Rongpoort (Weenen Division); a severe hailstorm occurred on the 15th at Steynsdorp (District Carolina), where 1·36 inch fell in half an hour without any rain: 1-inch stones were still on the ground on the 16th; at Balbrogie (Klip River District) 2·60 inches fell in half an hour with a strong westerly wind: the stones were very large and caused an enormous amount of damage; on the 26th a storm, stated to have been unprecedented in the last thirty years in regard to both size and quantity, occurred at Upington (Gordonia): the stones were the size of pigeons' eggs and the veld remained white for several hours afterwards; on the same date rain and hail fell at Louisvale (near Upington), 2·74 inches being recorded in 1 hour 25 minutes: the local damage to lucerne, cut but not stacked, is estimated at about £300. On the 28th a violent local hailstorm at Amatava (Potgietersrust) gave the crops a set-back, stripping cotton and mealies and the small remainder of fruit.

Rivers and Water Supply.—Owing to the light nature of the rainfall, the dry condition of the soil, and the occurrence of drying winds, wells and rivers continued low and were unaffected, except in Natal and one or two places in the Transvaal and Cape Province. The following résumé of the reports received will serve to give a general idea of the state of the water supply:—

Transvaal Province.—Piet Retief: Rivers practically empty. *Bloemhof:* River has risen about 5 feet. *Zwartkopjes* (District Heidelberg): Klip River at this point quite dry; no water flowing over the drift on Vereeniging road 5 miles below. At *Ermelo* a number of wells had dried up, the recent rains having had no appreciable effect on them. At *Busby* (District Ermelo) the rivers were stated never to have been so low, even in winter. At *Zandfontein No.* 256 (District Rustenburg) the cattle were standing the strain remarkably well, although drinking conditions for them were bad, most of the water having dried up. At *Winkelshook* (Standerton) the rains from the 26th were simply in floods, so that the lands were too wet to plough.

Orange Free State.—From *Meadows* (District Bloemfontein) it was reported that the rain came in heavy showers, but being of a soaking nature did not add much water to dams.

Natal.—At *Ladysmith* the Klip River rose 8 to 9 feet on the night of the 30th, and again almost to the same level on the night of the 31st, going down about 5 feet the following day in each case. At *Kloofend* (Alexandra District), on the 27th at 4 a.m., the Umzumbi River came down in a wall 12 feet high, overflowing its banks from hill to hill, and bringing down more mud than during any flood in the last twenty years. At *Paulpietersburg* the springs continued low for the time of year, owing to the rainfall (3·50 inches on 16 days) occurring only in small showers, and it was feared that there would be a shortage of water for winter unless there happened to be good late rains. The heavy rains at *Durban* on the 11th and 27th, and those at *Moorside* (Klip River Division) and *Hillside*

(Bergville Division), both on the 30th, have been already referred to. At *Mid-Illovo* it was stated that the rivers had a tendency to come down in flood towards the end of the month.

Cape Province.—At *Nelspoort*, in the Beaufort West Division, the river rose on the night of the 26th. At *Sydney-on-Vaal* the river had been stagnant for several weeks until the 28th, when the first flood-water arrived. The flood at *Rietpoort*, in the Murraysburg District, has been noted above. At *Kraaipan* (Mafeking District) the dams in the neighbourhood were practically dry.

From *Kalamari* (*Bechuanaland*) it was reported that the Mahalapye and Metla Rivers had not yet commenced to run.

In *South-West Africa* the rainfall for January was below the average at all stations except Heirachabis, in the extreme south-east, where there was a small excess of 0·02 inch or 8 per cent. A band of no rainfall lay over the south-west, more or less parallel with the coast from Swakopmund through Maltahohe and Aus to Gabis in the south. East and north of this line the deficits varied between 0·06 inch or 12 per cent. at Garinais, in the east of the southern section, to 4·36 inches or 78 per cent. at Grootfontein, in the north-east. The actual rainfall increased from west to east about the latitude of Windhoek from "Nil" at Swakopmund, through 0·96 inch at Neu-Heusis, to 2·27 inches at Gobabis. Northwards of this line the rainfall was between 1 and 2 inches, except at Okasangumingo, where it amounted to 2·18 inches; stations to the southwards, however, had totals of less than an inch for the month.

State of Country.—In the Transvaal although the hot, dry spell at the beginning of the month and some local hailstorms had caused considerable damage to crops and veld, and the water supply was falling, the good rains towards the end of the month caused considerable improvement in the east, south-east, and north, particularly in parts of the Carolina, Ermelo, and Standerton Districts, in the first of which bumper crops were anticipated. In Swaziland the low veld was dry and crops failing, but elsewhere conditions were favourable, on the whole, the drought in this section of the country not having been so severe as in many parts of the Union. In the west and south-west, although the drought had been relieved to a great extent in the Bloemhof District, reports were not so favourable, little or no mealie crops being anticipated, partly as a result of the drought, but mainly owing to destruction by locusts. Over some of the more central parts mealies had to be resown owing to the inadequate rainfall, which was also unequally distributed. Cattle generally were in good condition. The maize boreworm was infesting a few farms in the Ermelo District. In the Orange Free State somewhat similar conditions obtained, although conditions were looking serious at the commencement. Good rains in the second week and towards the end of the month caused a wonderful improvement, particularly in the east and north-east, although these rains came too late for the main crops in some areas. In the north, particularly the Kroonstad and Hoopstad Districts, farmers had lost heavily in stock; winter mealie crops were eaten off by locusts, although kaffir corn had escaped. In part of the Bloemfontein District mealies were a failure, owing principally to locusts, whilst drought had destroyed the wheat and oat crops in part of Bethlehem District. In parts of the south and south-west the drought was not yet broken, owing to the partial distribution of the rainfall. Mealie-grub in the earliest sown crops was reported from Rugby (Bethlehem District). Teff, rye, winter oats, etc., were being sown for winter feed. In Natal the drought was broken by rains generally of 5 to 7 inches, with a consequent improvement in crops and veld, the growth of vegetation

at Stanger being very rapid and dense. More rain, however, was required in parts of the Umvoti, Vryheid, and Pietersburg Divisions, also in portions of Umzinto and Zululand. Hail caused considerable damage in many areas, whilst high temperatures and hot winds detracted from the good results to be expected from the rains. Over Zululand, generally, the rainfall was comparatively small, the lands being reported as very dry at Emoyeni, even with a total precipitation of 4·34 inches, whilst the native crops at Cape St. Lucia were poor. Cattle were generally in fairly good condition. Except in portions of the Transkei, the neighbourhood of Stutterheim, a few favoured places in the northern border and Gordonia, the east of the Karroo and the south and west littorals, where the rainfall was higher than usual, high temperatures and strong, occasionally hot winds, in conjunction with subnormal precipitation constituted conditions unfavourable to crops and vegetation. Generally speaking, field crops were poor or non-existent, and practically no ploughing was carried on except at Tsolo. Strong south-easters and excessively warm days over the south-west of the Cape Province played havoc with fruit crops and caused great damage to vegetation in the Knysna District. In many areas the veld was bare or dried up in parts of Beaufort West, Barkly West, Murraysburg, Namaqualand, and Bechuanaland. An improvement in the appearance of the veld in the neighbourhood of Kalamari (Bechuanaland) and Mafeteng (Basutoland) was brought about by the rains at the end of the month. At Dunbrody (Uitenhage District) the month was noted as unseasonably cold.

The gross totals for the seven months since 1st July, 1923, were below the average, except in the east of the Transkei, and parts of the south-east of the south-west of the Cape Province. These excesses lay mostly between 3 and 5 inches, varying from 2·77 inches at Kokstad to 11·26 inches at Driefontein in the French Hoek area. Over the Transvaal the deficits were mostly between 6 and 8 inches, ranging, however, from 0·59 inch or 4 per cent. at Pietersburg in the north to 22·37 inches or 52 per cent. at Woodbush in the north-east. In Swaziland, Mbabane was 6·96 inches or 21 per cent. lower than usual. Over the Orange Free State the subnormal amounts were generally between 3 and 4 inches, varying from 2·74 inches or 31 per cent. at Bethulie in the south to 5·98 inches or 42 per cent. in the north. A much greater variation is shown in the amount of the shortfalls by Natal, where they ranged from 2·55 inches or 15 per cent. at Ladysmith to 15·90 inches or 57 per cent. at Empangeni; the deficits were commonly between 2 and 3 inches across the centre from west to east. Over the Cape Province the seven months' totals were subnormal by less than 1 inch in the west and south of the innermost plateau, also in parts of the central and southern Karroo. The shortages increased westwards to generally to between 1 and 2 inches, north-eastwards to 3 to 4 inches, eastwards to 4 to 6 inches, and to between 4 and 7 inches to southwards. The greatest deficit was 6·94 inches or 39 per cent. at Swellendam in the south-west, and the least, 0·02 inch or less than 1 per cent., at Murraysburg, in the south of the northern Karroo. In Basutoland the total for these seven months, 17·81 inches, was 10·05 inches or 56 per cent. lower than normal.

In South-West Africa excess totals for this period were confined to the more southerly and south-easterly portions of the territory; the surplus amounts varied between 0·31 inch or 22 per cent. at Gabis and 1·50 inch or 104 per cent. at Aus. At Okandjose, in the north-central portion, there was a small excess of 0·01 inch or less than 1 per cent. Elsewhere deficits prevailed, varying considerably in amount, the maximum being 7·83 inches or 61 per cent. at Tsumeb in the north, and the minimum, 0·38 inch or 97 per cent. at Swakopmund. These deficits were greatest between 6 and 8 inches in the north, 2 to 4 inches in the central parts, and decreasing from 1½ inch to a few tenths in the south central areas.

MARCH WEATHER CHARACTERISTICS.

In the Transvaal the rainy season is now declining, and the precipitation is not so heavy as during the three preceding months. Wet spells, however, with soft rains lasting several days, sometimes occur. Over the remainder of the Union there is a general increase on the February rainfall, the normal rising to a maximum over the Cape, northern border, and on the north and central Karroo, and to a secondary maximum in the north-east and south-east of the Cape, in the Orange Free State, Zululand, and Swaziland. In Zululand about 6 inches; in Swaziland, 5·5 inches; in Basutoland, 5 inches; in Natal, 4·5 inches; over the Transvaal, Kaffraria, and in the north-east of the Cape Province, 4 inches; over the Orange Free State and in the south-east of the Cape, 3·5 inches; over the Cape northern border, 3 inches; over the north and east-central Karroo, 2·5 inches; along the south coast, 2 inches; over the west-central and south Karroo and the Cape Peninsula, 1·5 inch; and in the south-west of the Cape and along the east coast less than 1 inch may be expected. Thunderstorms are still of frequent occurrence.

Throughout the Union the mean daily temperature is falling. It may be expected to reach about 73 degrees over the northern border of the Cape and the south Karroo; 72 degrees in Natal; 70 degrees over the east-central Karroo; 69 degrees along the west coast and in the south-west of the Cape; 68 degrees along the south coast and in the south-east of the Cape; 67 degrees in the Orange Free State and on the Transvaal high veld, the north Karroo, and the Cape Peninsula; 66 degrees in Kaffraria; 65 degrees over the north-east of the Cape; 64 degrees in Basutoland; and 62 degrees over the west-central Karroo. Hoar-frost with even an occasional killing-frost is apt to occur, especially during the last third of the month.

Over the summer-rainfall area there is a general decreased frequency of all winds having an easterly component (that is, from north-north-east to south-south-east, inclusive), and an increase of those having a westerly component. Although this statement is strictly true for Johannesburg, where the greatest increased frequency is in those from north-north-west, it requires a slight modification with regard to the Kimberley winds, where there is also a diminution of those from due west; whilst at East London the diminution in frequency extends to winds from north, north-north-west, and south-south-west, with, on the other hand, a marked increase of winds from north-east. Over the Cape Peninsula, there is, coincident with a considerable decrease of southerly winds, an increase of winds from south-east and south-south-east as well as of most winds having a westerly component. Except at Johannesburg, where there is a slight increase in velocity, winds show a decrease in force over the country.

Coincident with the diminution in strength of winds over the Cape Peninsula, there is a tendency to the formation of low-lying fogs over the south-west, but within the summer-rainfall zone the quantity of cloud should be noticeably diminishing, and over the Transvaal and the Cape northern border the number of hours of bright sunshine is about 75 per cent. of the total number possible.

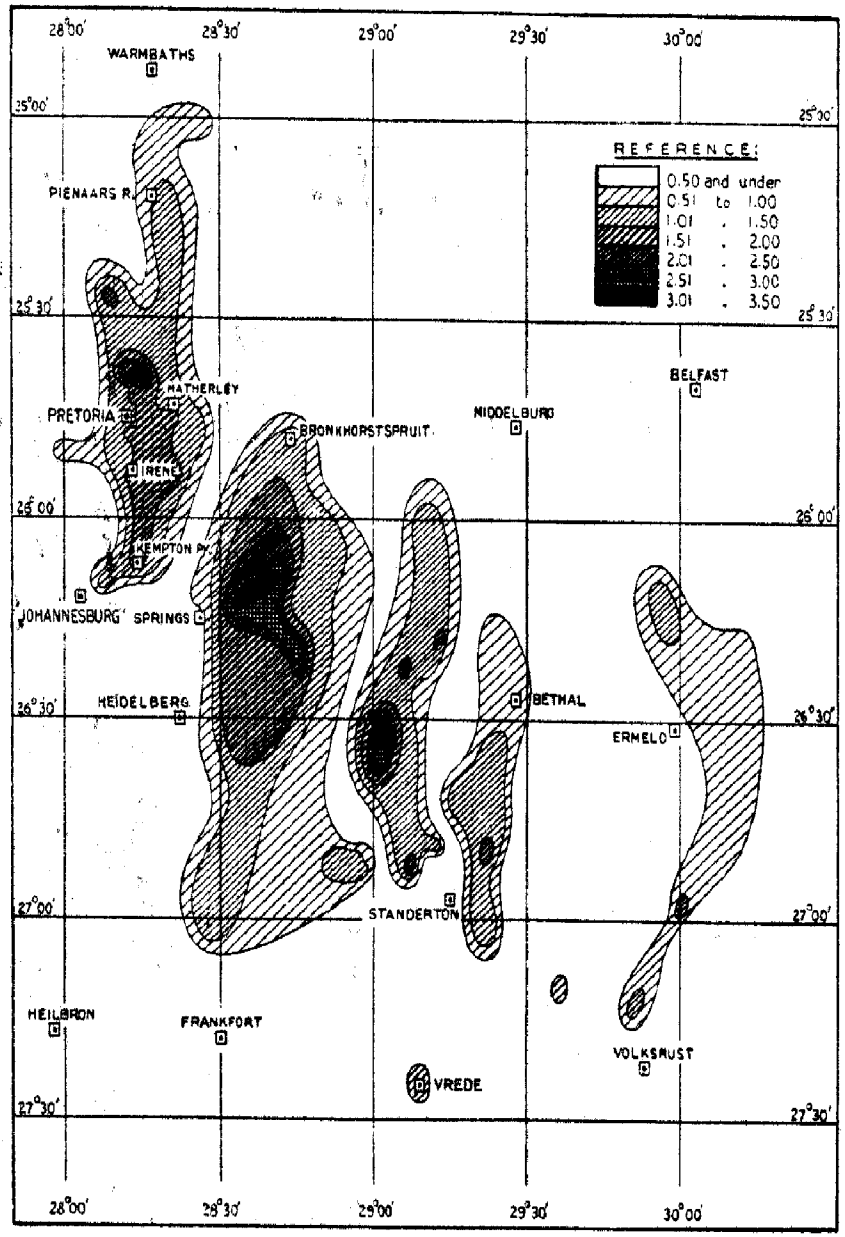
C. STEWART,
Chief Meteorologist.

Pretoria.

Hailstones which passed through the ¼-inch plate-glass reinforced with 1-inch mesh wire netting roof of studio of S.A. Criminal Bureau December 25th, 1923.

Photo by J. D. MacDougall, half-hour after fall.

RAINFALL MAP OF THUNDERSTORM AREA: DECEMBER 25TH, 1923.



ON Christmas Day, 1923, intense thunderstorms occurred over the Transvaal. The map shows the areas of precipitation, some of which was in the form of hail; and also indicates the tracks of the storms, which travelled from south to north.

The most westerly track was followed by two storms, one reaching Pretoria at 6.25 p.m. and the other at 7.30 p.m. From the first, hailstones weighing over 5 oz. fell and resulted in damage to property to the extent of £80,000.

Tiled roofs were almost totally destroyed, and even roofs covered with galvanized iron 22 gauge — were pierced.

OBSERVERS' NOTES FOR JANUARY, 1924.

TRANSVAAL.

Strathmore (*Klerksdorp*).—Very hot and exceptionally dry month. Country completely scorched up. Locusts very plentiful. Rainfall: 1·97 inch on nine days.—Chas. Scott.

Middelburg.—Very hot, sultry weather has prevailed during the month, generally with daily threats of rain which seldom materialized; thunderstorms were very local, and were sometimes accompanied with hail, but owing to absence of a driving wind, did but little damage; the threats of thunderstorms, however, which did not materialize, were frequently followed by a marked fall in the temperature, several times during the month calling for the warmth of a fire in the evening, pointing to the fact that there was a considerable amount of ice suddenly introduced to the neighbourhood. Only late in the month did anything like a general fall of rain occur. The maximum temperature this month reached a record height of 97 degrees. Crops are, on the whole, looking well in this district. Rainfall: 5·21 inches on fourteen days.—Dr. H. A. Spencer.

Barberton.—The rainfall has been much below the average, and crops have suffered to a considerable extent. Although the temperatures have not been excessive, the weather has been unusually trying and oppressive. Rainfall: 2·12 inches on nine days.—Walter Grubb.

Pietersburg.—Rainfall was only just sufficient to save late crops. Veld fair. Rainfall: 4·61 inches on six days.—W. J. Frankleyne.

Piet Retief.—Throughout the month severe hailstorms surrounding Piet Retief and in the district, causing much and severe damage to tobacco crops. Rivers are all practically empty. Country looking splendid. Rainfall: 4·46 inches on thirteen days.—J. Werner.

Potchefstroom.—First week exceptionally hot. Droughty weather continued until near the end of the month. The first good rain (1·02 inch) fell on the night of the 26th. Flying locusts were bad during the first two weeks of the month. Experimental plots were largely protected by smoke-screens and by driving. Rainfall: 2·48 inches on nine days.—J. B. Osborn.

Bloemhof.—Drought greatly relieved by rain. River has risen about 5 feet. Large swarms of locusts prevailing in district. Rainfall: 3·02 inches on eleven days.—F. Osborne.

Carolina.—January proved to be an excellent rainy month with rains favourably distributed, and crops generally are promising better than ever before, and providing no early frosts are experienced farmers will have a "bumper" year. Weather generally fine and cool, but with some exceptionally warm days, which are unusual here. Rainfall: 5·80 inches on twelve days.—G. F. Mijnhardt.

Myrthley (*Standerton*).—Hot weather prevailing for greater part of month, and drought was becoming serious generally. Three swarms of flying locusts passed over the station, the first doing considerable damage to young straw crops. Rainfall: 5·58 inches on eleven days.—J. L. Ellis.

Parktown North (*Johannesburg*).—Weather cloudy and unsettled, but no rain fell until the 7th. Swarms of flying locusts passed over this station. A big swarm settled on the 25th, and did quite a lot of damage to gardens and lawns: rain came just in time and the swarm cleared. The drought at the beginning of the month did much damage to crops. Good rains fell from the 21st until the end of the month. Veld nice and green. Rainfall: 3·05 inches on twelve days.—G. S. Garnett.

Amatava (*Potgietersrust*).—Fine hot weather interspersed with nice showers of rain. Crops doing well, with exception of set-back caused by violent hailstorm, quite local, on the 28th, stripping cotton, mealies, and small remainder of fruit. Rainfall: 4·21 inches on nine days.—A. R. Troye.

Zwartkopies (*Heidelberg*).—Rainfall much below normal. Several lightning storms have only had occasional flashes of exceptional severity. The Klip River at this point is quite dry; no water flowing over drift on Vereeniging road, 5 miles below. Rainfall: 2·78 inches on eleven days.—E. Taylor.

Gembokstontein (*Middelburg*).—The weather was very warm during the month, and the welcome rains towards the end assisted to cool the air. The heaviest falls were recorded on the 25th and 26th, when 2·56 inches and 1·13 inch were registered respectively. Rainfall: 5·23 inches on nine days.—L. C. Skead.

Nooitgedacht (*Warmbaths*).—Again a miserably inadequate rainfall, bringing the total for the season to 6·41 inches only. As in November, this farm, with two or three others to the south and west, appear to have been specially unfortunate in missing the local rainstorms; the veld on the farm 2 miles to the north is notably better. It has been necessary to replant all maize with quickly maturing varieties, and with a reasonable rainfall over the next three months there may yet be fair crops. Monkey nuts have stood the drought well, but have naturally not made much growth. Cattle are in fair condition. There have been no locusts. Three oxen were killed by lightning on the 25th between here and Warmbaths. Rainfall: 1·14 inch on nine days.—G. Gordon Brown.

Ermelo.—The rains during the month relieved the drought which was becoming a serious matter, but a great deal more is needed. A number of wells have dried up and the recent rains have had no appreciable effect on them. Rainfall: 4·96 inches on fourteen days.—J. Dean.

Berlin Plantation (*Barberton*).—Local opinion states that this is the driest January for forty years. The continued dry spell is causing anxiety in regard to the planting out of young trees. Rainfall: 2·80 inches on eight days.—E. Edwards.

Lichtenburg.—Same cry all through: no rain. Veld very dry; no grass. Swarms of locusts visited Lichtenburg and district. Rainfall: 0·94 inch on five days.—E. Newton.

Groenboom No. 444 (*Rustenburg*).—Though small rains have fallen here and there, this month was a very hot and dry one. Crops suffer on account of the drought and many were destroyed by locust swarms. Prospects are very low. Cattle are in fairly good condition. Where no rain has fallen veld looks parched. Rainfall: 0·37 inch on five days.—F. N. van Nouhuys.

Mosdene (*Naboomspruit*).—A dry and hot month with rainfall much below the January average, and crops have been suffering from drought. Luckily, at the critical moment, 1·94 inch of rain fell on the 25th to 27th, and the crops have picked up wonderfully, and are now looking well. Rainfall for month: 3·29 inches on six days. Total rainfall since 1st July last: 11·98 inches, as against an average of 17·66 inches for the previous six years.—Ernest E. Galpin.

Busby (*Ermelo*).—This extraordinary season continues. Rivers never so low even in winter, yet crops look grand. Rainfall: 4·39 inches on seventeen days.—W. Lunt.

Morgenster (*Ermelo*).—Crops, on the whole, very sound. A few farms infested with maize boreworm. Rainfall: 3·63 inches on nine days.—M. E. Jooste.

Badfontein (*Lydenburg*).—Crops are looking fair, but good soaking rains needed badly. Rainfall: 1·56 inch on six days.—L. Parker.

Kaffirskraal (*Marico*).—Locusts did a good deal of damage to crops and veld. No mealies will be reaped this year, and only a little kaffir corn. Winter veld promises very badly. Rainfall: 1·96 inch on three days.—A. E. Schueble.

Hartebeestspruit No. 9 (*Middelburg*).—Drought broken with beautiful rains and crops looking very well. Cattle in very good condition and plenty of grass. Rainfall: 3·72 inches on three days.—J. E. Goodwin.

Idalia (*Piet Retief*).—Crops good. Rainfall: 3·01 inches on ten days.—B. Creydt.

Elandsfontein (*Potchefstroom*).—Very little mealies this year on account of the locusts and drought. Rainfall: 0·74 inch on four days.—P. Davidtz.

Waaikraal (*Rustenburg*).—Very, very dry; not a single handful will be reaped on this location this year. Very serious outlook. Rainfall: 0·90 inch on six days.—W. Behrens.

Zandfontein No. 256 (*Rustenburg*).—This January has probably been the driest ever experienced in these parts. The outlook was terrible until the rains of the 26th (1·20 inch). Mealies extremely small and grass withered away, and unless rains come soon crops will be a complete failure. Cattle standing the strain remarkably well although drinking conditions for them are bad, most of the water having dried up. Rainfall: 1·87 inch on five days.—R. Boon.

Winkelhoek (*Standerton*).—The rains from 26th were simply in floods. The lands are too wet to plough. Mealie crops are now growing rapidly, except where they are soaked by rain. Rainfall: 10·43 inches on eleven days.—D. M. Louwrens.

Willowdene Estates (*Witwatersrand*).—Very dry and hot; crops and veld dried up. Rainfall: 2·83 inches on ten days.—W. Frost.

Kleinbegin (*Zoutpansberg*).—Crops looking well; grazing good. Rainfall: 2·08 inches on five days.—A. Bechino.

Kamhlabane Ranch (*Barberton*).—The mealie crops are coming on well and look healthy. Rainfall: 3·95 inches on four days.—H. B. Trollip.

Woburn (*Waterberg*).—Mealies have begun to suffer from drought, but grass is good and plentiful. Monkey nuts and cotton looking well. Rainfall: 1·26 inch on five days.—C. M. Brumage.

White Hills (*Barberton*).—9th January: thunderstorm and hail, causing much damage to tobacco crops. Lightning fired tobacco shed (50 feet by 20 feet), burning it to the ground. Heavy loss. Rainfall: 4·91 inches on nine days.—L. Lownds.

Vaalbank No. 66 (*Bethal*).—6th: 0·28 inch from 3.40 p.m. to 3.55 p.m.; only hail, no rain; cut the mealies and potatoes and knocked the teff into the ground. Rainfall: 3·97 inches on twelve days.—I. Spitz.

Steynsdorp (*Carolina*).—15th: severe hailstorm, 1·36 inch in half an hour. No rain. 1-inch stones still on ground on 16th. Rainfall: 5·26 inches on nine days.—A. P. Wilson Moore.

Noodshulp (*Waterberg*).—9th: hail storm, which did much damage to crops. Rainfall: 2·07 inches on seven days.—J. A. Cameron.

SWAZILAND.

Mbabaan.—The low veld is very dry and crops are failing. Rain is badly needed. Rainfall 5·98 inches on fifteen days.—R. C. S. Markham.

Transvaalia.—Crops here are normal; cotton looks well. Rainfall: 2·06 inches on ten days.—J. Coates.

Matendele.—A very anxious month up to the 19th, after which excellent growing period. From inquiries Swaziland seems to have suffered less from the drought than other parts of South Africa. Rainfall: 2·06 inches on six days.—H. S. Parry.

ORANGE FREE STATE.

Ladybrand.—Frequent thunderstorms accompanied by hail. The stock are improving in condition. It is anticipated that the crops will still derive some benefit from the rain. Rainfall: 4·79 inches on ten days.—S. Wenning.

Holfontein (Kroonstad).—Stock in general are in very poor condition, and several deaths have been reported during the month. The mealie crop is in a poor state and not much mealies can be expected from this district. Rainfall: 2·49 inches on three days.—L. C. McInerney.

Rugby (Bethlehem).—A month of fierce heat, nullifying any good that might have been derived from the frequent showers which fell up to the 25th. The rain which fell fell from the 25th to the end of the month was warm and steady, and both veld and maize crops are now looking well. Both large and small swarms of locusts have been seen during the month, but in no case have any settled, nor has any news been received of damage having been done by flying locusts locally. Some mealiegrub among earliest sown crops. Wheat and oat crops have been practically destroyed by the drought. Rainfall: 6·05 inches on eleven days.—A. C. Glynn-Baker.

Meadows (Bloemfontein).—Rain has come on in heavy showers. No damage done, and being soaking rain there is not much water in dams. Mealie crop a failure, owing principally to locusts. Farmers now planting rye for winter feed. Rainfall: 2·70 inches on seven days.—H. Dennison.

Tembani (Fauresmith).—Drought not yet broken. Rainfall: 1·44 inch on four days.—M. F. Schickerling.

Belladale (Frankfort).—The rainfall this month is above normal. A wonderful change has now taken place in the appearance of the veld. Unfortunately the rain has come too late for main crops. Mealies are few and very backward. Teff and winter oats are now being sown. Rainfall: 7·17 inches on thirteen days.—D. McCalman.

Commando Drift (Hoopstad).—Good soaking rains have come after the severe drought. Farmers have lost very heavily in stock, and locusts have accounted for what few mealies there were. Potatoes, teff, and sudan grass will take the place of mealies for forage, etc. Rainfall: 1·81 inch on four days.—J. W. Nawn.

Roodepoort (Hoopstad).—During this month tremendous swarms of flying locusts devastating most of the mealie land; kaffir corn lands, so far, have escaped. Rainfall: 2·59 inches on five days.—P. E. Mooy.

Witkop (Kroonstad).—The veld is in a deplorable condition; large stock dying. The few crops that survived the drought have been taken by the locusts. The chief anxiety now is that rain will come to provide sufficient grazing for winter. Rainfall: 1·10 inch on six days.—H. Smith.

Kalkfontein (Philippolis).—Unsettled weather every day, but no rain. On other farms in the district good rains have occurred, but the portion in which this station is situated is still very dry. Warm during the day and usually a south wind at night. Rainfall: 0·20 inch on one day.—D. W. Schoeman.

Carrigholt (*Thaba 'Nchu*).—Rain very badly wanted for stock and crops. Rainfall: 2·37 inches on ten days.—A. E. Arnold.

Prospect (*Vrede*).—When the month began the drought conditions were very serious, but the fine rains in the second week improved the position immensely. By the end of the month the country looked well. Veld though short is coming on nicely and crops have grown wonderfully. Sheep are in good condition and cattle are improving. There are large numbers of cattle in the neighbourhood that have trekked in search of grazing. Rainfall: 6·36 inches on thirteen days.—T. Pitcairn.

NATAL.

Bluebank (*Klip River*).—Drought now completely broken. All crops very late and germination has been bad, but with luck 50 per cent. crops may be expected. Large and small stock in very good condition. Rainfall: 5·22 inches on twelve days.—T. N. Niland.

Emoyeni (*Zululand*).—Lands very dry. Rainfall: 4·34 inches on eleven days.—R. L. Paige.

Glückstadt (*Vrijheid*).—The drought is very intense. Only 2·60 inches of rain fell during the month. Some of the mealie fields have been scorched. Thunder showers passed close by, but little or no rain fell here. Very hot days are succeeding one another. Notwithstanding this, cattle look well.—F. W. J. Schumann.

Hillside (*Bergville*).—Rains were general and the chances of a good mealie crop are fair. On the 30th 0·54 inch fell in twelve minutes, causing a lot of damage. Rainfall: 4·63 inches on twelve days.—W. H. Daugherty.

Kloofend (*Alexandra*).—On the 27th at 4 a.m. the Umzumbi River came down in a wall 12 feet high, overflowing its banks from hill to hill, and bringing down a lot of mud—more mud than I have seen during any flood in the past twenty years. No report, so far, of where this water came from. Rainfall: 3·29 inches on thirteen days.—J. D. Cruickshank.

Rongpoort (*Weenen*).—Great improvement on previous months, but considerably more rain needed. Grass short, but beautifully green. Hail and terrific wind on the 11th. Springs not yet affected at all. Rainfall: 5·40 inches on ten days.—J. H. Bartholomew.

Sawoti (*Umzinto*).—Country still dry, but crops and stock doing very well. Rainfall: 3·03 inches on sixteen days.—Archibald & Co.

Stanger.—Oppressive heat during first two weeks, followed by severe thunderstorms. Growth of vegetation very rapid and dense. Rainfall: 5·09 inches on ten days.—Cecil C. Foss.

Ladysmith.—The greater part of month was very hot and dry, and although 0·80 inch and 0·47 inch fell on the 5th and 6th respectively, this did not do as much good as the quantity would appear to indicate as the rain was in the nature of sudden downpours, most of the water running off. Between the 24th and 31st the total fall was 3·86 inches, and this should do a wonderful lot of good. The grass is already looking greatly improved. Some parts of the district have been visited with far more severe storms than we have experienced in Ladysmith. Hailstorms have been reported from several parts of the district, but although some of these have been fairly severe very little damage has been done, as the crops are not sufficiently advanced to be much affected. A farmer from Dewdrop (15 miles west from Ladysmith) reports that approximately 4 inches fell there on the 30th January, as against 1·02 inch

registered here. The Klip River rose from 8 to 9 feet on the night of the 30th, and again almost to the same level on the night of the 31st, going down about 5 feet on the following day in each case. Rainfall : 5·70 inches on nineteen days. —D. A. R. Leathern.

Paulpietersburg.—Rainfall : 3·50 inches on sixteen days ; below the average, and made up of small showers, so that springs remain very low for time of year, and prospects of shortage of water in the winter are serious, unless we get good late rains. Crops are, however, looking well and heavier falls have been reported in district, especially west and north-west than at station.—Dr. Niel Lipscomb.

Dundee.—Very oppressive weather during first half of the month, with two record days on the 17th (101 degrees) and 18th (102 degrees). I don't remember ever recording such heat in Dundee. Lightning during month has been very severe, and bad hailstorms are reported from the district, the town escaping. Some parts of the district have had abnormal rains, far exceeding our register. Rainfall : 7·08 inches on fifteen days.—West Thorrold.

Durban (Point).—Two heavy thunderstorms on the 11th (1·23 inch) and 27th (2·47 inches), both doing damage to roads, etc. On the 27th the amount of 2·47 inches fell in three-quarters of an hour. Rainfall : 7·76 inches on twelve days.—A. P. White.

Maritzburg (Mental Hospital).—Some very hot days ; on the 4th the maximum reached 105 degrees and on the 18th 103 degrees. Rainfall : 5·37 inches on fifteen days.—The Staff.

Mid-Illovo.—Nice light rains and drizzles. Veld and stock looking well, also crops considering previous adverse conditions. Rivers inclined to get in flood latter part of month. Lightning fatalities in neighbourhood. Rainfall : 6·18 inches on twenty days.—Lt.-Col. J. W. V. Montgomery, C.M.G., D.S.O.

Nottingham Road.—Good agricultural weather, though many storms had hail. A few cases of horse-sickness reported ; other stock healthy. Rainfall : 6·58 inches on seventeen days.—Miss E. Smythe.

Newcastle (Gaol).—Great anxiety was felt owing to drought conditions during the month, but this was relieved by copious rains latter part of month. Great heat was experienced, the maximum being 101 degrees on the 17th, and was more noticeable as on the 14th the minimum was 49 degrees. Swarm of locusts was reported 7 miles north, also 10 miles east of town. The town was particularly free from hailstorms, but considerable damage is reported from surrounding districts. Rainfall : 6·31 inches on seventeen days.—H. Ellis.

Cape St. Lucia.—A hot month. Native mealie crops poor. Rain badly needed. Stock in good condition. Rainfall : 2·10 inches on nine days.—J. Murphy.

Greytown.—Umvoti Division, as a whole, looking nice and green, but dries out between light rains. Mealies looking very well, but will require a lot more rain. Very trying weather, as I write a strong north-west wind blowing and drying everything up. Rainfall : 3·59 inches on thirteen days.—J. M. Handley.

Howick.—We have had a few very hot days during the month ; the 17th (102 degrees) was the hottest day recorded since 22nd January, 1914, and the 18th (104 degrees) the hottest as far can be traced since 1912. Everything is looking as fine as can be expected after the severe winter, and farmers are looking forward to a good mealie crop. Rainfall : 5·21 inches on fourteen days. —B. J. Potgieter.

Cape Province.

Kokstad.—Exceptionally hot. Five days in the "nineties"—98 degrees on 4th constitutes a record high reading during the nineteen years I have kept records. There have been but little signs of drought here. Rainfall: 6·02 inches on sixteen days.—H. D. Coyte.

Queenstown.—Showers from 22nd relieved matters. The veld has a green tinge. No ploughing done and few mealies planted. No voetgangers on commonage as yet. Rainfall: 1·74 inch on thirteen days.—H. Holley.

Somerset East.—Hot, dry weather during the first three weeks of the month was followed by a week of cloudy, mild weather, with frequent soft rains. Rainfall: 1·87 inch on ten days.—C. Harris.

Stutterheim.—Mealie crop exceptionally fine. Rainfall: 5·58 inches on fifteen days.—F. C. Bousfield.

Aliwal North.—A month of very high temperature. Only light rains amounting to 1·82 inch on eleven days, the greater part of which fell the last few days of the month. The rainfall for January, 1923, was 6·40 inches.—Alex. Alcock.

Graaff-Reinet (The Convent).—A very warm month. Great heat during day was generally followed by duststorms in the evening. Rainfall: 1·63 inch on four days.—The Mother Superior.

Groot Drakenstein.—Temperatures considerably above the average. On the two hottest days, 3rd (105 degrees) and 22nd (106·7 degrees), fruit and grapes were scorched. South-easters were very prevalent, blowing on seventeen days, but the only occasion that great damage occurred was on the night of the 31st. Rainfall: 0·97 inch on four days.—Lionel Baker.

Mafeking (Convent).—A very dry, warm month. Rainfall: 1·69 inch on ten days.—The Mother Superior.

Rietfontein (Aliwal North).—Very hot month with prevalence of south-east winds at night. Crops very poor. No ploughing done. Rainfall below average. Rainfall: 3·02 inches on seven days.—A. G. Smith.

Queenstown.—Hot northerly winds prevailed. The drought is yet practically unbroken. Rainfall: 1·74 inch on eleven days.—J. F. C. Rein.

Jansenville.—Much wind during month and frequently overcast. Rainfall: 0·78 inch on three days.—W. C. S. Albertyn.

Nelspoort (Beaufort West).—Weather dry and sultry. Hot wind from east after sunset almost daily. Grazing not good for cattle, consequently they are in poor condition. River rose on the night of the 26th. Rainfall: 1·49 inch on two days.—R. S. Cowie.

Belvedere (Knysna).—The principal features throughout the month were the constant strong south-east winds, causing great dryness and damage to vegetation. Rainfall: 2·47 inches on seven days.—F. Thornbury.

Tsolo.—On the 4th the maximum thermometer in the screen read 104 degrees, and the thermometer in the sun 135 degrees. The heat was intense. The wind from the south-west was just like a furnace, or like riding close to a big grass fire. Luckily a little rain fell during the night and the next day, otherwise everything would have been scorched up. The foregoing remarks apply also to the 18th. Ploughing is going on amongst the natives. Stock, sheep, etc., are free of disease. Rainfall: 3·63 inches on sixteen days.—H. P. Tillard.

Sydney-on-Vaal (*Barkly West*).—Wind and duststorms almost daily until 26th. Maximum temperature on 3rd (107·2 degrees), 4th (108·2 degrees, and 17th (107·5 degrees), and minimum temperature 4th (79·3 degrees), 5th (79 degrees), and 18th (82·1 degrees), highest recorded in the years in which observations have been taken here. Voetgangers prevalent until 14th inst; all swarms destroyed; swarms of fliers prevalent almost daily in evidence. No grazing in veld. Cattle dying in large numbers. River stagnant for several weeks until 28th, when first floodwater arrived. Rainfall: 2·69 inches on ten days.—J. G. Richards.

Dunbrody (*Uitenhage*).—Much cloudy weather and humid atmosphere. Unseasonably cold. Rainfall: 0·81 inch on seven days. Rev. Father Lallemand.

Grootfontein (*Middelburg*).—Still very dry. Locusts reached flying stage. Rainfall: 1·76 inch on eleven days.—E. J. van Meerten.

Port Alfred.—Month fearfully dry. No sickness amongst cattle. Rainfall: 1·76 inch on seven days.—W. H. Pascoe.

Elsenburg (*Stellenbosch*).—The month was noted for high temperatures (105·2 degrees on 22nd), and hot, dry south-east winds. Rainfall: 0·66 inch on four days.—D. C. Crawford.

Darling (*Malmesbury*).—Strong south-east winds prevailing throughout month, generally commencing in afternoon and increasing during evening and night; calm in mornings. Rainfall: 0·42 inch on two days.—P. H. Drake.

Ceres.—Weather generally drier and hotter than usual, and absence of dews. Rainfall: 0·41 inch on four days.—A. Heatlie.

Murraysburg.—The drought continues in portions of the district. The rains which fell towards the end of the month were partial. Locusts have disappeared from this area. The weather continues to be promising for more rain. Rainfall: 1·72 inch on three days.—W. H. Rose-Innes.

Upington.—Heavy hail, size of pigeon's eggs, fell on the 26th. Veld white for some hours afterwards. Residents of thirty years' standing have not experienced such hail or anything approaching it in quantity. Rainfall: 1·38 inch on four days.—E. H. Jones.

Louisvale (*Upington*).—January was a hot month, for the most part cloudless during the day. On the 26th rain and hail fell, and 2·74 inches were recorded in an hour and twenty-five minutes. The local damage to crops of lucerne cut, but not stacked, is estimated at about £300. Rainfall: 2·78 inches on two days.—Stuart M. Smith.

Kraaipan (*Mafeking*).—A very hot month, and rainfall 4·48 inches less than for January last. Dams in the neighbourhood are practically dry, and the outlook for winter grazing is very discouraging. In many cases farmers have had to trek their stock to more favourable parts. Rainfall: 1·73 inch on seven days.—P. J. Hart.

Bedford.—To talk of drought with a rainfall of 2·37 inches for the month seems absurd, but when that is spread over fifteen days, with the ground devoid of moisture, with great heat and high winds, drought is the only word indicating the state of water and veld. Much fruit has fallen from trees and much eaten by birds, which are ravenous, indicating shortage of natural food in the bush.—Thos. C. Hall.

O'okiep.—Drought continues: veld parch and withered. Rainfall: Nil.—J. Burrows.

Klaver (*Van Rhynsdorp*).—4th: maximum temperature, 112 degrees. Fish in river and fowls died owing to excessive heat. Rainfall: 0·01 inch on one day.—D. Cameron.

Vruchtbaar (*Wellington*).—Excessively warm days, which played havoc with grapes and some kinds of export fruit. Rainfall: 0·94 inch on five days.—P. J. Cillie (C.'s son).

Rondavel (*Richmond*).—Veld very dry; a few good showers fell in the district, also hail, and 750 sheep were washed away at Rietpoort, in the Murraysburg District. Rainfall: 1 inch on three days.—P. J. Kock.

Rietfontein (*Somerset East*).—Very dry; rain falling in parts of district. No crops. Rainfall: 0·45 inch on one day.—H. J. Pietersen.

Bechuanaland.

Kalamari.—On the 8th and 10th four flying swarms of locusts (not large swarms) passed over from the east and going direct west. On the 19th and 20th two very large swarms, each about 15 miles in length, passed over from eastern Transvaal and south-west going west. The Mahalapye and Metla Rivers have not yet commenced to run. No ploughing in this district and at Shoshong has been done by the natives. Everything was looking very serious in the neighbourhood, but the rain on the 26th (0·65 inch) and 28th (0·84 inch), relieved matters somewhat. The veld in the vicinity is now looking green and fresh. Rainfall: 1·49 inch on two days.—E. Smith.

Dikgatlong Ranch (*Tuli Block*).—Drought still raging; unless the rain comes very soon the position as regards the welfare of cattle will be most serious. No voetgangers have been seen during the month, and only a limited number of fliers, which came from the Waterberg District. Rainfall: 0·52 inch on four days.—Paul Jousse.

Mahalapye.—Terribly hot and oppressive; so many indications of rain, yet always blown away; veld very bad. Rainfall: 1·48 inch on five days.—Miss M. Giles.

Basutoland.

Mafeteng.—Very hot spell, 1st to 9th and 14th to 18th. Drought prevented the planting of maize and kaffir corn. Very poor wheat crop. Swarms of locusts all around first fortnight of month. Veld very bare and has a winter appearance, but showing green after rains from 23rd to 27th. Rainfall: 2·49 inches on twelve days.—F. Hodgson.

RAINFALL, JANUARY, 1924.

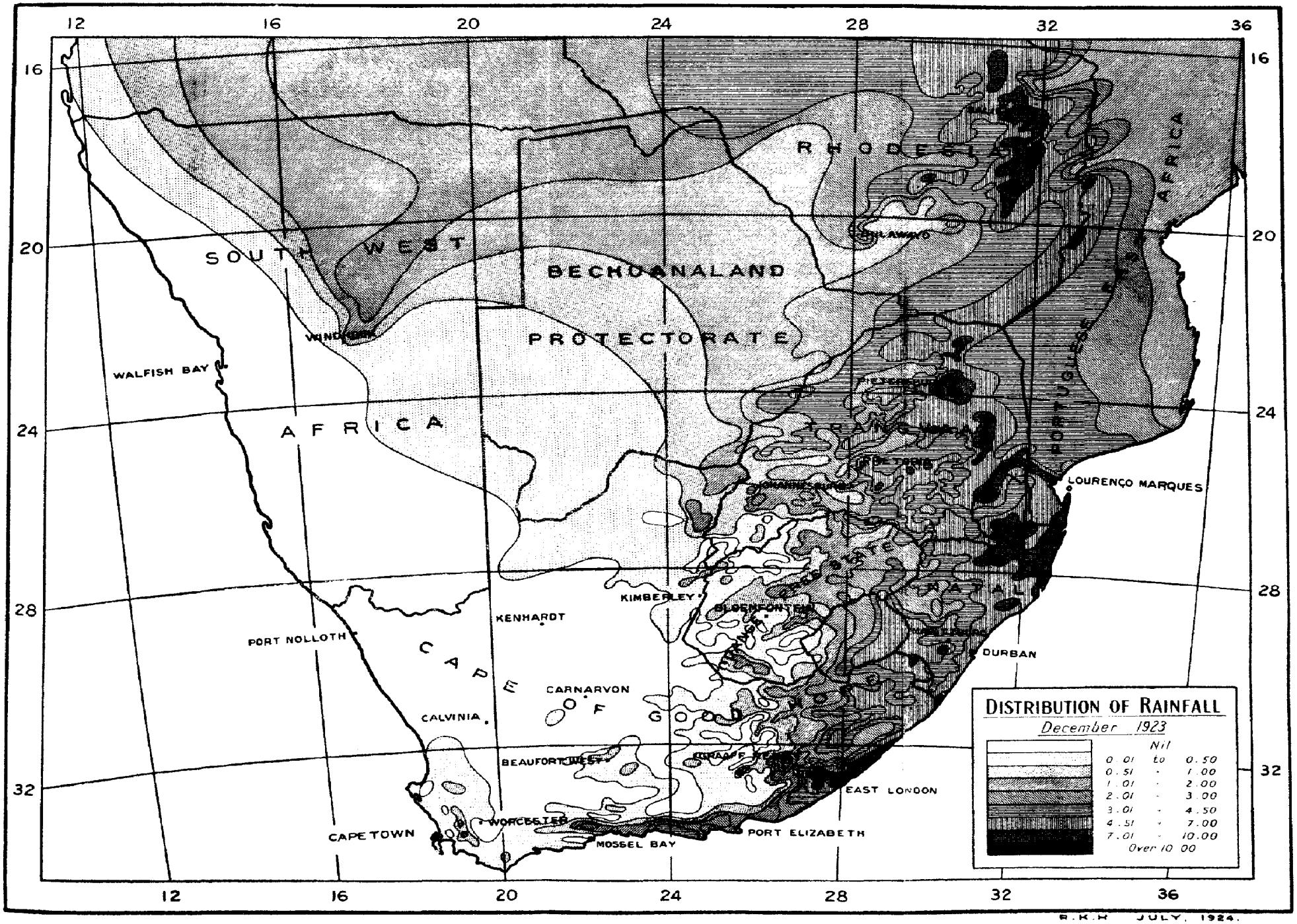
Place.	Observer.	Month. Jan., 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—							
Barberton	W. Grubb	2·12	6·51	— 4·39	12·26	20·53	— 8·27
Belfast	The Forester	4·82	6·15	— 1·33	18·26	22·08	— 3·82
Bethal	H. J. Joubert	3·34	5·33	— 1·99	12·98	20·94	— 7·96
Bloemhof	F. Osborne	3·02	3·41	— 0·39	6·63	9·95	— 3·32
Ermelo	The Forester	5·16	6·12	— 0·96	14·69	23·24	— 8·55
Haenertsburg	S.A. Police	4·26	9·39	— 5·13	15·56	23·38	— 7·82
Heidelberg	W. ter Horst	3·71	4·70	— 0·99	12·03	18·73	— 6·70
Johannesburg (Observatory)	The Staff	3·88	5·57	— 1·69	13·08	19·95	— 6·87
Klerksdorp (Strathmore)	C. Scott	1·97	4·06	— 2·09	5·94	13·86	— 7·92
Komatipoort	H. J. Evans	1·95	5·00	— 3·05	8·13	14·91	— 6·78
Louis Trichardt	C. L. Cope	1.94	6·37	— 4·43	11·90	18·28	— 6·38
Middelburg	Dr. H. A. Spencer.	5·21	5·25	— 0·04	15·90	19·39	— 3·49
Nylstroom	G. Bakker	1·63	5·20	— 3·57	8·68	15·96	— 7·28
Pietersburg	W. Frankleyne	4·61	4·28	+ 0·33	13·59	14·18	— 0·59
Piet Retief	J. Werner	4·46	6·55	— 2·09	14·91	24·59	— 9·68
Pigeonhole (New Agatha)	J. McCallum	7·52	9·07	— 1·55	20·63	27·88	— 7·25
Pilgrims Rest	E. M. Skea	3·19	8·37	— 5·18	15·03	22·71	— 7·68
Potchefstroom (Experimental Farm)	The Manager	2·48	4·15	— 1·67	8·08	15·15	— 7·07
Pretoria (Meteorological Office)	The Staff	2·75	5·86	— 3·11	12·49	19·33	— 6·84
Rooiberg	N. H. Monro	1·15	5·99	— 4·84	9·15	16·65	— 7·50
Rustenburg	A. Streatfield	3·73	5·03	— 1·30	10·80	16·98	— 6·18
Standerton	W. J. Madge	4·98	4·31	+ 0·67	16·93	20·59	— 3·66
Woodbush No. 1	The Forester	4·56	16·77	—12·21	20·48	42·85	—22·37
Zeerust	H. Dietrich	0·68	4·45	— 3·77	12·51	14·18	— 1·67
Swaziland—							
Mbabane	Swaziland Police	5·98	10·37	— 4·39	26·92	33·88	— 6·96
Orange Free State—							
Bethulie	J. J. Wardhaugh	1·55	2·64	— 1·09	6·09	8·83	— 2·74
Bloemfontein	G. A. Schepers	3·83	3·76	+ 0·07	8·47	11·55	— 3·08
Boshof	The Postmaster	3·54	3·05	+ 0·49	6·29	10·41	— 4·12
Harrismith	The Forester	5·19	5·04	+ 0·15	15·90	19·02	— 3·12
Kroonstad	S. R. Northfield	2·33	4·21	— 1·88	8·17	14·15	— 5·98
Ladybrand	The Forester	4·79	4·78	+ 0·01	12·31	16·77	— 4·46
Lindley	—	—	4·26	—	—	14·92	—
Natal—							
Dundee	W. Thorrold	7·08	6·04	+ 1·04	16·62	20·47	— 3·85
Durban (Point)	The Port Captain	7·76	4·36	+ 3·40	21·71	25·08	— 3·37
Empangeni	The Forester	1·33	5·88	— 4·55	11·82	27·72	—15·90
Estcourt	The Town Clerk	5·98	5·59	+ 0·39	14·96	17·93	— 2·97
Hlabisa	The Gaoler	1·97	7·25	— 5·28	—	28·17	—
Howick	The Gaoler	5·21	5·24	— 0·03	16·44	20·27	— 3·83
Ladysmith	D. A. R. Leathern.	5·70	4·65	+ 1·05	14·35	16·90	— 2·55
Maritzburg (Mental Hospital)	The Staff	5·37	5·98	— 0·61	12·35	23·24	—10·89
Stanger	C. C. Foss	5·09	5·25	— 0·16	17·88	27·75	— 9·87
Vrijheid	The Gaoler	5·10	6·89	— 1·79	17·82	23·66	— 5·84
Weenen	The Gaoler	2·76	5·52	— 2·76	10·17	17·62	— 7·45
Cape—							
Aliwal North	A. Alcock	1·82	2·89	— 1·07	5·86	10·65	— 4·79
Beaufort West	The Gaoler	1·24	1·09	+ 0·15	4·01	4·59	— 0·58
Bedford	T. C. Hall	2·37	3·37	— 1·00	8·90	14·38	— 5·48
Britstown	The Gaoler	0·42	1·14	— 0·72	2·08	4·38	— 2·30
Calvinia	The Gaoler	0·48	0·37	+ 0·11	3·28	3·86	— 0·58
Capetown (Royal Observatory)	The Staff	0·26	0·69	— 0·43	13·19	13·61	— 0·42
Ceres	A. Heatlie	0·41	1·02	— 0·61	18·35	23·81	— 5·46
Carnarvon	A. P. Malherbe	1·12	1·02	+ 0·10	2·77	3·26	— 0·49
Clanwilliam	The Gaoler	0·09	0·22	— 0·13	2·70	4·55	— 1·85
Concordia	F. H. Carstens	0·01	0·18	— 0·17	1·37	2·88	— 1·51
Driefontein (French Hoek)	The Forester	1·30	2·16	— 0·86	51·90	40·64	+11·26
East London	A. Downie	4·51	3·19	+ 1·32	24·27	19·44	+ 4·83
Fraserburg	The Gaoler	0·59	0·73	— 0·14	2·07	2·73	— 0·66
Grahamstown	Vet. Res. Officer	1·89	2·53	— 0·64	10·32	16·33	— 6·01
Garies	The Gaoler	0·00	0·14	— 0·14	1·56	2·65	— 1·09

RAINFALL, JANUARY, 1924—(*continued*).

Place.	Observer.	Month. Jan., 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Cape (continued)—							
Graaff-Reinet (Convent)	The Mother Superior	1·63	1·37	+ 0·26	6·98	7·04	— 0·06
Groot Drakenstein	L. Baker	0·97	1·10	— 0·13	24·03	19·68	+ 4·35
Griquatown	The Gaoler	1·79	1·76	+ 0·03	2·14	5·45	— 3·31
George	Rev. Canon B. Price	2·10	3·08	— 0·98	13·28	19·54	— 6·26
Hanover	The Gaoler	1·26	1·65	— 0·39	2·76	5·72	— 2·96
Hopetown	The Gaoler	0·83	1·89	— 1·06	2·82	5·65	— 2·83
Kenhardt	R. Seydell	0·72	0·57	+ 0·15	1·68	2·10	— 0·42
Kimberley	F. Schmidt	2·17	2·33	— 0·16	4·69	8·06	— 3·37
Knysna	The Gaoler	1·80	2·10	— 0·30	13·33	17·01	— 3·68
Kokstad	H. D. Coyte	6·02	4·52	+ 1·50	18·94	16·17	+ 2·77
Kingwilliamstown	W. Kindness	2·48	2·54	— 0·06	17·68	14·20	+ 3·48
Kuruman	—	—	3·29	—	—	8·22	—
Mafeking (Convent)	The Mother Superior	1·69	4·23	— 2·54	9·28	13·49	— 4·21
Mossel Bay (Cape St. Blaize)	The Lightkeeper	1·44	1·18	+ 0·26	7·81	9·67	— 1·86
Murraysburg	W. H. Rose-Innes	1·72	1·11	+ 0·61	4·66	4·68	— 0·02
O'okiep	J. Burrows	0·00	0·21	— 0·21	1·78	3·51	— 1·73
Philipstown	The Gaoler	1·61	1·69	— 0·08	2·79	5·85	— 3·06
Piquetberg	The Gaoler	0·69	0·55	+ 0·14	9·31	11·98	— 2·67
Port Elizabeth	The Lightkeeper	0·91	1·20	— 0·29	9·04	13·32	— 4·28
Port St. Johns	The Lightkeeper	8·63	4·92	+ 3·71	32·73	29·89	+ 2·84
Port Nolloth	The Lightkeeper	0·00	0·07	— 0·07	0·88	1·15	— 0·27
Prieska	The Gaoler	0·02	1·23	— 1·21	0·95	3·65	— 2·70
Queenstown	H. Holley	1·74	3·38	— 1·64	5·85	12·22	— 6·37
Steytlerville	The Gaoler	0·85	0·82	+ 0·03	3·94	4·54	— 0·60
Sutherland	The Gaoler	0·71	0·50	+ 0·21	3·59	4·47	— 0·88
Swellendam	The Gaoler	1·68	2·41	— 0·73	11·07	18·01	— 6·94
Sydney's Hope	Rev. S. Rippon	1·38	2·06	— 0·68	9·37	12·98	— 3·61
Somerset East	C. Harris	1·87	2·79	— 0·92	10·34	14·00	— 3·66
Stutterheim	F. C. Bousfield	5·58	3·92	+ 1·66	21·96	17·13	+ 4·83
Uitenhage	H. Inggs	1·32	1·11	+ 0·21	9·52	9·55	— 0·03
Umtata	Miss N. Dix Peck	3·39	3·56	— 0·17	13·34	14·54	— 1·20
Uniondale	The Gaoler	0·54	0·68	— 0·14	4·99	7·06	— 2·07
Upington	The Gaoler	1·38	0·83	+ 0·55	1·72	2·80	— 1·08
Victoria West	The Gaoler	0·88	1·05	— 0·17	2·70	4·23	— 1·53
Vryburg	Chas. Butler	1·89	4·15	— 2·26	9·48	10·05	— 0·57
Worcester	The Gaoler	0·18	0·25	— 0·07	3·97	6·91	— 2·94
Wynberg (Convent)	The Mother Superior	0·50	1·37	— 0·87	24·87	27·21	— 2·34
Basutoland—							
Mafeteng	F. Hodgson	2·49	5·48	— 2·99	7·76	17·81	— 10·05
South-West Africa—							
Aus	E. Marthins	0·00	0·09	— 0·09	2·75	1·25	+ 1·50
Bethanie	Rev. Peter	0·10	1·15	— 1·05	1·50	1·90	— 0·40
Duesternbrock	J. & A. Matthiessen	1·08	2·54	— 1·46	1·66	4·93	— 3·27
Franzfontein	H. Janson	1·35	1·78	— 0·43	2·04	3·88	— 1·84
Gabis	Rev. P. Rehor	0·00	0·11	— 0·11	1·70	1·39	+ 0·31
Garinais	F. Bertling	0·46	0·52	— 0·06	3·42	1·96	+ 1·46
Gibeon	Rev. Spellmeyer	0·28	1·39	— 1·11	0·90	5·48	— 4·58
Gobabis	Rev. Irle	2·27	4·01	— 1·74	4·76	7·87	— 3·11
Grootfontein	Pitkowski	1·25	5·61	— 4·36	4·66	12·23	— 7·57
Gr. Witvley	Maass	1·61	3·10	— 1·49	2·92	6·53	— 3·61
Haribes	Cpt. Meyer	0·43	0·59	— 0·16	0·83	1·94	— 1·11
Heirachabis	Ed. Sroka	0·27	0·25	+ 0·02	2·02	1·16	+ 0·86
Maltahoeke	E. Just	0·00	1·14	— 1·14	0·60	2·10	— 1·50
Neu-Heusis	Liebig's Extract Co.	0·96	3·22	— 2·26	1·66	6·14	— 4·48
Okahandja	B. Templin	0·61	3·14	— 2·53	1·21	5·13	— 3·92
Okandjose	Von Gossler	1·61	1·94	— 0·33	4·55	4·54	+ 0·01
Okasangumingo	R. H. A. Schneider.	2·18	2·61	— 0·43	6·35	7·70	— 1·35
Omaruru	The Postmaster	0·63	3·41	— 2·78	1·17	5·54	— 4·37
Rehoboth	The Postmaster	0·31	2·39	— 2·08	0·31	4·47	— 4·16
Rietfontein	B. Leist	1·01	3·94	— 2·93	3·89	10·31	— 6·42
Swakopmund	E. Sievert	0·00	0·10	— 0·10	0·01	0·39	— 0·38
Tsumeb	Ing. Schetter	1·91	5·82	— 3·91	5·11	12·94	— 7·83
Usakos	Rev. Diehl	0·08	1·09	— 1·01	0·08	2·08	— 2·00
Voigtsgrund	A. Voigts	0·31	1·01	— 0·70	1·40	2·30	— 0·90
Waterberg	D. Hahn	1·85	4·79	— 2·94	5·64	9·83	— 4·19
Windhoek	Observatory	1·83	3·11	— 1·28	4·61	6·03	— 1·42

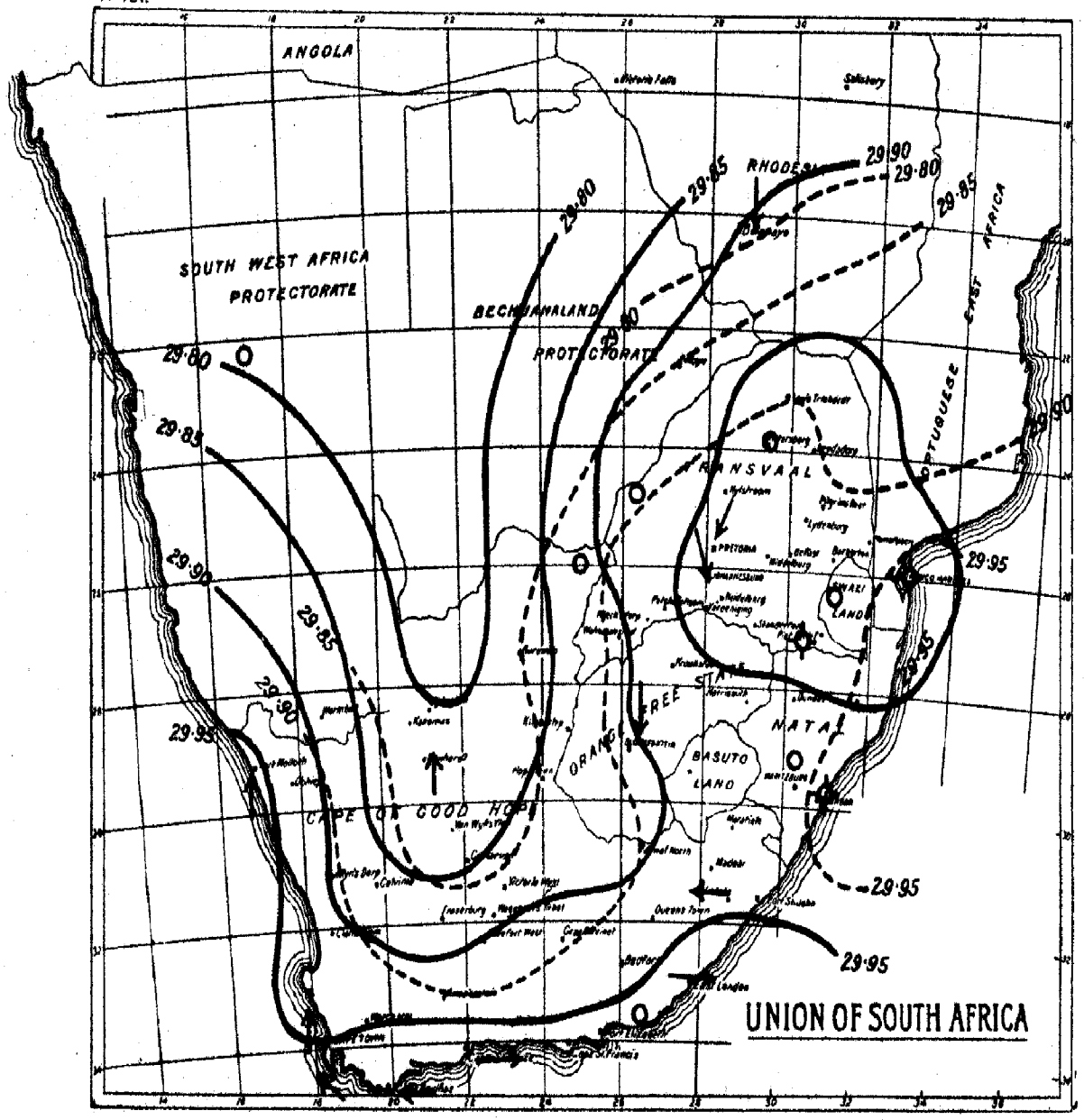
AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), JANUARY, 1924.

Station.	Observer.	Month—Jan., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Transvaal—										
Barberton	Walter Grubb	86·9	65·0	76·0	73·2	+ 2·8	99·0	5th, 11th, and 18th	58·0	13th and 14th.
Belfast	The Forester	76·8	50·5	63·6	63·0	+ 0·6	88·0	18th	42·0	14th and 23rd.
Bloemhof	F. Osborne	92·4	64·9	78·6	74·5	+ 4·1	103·0	17th	50·0	12th.
Ermelo	The Forester	80·1	54·1	67·1	66·2	+ 0·9	91·0	5th	45·0	14th.
Johannesburg (Observatory)	The Staff	81·0	57·5	69·2	65·4	+ 3·8	89·5	18th	49·1	14th.
Klerksdorp (Strathmore)	Chas. Scott	90·4	63·5	77·0	73·9	+ 3·1	99·0	3rd and 17th.	56·0	13th.
Komatipoort	H. J. Evans	96·5	69·5	83·0	80·5	+ 2·5	109·0	18th	60·0	14th.
Louis Trichardt	C. L. Cope	85·0	61·4	73·2	70·6	+ 2·6	96·0	17th and 18th	50·0	1st.
Middelburg	Dr. H. A. Spencer	85·9	56·7	71·3	68·2	+ 3·1	97·0	18th	48·0	14th.
Nylstroom	G. Bakker	88·2	61·6	74·9	72·3	+ 2·6	98·0	18th	52·0	14th.
Pietersburg	W. J. Frankleyne	86·7	59·1	72·9	70·7	+ 2·2	98·0	17th	52·0	14th.
Piet Retief	J. Werner	81·5	59·5	70·5	66·9	+ 3·6	94·0	4th and 18th	50·5	13th.
Pigeonhole (New Agatha)	Jno. McCallum	77·7	60·7	69·2	—	—	88·0	17th	51·0	14th.
Pilgrims Rest	E. M. Skea	81·4	57·0	69·2	68·0	+ 1·2	93·0	17th	51·0	14th.
Potchefstroom (Exp. Farm)	The Manager	90·8	62·2	76·5	70·2	+ 6·3	98·9	17th	54·0	12th.
Pretoria (Meteorological Office)	The Staff	86·0	62·1	74·0	71·7	+ 2·3	96·6	18th	55·3	14th.
Rustenburg	A. Streatfield	91·4	62·1	76·8	74·4	+ 2·4	103·0	18th	55·0	1st.
Standerton	—	—	—	—	67·8	—	—	—	—	—
Zeerust	H. Dietrich	91·1	64·0	77·6	74·4	+ 3·2	101·0	17th	57·0	29th.
Swaziland—										
Mbabane	Swaziland Police	80·2	59·1	69·6	67·4	+ 2·2	93·0	18th	51·0	13th and 14th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	89·2	60·0	74·6	73·3	+ 1·3	101·5	4th	47·2	13th.
Bloemfontein	G. A. Schepers	89·0	62·2	75·6	72·4	+ 3·2	101·3	17th	47·6	13th.
Harrismith	The Forester	79·0	53·3	66·2	64·8	+ 1·4	91·0	18th	43·0	13th.
Kroonstad	S. R. Northfield	88·5	61·2	74·8	72·0	+ 2·8	98·2	17th	52·3	13th.
Ladybrand	The Forester	83·4	57·1	70·2	68·8	+ 1·4	95·0	17th	47·0	12th.
Lindley	—	—	—	—	68·5	—	—	—	—	—
Natal—										
Dundee	West Thorrold	85·5	57·3	71·4	72·2	− 0·8	102·0	18th	51·0	14th.
Durban (Point)	The Port Captain	80·8	70·7	75·8	76·6	− 0·8	85·6	17th	62·6	13th.
Empangeni	The Forester	87·5	68·4	78·0	77·0	+ 1·0	104·0	10th	59·0	14th.
Estcourt	The Town Clerk	84·6	59·7	72·2	71·7	+ 0·5	102·0	18th	50·0	12th.
Hlabisa	Sergt. Burchill	86·8	59·9	73·4	74·4	− 1·0	95·0	18th and 29th	54·0	15th.
Ladysmith	D. A. R. Leathern	88·8	63·8	76·3	77·0	− 0·7	104·0	18th	52·0	14th.
Maritzburg (Mental Hospital)	The Staff	83·0	63·8	73·4	73·3	+ 0·1	105·0	4th	54·0	13th.
Stanger	Cecil C. Foss	83·6	68·2	75·9	76·6	− 0·7	99·0	18th	59·0	14th.
Weenen	The Gaoler	89·2	63·1	76·2	77·0	− 0·8	105·0	17th and 18th	52·0	13th.



R.K.H. JULY, 1924.

N°101.



January, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for January, 1924.

8301—4/12/24—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. FEBRUARY, 1924. No. 50.

MEAN pressure higher than usual in the east, but practically normal over the centre, south, and west; temperatures about two degrees less than the average, due to both days and nights being cooler than usual; a cold spell towards the middle of the month, with frost in the more low-lying parts of the Transvaal, Free State, and Natal; good rains over a portion of the country at the beginning of the month, but dry during the last fortnight; rainfall generally less than usual, except over part of the eastern high veld, and of the Barberton and Waterberg Divisions of the Transvaal, portions of the northern Karroo, northern Border, and a few stations in Kaffraria and the south-east of the Cape Province, the north-east of the Free State, and north-west of Natal; an unusual absence of thunderstorms; a few destructive hailstorms; a fall of snow on the Drakensberg on the 11th; some hot winds and strong "south-easters" in the south-west of the Cape Province; these were the outstanding features of the weather of February, 1924.

Pressure.—Mean atmospheric pressure, as may be seen from the accompanying map, was about a tenth of an inch above normal over Rhodesia; half a tenth over the Transvaal, Natal, Orange Free State, and the south of the Cape Province; but almost normal over the centre, south-west, and west of the Cape Province. The equatorial low pressure was in evidence during the greater part of the month, being present on twenty-three days. High pressure areas were present on fifteen days, and lay over the west and south-west on the 10th, 27th, and 28th; over the south to south-east on 1st, 11th to 14th, 17th, 18th, and 24th; over the east on the 15th and 19th to 21st. "Lows" apeared on the coast on twelve days, viz., on the south-west on the 15th; on the south on the 19th to 21st; on the south to south-east on the 3rd and 4th, 9th, 22nd, 25th, and 26th: over the east on the 10th and 16th.

Temperature.—The mean temperature over the Union (70·9 degrees) was 1·9 degree lower than usual, the difference being equally divided between the days, with a temperature of 80·1 degrees, and the nights, with a mean for the month of 57·8 degrees. A deficiency in the mean monthly temperature was common to all four Provinces. Thus Natal, with a temperature for February

of 70·6 degrees, was 4·3 degrees, the Free State (with 66·1 degrees) was 3·3 degrees, the Transvaal (with 67·4 degrees) was 2·3 degrees, and the Cape Province (with 70·1 degrees) was only 0·6 degree below the corresponding normals. Similarly, the mean maxima and mean minima were both less than the average. Natal (with 80·3 degrees as the mean day temperature) was 6·8 degrees, the Free State (with 78·0 degrees) was 3·0 degrees, the Transvaal (with 79·1 degrees) was 1·6 degree, and the Cape (with 81·1 degrees) was 0·4 degree cooler than the respective average conditions. Similarly, the mean night or minimum temperature over Natal (61·0 degrees) was 1·7 degree, over the Orange Free State (54·2 degrees) was 3·5 degrees, over the Transvaal (55·9 degrees) was 2·5 degrees, and over the Cape Province (59·0 degrees) was 0·9 degree lower than the corresponding normals. At the individual stations the mean temperature for February was sub-normal over the whole Union, except at Komati Poort and Bloemhof in the Transvaal, where it was 0·2 degree and 1·3 degree respectively higher than the average. The temperature of the month was also super-normal over parts of the north-east of the northern Border and northern Karroo, Namaqualand, and the south-west of the Cape Province, including the Peninsula. The excesses there were mostly about 2 degrees, but ranged from 0·2 degree at Queenstown to 2·5 degrees at Wynberg in the Cape Peninsula. In the Transvaal, the deficits were greatest in the east of the high veld, being 4·9 degrees at Belfast, and continued over 3 degrees westwards as far as Rustenburg. From these portions of the high and middle velds the deficits decreased in all directions, but rising once more to 3·7 degrees at Louis Trichardt, in the Zoutpansberg. The minimum deficit was 0·1 degree at Potchefstroom. In the Orange Free State, the sub-normal amounts decreased from east to west, the maximum being 5·3 degrees at Harrismith, and the minimum 2·1 degrees at Bloemfontein. In Natal, on the other hand, the largest deficits were in the west, and decreased eastwards, being over 6 degrees at Ladysmith and Dundee and 2·1 degrees at Durban. From Natal, the shortages in temperature decreased southwards through Kaffraria, from 3·2 degrees at Kokstad to 1·2 degree at Umtata, reaching the minimum of 0·3 degree at East London. Over portions of the south-east and the south coastal area they once more increased to 2·4 degrees, but decreased westwards to less than 1 degree at Murraysburg, the departures from normal ultimately becoming positive as already noted. Over the northern Border and in Bechuanaland the deficits exceeded 1 degree. Temperature was also below the average by 5·9 degrees at Mafeteng, in Basutoland, and by 1·8 degree at Mbabane, in Swaziland. Both days and nights were mostly cooler than usual over the greater part, and the eastern part of the Union, but above the average in the more westerly sections of the Cape Province. In the Transvaal, both mean maxima and minima were above the average at Bloemhof by 1·2 degree, whilst at Zeerust in the west and Komati Poort in the east the days were warmer than usual by 0·3 degree and 0·6 degree respectively. Elsewhere both day and night temperatures were sub-normal. The mean maxima were frequently lower than usual by amounts exceeding 3 degrees, but the deficits varied from 4·8 degrees at Pretoria to 0·1 degree at Standerton. The shortage in the mean minima was usually greater than in the case of the maxima, being mostly between 3 and 5 degrees, and ranging from 6·1 degrees at Belfast to 0·1 degree at Komati Poort. Sub-normal temperatures during both days and nights were common to all stations in the Orange Free State, being greatest in the east and north-east, and decreasing towards the west and south. The negative departures of the mean maximum temperatures varied from 5·5 degrees at Harrismith to 1·7 degree at Bloemfontein. The corresponding values for the mean minima were 5·1 degrees at Ladybrand and 1·8 degree at Bethulie. The deficits in the day temperatures were greatest in Natal, where they lay between 4·6 degrees

at Empangeni and 11·0 degrees at Ladysmith. The shortages in the night temperatures were much smaller, being commonly between 1 and 2 degrees, but varying from 0·7 degree at Maritzburg to 5·5 degrees at Dundee. At Durban, however, a small excess of 0·7 degree occurred in the mean minimum temperature for the month. In the Cape Province, both days and nights were cooler than usual at a number of stations in the east, including the east-central Karroo, parts of the south-east, and Kaffraria, also along the south coast. The minus quantities varied, in the case of the day temperatures, from 3·9 degrees at Kingwilliamstown to 0·4 degree at Port Elizabeth; and in the case of the night temperatures, from 3·0 degrees at Kokstad to 0·4 degree at Mossel Bay. At Mafeking, Murraysburg, Queenstown, and East London, the mean maxima were higher than usual, and the nights lower, whilst at Aliwal North the days were normal. On the other hand, at Kimberley and Port St. Johns the days were considerably—over 3 degrees—cooler than usual, but the nights slightly warmer. In the more westerly portions of the Cape Province, both day and night temperatures were in excess. The surplus amounts of the day temperatures lay between 5·0 degrees at Carnarvon and 0·4 degree at Mafeking; and of the night temperatures between 2·4 degrees at O'okiep and 0·4 degree at Kimberley. The mean minimum at Port Nolloth was a tenth of a degree below normal. The mean warmest station was Komati Poort, with a temperature of 79·6 degrees; and the coolest Belfast, with 57·5 degrees, both in the Transvaal, a difference of 22·1 degrees. In the Free State, the highest mean monthly temperature was 69·6 degrees at Bethulie, and the lowest 59·3 degrees at Harrismith, a difference of 10·3 degrees. In Natal, the corresponding values were 74·8 degrees at Empangeni and 64·8 degrees at Dundee, a difference of 10 degrees. In the Cape Province, the extreme monthly temperatures were 79·6 degrees at Kenhardt and 60·5 degrees at Port Nolloth, a difference of 19·1 degrees. The highest mean maximum was 94·1 degrees at Kenhardt, and the lowest mean minimum 46·0 degrees at Belfast, a difference of 48·1 degrees. There was no outstanding warm spell during the month, the highest readings being recorded on twenty days, principally the 3rd to 5th and 25th to 27th, and on the 29th. The highest and lowest maxima during the month over the different Provinces were as follows: Transvaal, 103·0 degrees on the 4th at Komati Poort, and 80·0 degrees on the 27th at Belfast; Orange Free State, 92·0 degrees on the 29th at Bethulie, and 79·0 degrees at Harrismith on the 4th and 26th; Natal, 99·0 degrees on the 4th at Empangeni and 88·0 degrees at Estcourt on the same date; Cape Province, 104·5 degrees on the 21st during a hot wind at Uitenhage, and 80·0 degrees at Port Elizabeth on the 3rd, 8th, 9th, and 24th. Although the lowest readings during the month were registered on fifteen days, they centred mainly round two cold spells, viz., from the 11th to 13th and about the 19th, where areas of high pressure had pushed in from the south, and covered the greater part of the Union. The highest and lowest minimum readings recorded over the various Provinces were as follows: Transvaal, 59·0 degrees on the 15th at Komati Poort, and 34·0 degrees on the 22nd at Belfast; Orange Free State, 35·0 degrees on the 19th at Harrismith, and 47·0 degrees on the 13th at Bethulie; Natal, 43·0 degrees on the 14th at Dundee, and 60·4 degrees on the 11th at Durban; Cape Province, 38·5 degrees at Murraysburg on the 12th, and 60·0 degrees at Port St. Johns on the 11th and 12th. The highest and lowest readings during the month were therefore respectively 104·5 degrees at Uitenhage on the 21st, and 34·0 degrees at Belfast on the 22nd, showing an extreme range of 70·5 degrees. One of the most noteworthy and unusual features of the weather of February was the occurrence of radiation *frosts* during the cold snaps, principally in low-lying areas in the east of the Transvaal and Free State, and at Impendhle, in Natal. At Rugby, in the Bethlehem

District of the Orange Free State, the frosts on the 12th and 19th were so intense as to kill maize in very low-lying lands; kaffir corn was also affected at Mooi Vlei, in the Ermelo District.

Precipitation.—An excess of rainfall during February was confined to relatively small areas in the various Provinces. Thus, in the Transvaal, a small excess occurred at Barberton, in the eastern low veld, much larger excesses at Belfast and Middelburg, extending southwards to Bethal, on the east of the high veld, and surplus amounts of between three-quarters to one and a half inch between Rooiberg and Nylstroom in the west of the central low veld. In the Free State, the rainfall was higher than usual in the neighbourhood of Harrismith and in Natal at Dundee. In the Cape Province, plus amounts occurred over part of south of the northern border, over the south and south-west of the northern Karroo, portions of the central Karroo, the south-east and extreme east of Kaffraria. Elsewhere the rainfall was lower than usual. The excesses in the Transvaal varied between 0·06 inch (or only 1 per cent. of the normal) at Barberton and 3·89 inches, or 110 per cent., at Belfast; and in the Cape Province, 1·51 inch, or 81 per cent., at Hopetown to 0·41 inch, or 44 per cent. of the average at Fraserburg. At Harrismith (Orange Free State) there was an excess of 1·09 inch, or 24 per cent., and at Dundee (Natal) a surplus of 0·78 inch, or 17 per cent. The deficits showed considerable range over the Transvaal, being least (less than an inch) over the south centre and increasing to 2–4 inches or over towards the north, east, south-east, and south-west. The shortages ranged from 0·03 inch or less than 1 per cent. at Rustenburg, to 9·62 inches, or 75 per cent., at Woodbush. In the Free State the shortages lay between 1 and 2 inches, varying from 1·19 inch, or 43 per cent., at Boshof, to 2·0 inches, or 49 per cent., at Ladybrand. In Natal, the deficits were often less than an inch, ranging, however, from 0·04 inch, or about 1 per cent., at Durban, to 2·11 inches, or 40 per cent., at Empangeni. Fairly good rains fell over the greater part of the summer rainfall area during the early part of the month; the weather continued dry during the second half of the month until the last few days, when some good heavy showers occurred in some areas. Among these may be mentioned the fall of 7·45 inches on the 28th at Louieville, in the Division of Barberton; of this amount, 2·70 inches fell between 4.10 and 4.45 p.m., or at the rate of 4·63 inches per hour, causing damage to ploughed lands, estimated at £100. *Thunderstorms* were comparatively infrequent, and the few *Hailstorms* reported were mostly light, causing little damage. During a hailstorm at Queenstown at 2 p.m. on the 7th, exceptionally large pieces of jagged ice fell, but did not cause much damage, owing to the absence of wind. At Leeuwkop, in the Pretoria District, hail caused considerable damage to crops on the 10th and 28th. At Standerton there was a light fall of hail on the 24th. Similar light falls occurred over parts of Natal and the Free State, also in the Barberton District. On the 26th, at Dawn, in the Estcourt Division of Natal, a heavy hailstorm, with stones the size of pigeon eggs, caused considerable damage. Similar severe storms on the 27th, four miles from Piet Retief, also caused severe and heavy damage to crops. Snow was reported as having fallen on the 11th on the Drakensbergen, and continued visible till the 13th.

In South-West Africa, the stations show totals varying between 0·01 inch at Swakopmund and 5·41 inches at Grootfontein. From Windhoek southwards and in more westerly parts the totals were mostly under an inch, whilst northwards they were generally between one and three inches, but exceeding 5 inches at Okasangumingo and Grootfontein. These totals were sub-normal at all stations, with the exception of Omaruru in the west and Voigtsgrund in the south centre, where there were excesses of 0·59 inch, or 21 per cent., and

0·48 inch, or 17 per cent., respectively. The sub-normal amounts were mostly less than one inch in the southern, and generally between two and three inches in the northern half of the territory. These deficits varied from 0·14 inch or 19 per cent., at Gabis in the south, to 5·49 inches, or 88 per cent., at Okandjose, north of Windhoek. The cumulative rainfall since the 1st July, 1923, is mostly considerably below normal, an excess being confined to a few circumscribed areas in Kaffraria, the south-east and south-west of the Cape Province, and the west of the northern Karroo, and a small portion of the east of the Transvaal high veld. These plus amounts were mostly between two and four inches, but varied from 0·07 inch, or less than 1 per cent., at Belfast, Transvaal, to 10·66 inches, or 26 per cent., at Driefontein, in the south-west of the Cape. The deficits in the Transvaal were commonly between 6 and 12 inches, but varied from 0·98 inch, or 4 per cent., at Middelburg, to 31·99 inches, or 57 per cent., at Woodbush. In the Free State, the shortages lay mostly between 4 and 6 inches, but ranged from 2·03 inches, or 8 per cent., at Harrismith, to 7·82 inches, or 44 per cent., at Kroonstad. In Natal the totals for the eight months were mostly 3–6 inches less than usual, the minus quantities varying, however, between 3·07 inches, or 12 per cent., at Dundee and 18·01 inches, or 55 per cent., at Empangeni. In the Cape Province the deficits were least—under one inch—over the central Karroo, increasing to 2–4 inches over the northern Karroo, the southern Karroo, and the south and west coasts, but increasing to 5–7 inches in parts of the south-east, north-east, and the west of the south coastal areas; they varied between 0·23 inch, or 2 per cent., at Uitenhage and 11·09 inches, or 68 per cent., at Queenstown. The gross totals for the eight months were above the average in the south, south-west, and part of the south-east, by amounts varying from 0·03 inch, or 2 per cent., at Heirachabis to 1·15 inch, or 63 per cent., at Aus. Over all the rest of the country the precipitation was sub-normal, generally by 3–8 inches, but ranging from 0·42 inch, or 8 per cent., at Voigtsgrund to 10·44 inches, or 54 per cent., at Tsumeb, in the north. The cumulative amounts since the beginning of the current year were above normal in a portion of the east of the high veld, the north-east of the Free State, part of the west of Natal, and on the coast at Durban, in detached areas in Kaffraria, the south-east, the east of the south coastal areas, parts of the northern Border, the south and west of the northern Karroo, and the centre of the central Karroo. The excesses in the Transvaal were about 2½ inches, or 26 per cent. above the average; in Natal they varied from 0·10 in., or 1 per cent., at Ladysmith to 3·36 inches, or 37 per cent.; at Durban; in the Orange Free State, the excess at Harrismith was 13 per cent. above the average; whilst in the Cape Province, where the surplus amounts were generally half an inch or less, but rising to about 2 inches in Kaffraria, they ranged from 0·01 inch, or less than 1 per cent. at Uitenhage to 2·27 inches, or 25 per cent. above normal, at Kokstad. Over the rest of the Union and South-West Africa the totals for the two first months of the year were lower than usual. Over the Transvaal, the deficits lay mostly between 1 and 4 inches, but rose to 7–10 inches in the north and east; they ranged from 0·40 inches, or 5 per cent., at Pietersburg to 21·83 inches, or 74 per cent., at Woodbush. In the Free State, the sub-normal amounts were mostly between 1 and 3 inches, varying, however, from 0·70 inch, or 12 per cent., at Boshof, to 3·72 inches, or 48 per cent., at Kroonstad. In Natal, the shortages were mostly between 1 and 3 inches, with a range between 0·64 inch, or 6 per cent., at Howick and 6·66 inches, or 60 per cent., at Empangeni. Over the Cape Province, the aggregate precipitation for January and February was mostly less than the average by less than an inch, the deficiencies measuring to between 1 and 2 inches in the south-east, 3–4 inches over the north-east, and 2–5 inches over the northern border and Bechuanaland. There was a variation, however, from 0·03 inch,

or 3 per cent. at Sutherland to 5·46 inches, or 70 per cent., at Vryburg. In South-west Africa, the two months' rainfall was mostly under the normal by less than 1 inch in the south, but by 2–5 inches in the north, varying between 0·19 inch, or 95 per cent., at Swakopmund and 6·52 inches, or 54 per cent., at Tsumeb.

State of Country.—The good rains in the early part of the month were succeeded by remarkably cool weather, which tended to retard the growth of crops and grass. The need for additional rain was being felt towards the end of the month. In the northerly parts of the Transvaal, the crops were generally described as in fair or good condition, and the veld looking well, while hopes were entertained that quickly ripening maize planted in January would ripen. In parts of the Zoutpansberg and Pietersburg, however, the maize and other crops were a failure or very small, as a result of late ploughing and drought. In Barberton the cotton crops were promising well, and had withstood the drought in the Zoutpansberg when other crops failed. In the Ermelo and Standerton Districts, kaffir corn, mealies, pumpkins, etc., were affected by frost and some crops ruined by drought. In Wakkerstroom District the veld and crops were in a satisfactory condition; but in the adjoining district of Piet Retief the crops were stated to be poor. In the Bloemhof, Wolmaransstad, and Lichtenburg areas, it was reported that there were no crops, owing to their having been killed by the drought, whilst in the Potchefstroom District the pasturage was poor, the fresh green grass dying off fast. In Rustenburg, however, there was a slight improvement in the crops, and it was anticipated that some mealies would be reaped if no frost occurred; the grass there was very short. The effects of hail have been already noted. In the Orange Free State, the most satisfactory reports were from the Harrismith, Ladybrand, Thaba 'Nchu, and Senekal Districts, where the crops were reported as looking well, as also the late crops in part of the Heilbron District, although the amount sown was below the average. In part of the Bloemfontein area, the grass was coming on. Over the more north-westerly portions of the Free State, conditions were generally unsatisfactory, the crops being poor or an utter failure, whilst there was stated to be no veld for large stock in the Hoopstad District. In the Vrede District, crops and grass had made but little growth, and the country was again dry at the end of the month. In the Bethlehem area, oat crops had perished, maize was backward, and teff so much so that there was little chance of its reaching a mowable length. Crops in the low-lying lands were killed by frost. In Natal, growth was checked to a considerable extent by the unusually cold weather. From Ladysmith, Mid-Illovo, Gluckstadt, Paulpietersburg, Impendhle, it was stated that crops were looking well, and had improved considerably. At Nottingham Road and Rongpoort (District Weenen), crops were not growing well, and grass was short, owing to cold and drought. At Estcourt, only a medium harvest of mealies was expected, whilst from Greytown it was reported that, although mealies were most promising, the grass was very short, so that but little hay would be cut for winter. In the Cape Province, the persistent strong "south-easters" over the south-west did considerable damage to fruit and grape crops, while oaks were as bare as at the beginning of June. A hot wind at Port Alfred on the 21st had a disastrous effect on garden produce and fruit. In the Bathurst Division the apple crop was expected to be below the average this season, but pineapples were showing good results; mealies were practically dried up, owing to small rainfall and strong winds. From Stutterheim it was stated that mealies were exceptionally good, the pasturage excellent, and fruit better than at any time during the last twenty-five years. At Louisvale (District Kenhardt), farmers leading water from the Orange River were doing well with lucerne and vines, notwithstanding the dry conditions and locusts. At Grootfontein, Division Middelburg,

good rains had caused an improvement in the veld. At Aliwal North, Murraysburg, Queenstown, Tsolo, Laingsburg, Great Kei Drift (Stutterheim Division), and Mafeking, it was still very dry, and the prospects for winter far from reassuring, so that farmers were trekking with their cattle. In the Bechuanaland Protectorate the veld was at its best at Kalamarie, and at Dikgatlong it had improved as the result of nine days' consecutive rain; but the veld was in bad condition at Molepolole. Generally speaking, stock were in fair to good condition, and free from disease, although in some exceptional areas, as at Holfontein (District Kroonstad) they were still in poor condition, and were beginning to fall off in condition in parts of the Cape Province. At Groot Kei Drift, sheep were dying freely, although cattle continued in good condition.

Rivers and Water Supply.—No reports were received of any floods in rivers. The Orange River at Louisvale was stated to be running strongly; but the Limpopo, which should have been at its maximum, was barely running. In the Ermelo township, wells had dried up, and the position was serious; at Wakkerstroom, streams-springs were by no means up to their usual strength, and at Paulpietersburg (Natal) the springs were still very low. At Greytown, in Natal, on the other hand, many springs were running; but, generally speaking, grave fears were expressed that the water supply would prove inadequate for winter.

WEATHER CHARACTERISTICS FOR THE MONTH OF APRIL.

Along the western and southern coasts, and in the south-west of the Cape Province, the rains are now increasing; but over the other portions of the Union the decreasing precipitation indicates the advent of autumn and the approach of the dry season. The heaviest rainfall should occur over the Cape Peninsula, where the normal for the month is about 3·0 inches; then in order come Natal, the south coast, the south-west of the Cape, and Basutoland, with 2·5 inches; Kaffraria, the Cape south-western and north-eastern districts, and the Orange Free State with 2·0 inches; the Transvaal, the Cape northern borders and the northern Karroo, with 1·5 inch; and the southern and central and east-central Karroo and the west coast, with 1·0 inch.

The mean daily air temperature is now about 70 degrees on the Transvaal low veld; 68 degrees in Natal; 65 degrees in the Cape south-eastern districts; 64 degrees along the west coast and over the southern Karroo; 63 degrees over the Cape south-western districts; 62 degrees over the Cape Peninsula; 61 degrees along the south coast and over the Transvaal high veld; 60 degrees in the Orange Free State; 59 degrees in Basutoland and over the Cape north-eastern districts; 58 degrees on the north and 57 degrees on the central Karroo. Light frosts may be expected.

In the Transvaal about 78 per cent., over the Cape northern borders 77 per cent., and over the south-west of the Cape 61 per cent. of the total possible hours of bright sunshine should be enjoyed.

Over the northern border of the Cape Province, north-north-westerly, and over the south-east of the Cape north-easterly and south-westerly winds prevail; over the Transvaal there is a decrease in frequency and force of winds from S.E. round by E. to N.N.W., with an increase in frequency of stronger winds from the other points of the compass; over the Cape Peninsula southerly winds still prevail, but with much diminished force.

C. STEWART,
Chief Meteorologist.

Pretoria.

Report 399
S. [illegible]

OBSERVERS' NOTES: FEBRUARY, 1924.

TRANSVAAL.

Barberton.—Showery weather at the beginning of the month was succeeded by a long dry spell; with the exception of two or three days, the weather has been cool and cloudy. A little hail fell in various parts of the district. The cotton crops are looking well. Rainfall: 4·47 inches on twelve days.—W. Grubb.

Middelburg.—Heavy and continuous rains fell at the beginning of the month; from 5th to 8th alone 4·51 inches fell, an average of over an inch a day, the total for the month reaching 6·65 inches on fourteen days. With the set-in rain, the temperature fell considerably, so that during the middle of the month, with cold winds blowing from the east, it was like a sudden return to winter, and fires were grateful in the evenings. Since then there have been many threatenings of rain, with localized thunderstorms around, which suggest the falling-off of the summer rains and an early winter.—Dr. H. A. Spencer.

Pietersburg.—Soft rains early portion of month; veld and crops in fair state, but rain badly needed. Rainfall: 2·62 inches on eight days.—W. J. Frankleyne.

Piet Retief.—Country very dry; severe hailstorms about four miles from Piet Retief on Wednesday the 27th, doing severe and heavy damage to crops. Rainfall: 3·76 inches on twelve days.—J. Werner.

Potchefstroom (School of Agriculture).—Good rains at beginning of the month, followed by a spell of remarkably cool weather. Rains very beneficial to crops, but cool weather retarded growth considerably. Last two weeks of month rather dry; especially during the last week was the lack of moisture noticeable in the crops. Rainfall: 3·47 inches on twelve days.—The Manager.

Standerton.—Variable weather: extreme heat and cold. Frost was reported in various portions of the district and low-lying parts of the town. A light fall of hail took place on the 24th. Rainfall: 1·64 inch on seven days.—W. J. Madge.

Ermelo.—Rain badly needed in township. Wells have dried up, and position serious. Rainfall: 1·72 inch on fourteen days.—J. Dean.

Mosdene (Waterberg).—A very cold month, the mean of the daily maximum and the minimum temperatures being below the normal. Very fine rains fell during the earlier portion of the month, and crops have come on splendidly; but rain is again wanted to bring on the late-planted crops. Rainfall for the month: 6·18 inches on nine days. Total rainfall since 1st July last, 18·16 inches.—E. E. Galpin.

Nooitgedacht (Waterberg).—The rainfall has been sufficient for the first time this summer. The veld is looking well, and if frosts and locusts hold off, there is a chance that the quickly-maturing maize planted in January will ripen. The growth this month has been retarded to some extent by cool weather. There have been no locusts. Rainfall for month: 5·97 inches on fourteen days.—G. Gordon Brown.

Myrthley (Standerton).—The month opened up cloudy and wet, and promised well for all crops. This was followed by exceptionally cold weather, doing a great deal of harm, the thermometer registering as low as 36·5 degrees F. on the 20th. The latter part of the month was dry, and rain is badly needed. Rainfall: 2·46 inches on ten days.—J. L. Ellis.

Jakhalsfontein (Pietersburg).—Light easy rains during earlier part of the month; latter part dry and droughty; crops suffering badly. Rainfall: 1·88 inch on nine days.—J. C. Palmer.

Wakkerstroom.—Rainfall: 2·85 inches on eleven days. As, however, practically all of it fell during the first half, and as a great deal of leeway has to be made up, owing to the severity and duration of the recent drought, we hope for more. Reports from the district are fair; the veld, crops, and cattle are in satisfactory condition, but streams and springs are not by any means up to their usual strength. An unusual feature was the cold snap about the middle of the month, and temperature on the night of the 20th was only four degrees above freezing point, while it is said that one or two places had frost.—J. Cilliers.

Louieville (*Barberton*).—28th February, 7·45 inches; of this, 2·70 fell from 4.10 p.m. to 4.45 p.m and the remainder during the night. Considerable damage to ploughed lands, estimated at £100. Rainfall: 12·14 inches on nine days.—E. Roselt.

Makouwskop (*Bloemhof*).—All crops killed by the drought. Rainfall: 0·61 inch on six days.—W. Hallatt.

Mooivlei (*Ermelo*).—14th February: slight frost affected kaffir corn; mealies are wilting for want of rain. Rainfall: 2·02 inches on five days.—M. Gerrie.

Klippan (*Lichtenburg*).—Very dry; nothing grows. It is a mystery how the stock remain alive. Rainfall: 1·02 inch on seven days.—P. M. Fischer.

Witklip No. 26 (*Lydenburg*).—Mealies are not very good; the late ploughing and spells of drought are responsible. Rainfall: 3·66 inches on thirteen days.—E. Penny.

Reston (*Middelburg*).—Crops are looking fair, and stock are in good condition. Rainfall: 4·0 inches on eleven days.—A. E. Purves.

Confidence (*Piet Retief*).—Crops in general are very poor on account of drought. Rainfall: 3·79 inches on seven days.—P. Viljoen.

Weltevreden (*Potchefstroom*).—Pasture is very poor, and the little fresh green grass is dying off fast. Crops generally are bad. Rainfall: 1·56 inch on three days.—W. Churr.

Leeuwkop.—10th February: hail, crops destroyed: 28th February: hail, crops damaged. Rainfall: 5·54 inches on nine days.—S. A. Police.

Zandfontein (*Rustenburg*).—The crops have slightly improved during February, and some mealies may be expected if there is not an early frost. The grass remains very short. Rainfall: 3·50 inches on fourteen days.—R. Boon.

Vaalbank (*Standerton*).—Crops ruined. Rainfall: 0·80 inch on eight days.—R. Smith.

Irenedale (*Standerton*).—10th to 17th: the winds from E. and S.E., with frost in parts, damaged mealie leaves, pumpkins, etc. Rainfall: 0·73 inch on four days.—E. van Muschenbroek.

Punda Maria (*Zoutpansberg*).—Crops bad, and very little on account of drought. Rainfall: 1·29 inch on three days.—J. J. Coetser.

Doornkloof (*Zoutpansberg*).—Crops good; cattle fat. Rainfall: 3·85 inches on twelve days.—S. M. Ralston.

La Cotte (*Zoutpansberg*).—Similar drought unknown for years here; maize an absolute failure; cotton only able to withstand the drought. Rainfall: 0·47 inch on four days.—W. Andrews.

Brakpan (*Wolmaransstad*).—The drought is very bad, and there are no crops in the district. Unless there is some rain before the winter sets in, all the cattle will die. Rainfall: 1·45 inch on five days.—J. C. Lombard.

SWAZILAND.

Matapa.—The rain of the 27th and 28th (1·04 inch and 0·54 inch) saved the mealie crops in this district. Rainfall: 5·18 inches on eleven days.—A. Torrens.

ORANGE FREE STATE.

Rugby (*Bethlehem*).—During the first half of the month, very cold weather was experienced, culminating in hoar frosts on the 12th and 19th, which were severe enough to kill maize situated in very low-lying lands. Maize crops are still very backward; oat crops have perished, and teff grass is so backward that it has little chance of attaining a mowable length. Cattle and sheep are in good condition. Rainfall: 1·67 inch on seven days.—A. C. Glynn Baker.

Wicksfield (*Bloemfontein*).—Nice rains; grass coming on; rain very patchy, mostly local storms travelling from east to west. Rainfall: 2·70 inches on five days.—J. C. Collett.

Stanleyvale (*Harrismith*).—A fairly nice month; a cold spell in middle of month; crops doing well, also stock. Rainfall: 3·66 inches on eleven days.—G. C. Atkins.

Rietfontein (*Heilbron*).—We are very dry; all crops a failure hereabouts; no teff; 100 acres of teff have been sown twice, and still a failure. Rainfall: 2·05 inches on 9 days.—E. Wallace.

Heilbron.—Crops: late crops, from all accounts, are doing well; sowing below average. Stock: Condition fair; no diseases; no deaths during month. Rainfall: 1·80 inch on thirteen days.—P. A. du P. Naude.

De Rots (*Hoopstad*).—No veld for large stock; no crops to report about—nearly everything dried up. Rainfall: 0·93 inch on five days.—J. G. Greyling.

Overwinning (*Kroonstad*).—Have not seen any locusts. Very little mealies or kaffir corn will be reaped in this area this season, owing to drought. Rainfall: 1·21 inch on five days.—J. Furlong.

Hibernia (*Senekal*).—Crops are very nice; Stock are fat; no diseases. Rainfall: 2·38 inches on five days.—S. J. Bruwer.

Mount Stephen (*Thaba 'Nchu*).—Crops looking splendid after severe drought. Rainfall: 3·41 inches on nine days.—J. Hartman.

Prospect (*Vrede*).—The weather was rather chilly during the early part of the month, and crops and grass made little growth. By the end of the month all was dry again. Sheep are doing remarkably well this season; cattle fairly so. Rainfall: 1·95 inch on twelve days.—T. Pitcairn.

Ladybrand.—Not much benefit was derived from the rain, as the weather was bright and the sun hot. Stock in good condition, and crops are looking well. Rainfall: 2·07 inches on nine days.—Government Forester.

Holfontein (*Kroonstad*).—Some very cold days and nights were experienced during the month. Stock still in poor condition; crops in general not good; anthrax and gall-sickness reported during the month; several deaths. Rainfall: 3·60 inches on nine days.—H. C. McInerney.

NATAL.

Dundee.—A very pleasant month, but a great deal too cold for February, checking growth of crops. Rainfall: 5·47 inches on fourteen days.—W. Thorrold.

Estcourt.—The outstanding features of the month are the low rainfall, the comparatively low maximum temperatures, and the positively cold weather during the middle of the month. A light fall of snow took place on the Berg on the 11th, and snow was visible until the 13th. The coldest day of the month was the 19th, when a minimum temperature of 45 degrees was recorded. Rain is once more urgently needed. Reports of mealie crops indicate that only a medium harvest can be expected. Rainfall for month: 3·42 inches on ten days.—Town Clerk.

Ladysmith.—Excellent rains during early part of month caused a great improvement in condition of crops and grass. Stock are in better condition than for some time. The latter part of the month was dry, and more rain is needed. A comparatively cool month for February. Rainfall: 4·28 inches on sixteen days.—D. A. R. Leathern.

Nottingham Road.—Very cold snaps for February; heavy fall of snow on the Drakensberg on the 11th; crops not growing well; stock healthy. Rainfall: 4·41 inches on thirteen days.—Miss E. Smythe.

Mid-Illovo.—Good growing weather although wind abnormally cold at times; crops good. Rainfall: 6·81 inches on fifteen days.—Lieut.-Col. J. W. V. Montgomery, C.M.G., D.S.O.

Impendhle.—A very close, muggy atmosphere during the month; a very slight frost on the morning of the 11th, unusual at this time of the year. Good growing weather; crops looking well. Rainfall: 5·09 inches on thirteen days.—T. H. Biddulph.

Paulpietersburg.—Rainfall rather below average, and springs still very low, but crops looking well; a spell of unusually cold weather, without much rain, in the middle of the month. Rainfall: 4·39 inches on eleven days.—Dr. N. Lipscomb.

Greytown.—Rainfall: 4·01 inches on eleven days. Although about an average rainfall for February, conditions were very droughty. Rainfall, however, came at regular intervals, and mealie crops are looking most promising. Grass will be woefully short, and little hay will be cut for the winter. Many springs are running very weak.—J. M. Handley.

Gluckstad (Vryheid).—The rainfall has almost returned to normal, and the drought has now been completely broken. Crops have improved considerably. On the 10th, 11th, and 12th, it was very cold for the time of the year; consequently, growth was for a while retarded. Rainfall: 4·87 inches on eleven days.—F. W. J. Schumann.

Rongpoort (Weenen).—Grass very nice, but short; crops not growing well, owing to insufficient rain and cold weather; very cold at times. Rainfall: 4·56 inches on seven days.—J. H. Bartholomew.

Cape Province.

Aliwal North.—All very dry; only light rains; farmers' prospects for winter bad. Rainfall: 1·27 inches on nine days.—A. Alcock.

Groot Drakenstein.—A thoroughly disagreeable month of heat, wind, and dust; fruit practically finished, thanks largely to help of high winds; vintage about half of last year's; grapes badly scorched; oak trees in many cases as bare as at beginning of June. Rainfall: 0·05 inch on one day.—Lionel Baker.

Murraysburg.—Rainfall for month: 1·06 inch on five days. Rain in portions of the district has been more, but less in other parts. Some places have had no rain at all, and farmers are trekking with their stock. Unless March and April show up a much improved and more general fall of rain, I am afraid that the prospects for the winter will be very gloomy.—W. H. Rose-Innes.

Queenstown.—Rainfall : 1·32 inch on nine days. A very dry month for February ; no veld, and outlook for the winter serious. Hail fell at 2 p.m. on the 7th—exceptionally large pieces of jagged ice ; no wind or much damage.—H. Holley.

Stutterheim.—Rainfall exceptionally low—2·94 inches on fifteen days. Mealie crop exceptionally good ; pasturage excellent ; fruit better than any season during the last twenty-five years.—F. C. Bousfield.

Louisvale (Kenhardt).—Rainfall : 0·75 inch on four days. Veld very dry, and locusts hatching out. Orange River running strongly, and agricultural farmers leading from the river doing well with lucerne and vines.—S. N. Smith.

Tsolo.—Rain badly wanted ; grass drying up, and cattle falling off in condition. Rainfall : 3·26 inches on fourteen days.—H. P. Tillard.

Kraaipan (Mafeking).—A very dry month, the rainfall being 5·37 inches less than that for February last year. There is very little veld feeding, and even if rain comes on now, it will hardly bring on winter grazing. Rainfall : 0·42 inch on five days.—P. J. Hart.

Port Alfred (Bathurst).—Stock generally in good health, but falling off in condition on account of drought. Mealie crop practically dried up, owing to lack of rain and high winds. The hot wind on the 21st had a disastrous effect on garden produce and fruit crops. It is anticipated that the apple crop will be below the average this season. Pines season in full swing, and good crops are recorded. Rainfall : 1·89 inch on five days.—W. H. Pascoe.

Grootfontein (School of Agriculture), Middelburg.—Drought broken ; good rains all round ; veld improving. Rainfall : 2·81 inches on ten days.—E. J. van Meerten.

Vruchtbaar (Wellington).—A monthof south-easters ; considerable damage was done to fruit and grape crops. Rainfall : 0·11 inch on one day.—P. J. Cillie.

Hillandale (Laingsburg).—The drought is getting very bad in this district : farmers are trekking ; practically no rain for three months now. Rainfall : 0·12 inch on three days.—V. Young.

Katberg (Stockenstroom). Hailstorm on the 4th ; there was considerable damage done to crops and young trees ; hail was the size of pigeons' eggs. Rainfall : 5·40 inches on eleven days.—T. Staples.

Great Kei Drift (Stutterheim).—Grazing very scanty ; crops backward ; only about 75 per cent. sown ; sheep dying freely ; cattle in good condition. Rainfall : 0·95 inch on five days.—M. E. Acton.

Bechuanaland Protectorate.

Molepolole.—Veld in bad condition ; natives have not ploughed. Rainfall : 2·29 inches on nine days.—B. P. Police.

Kalamarie.—The veld is at its best ; cattle are looking fit. Rainfall : 4·87 inches on six days.—E. Smith.

Dikgatlong Ranch (Tuli Block). The drought eventually broke on the 6th instant. Total rainfall was 4·60 inches, and fell on nine consecutive days. The fall was very soft, and there was an almost total absence of lightning and thunder. For the remainder of the month the weather has been dry, hot, and almost cloudless. The veld has responded to the change and, helped by the dews, is now fairly good ; but unless we get much more rain during March and April, the district will be faced by a terrible winter, both as regards veld and underground water supplies. The Limpopo, which should have its maximum stream, is barely running. No locusts.—Paul Jousse.

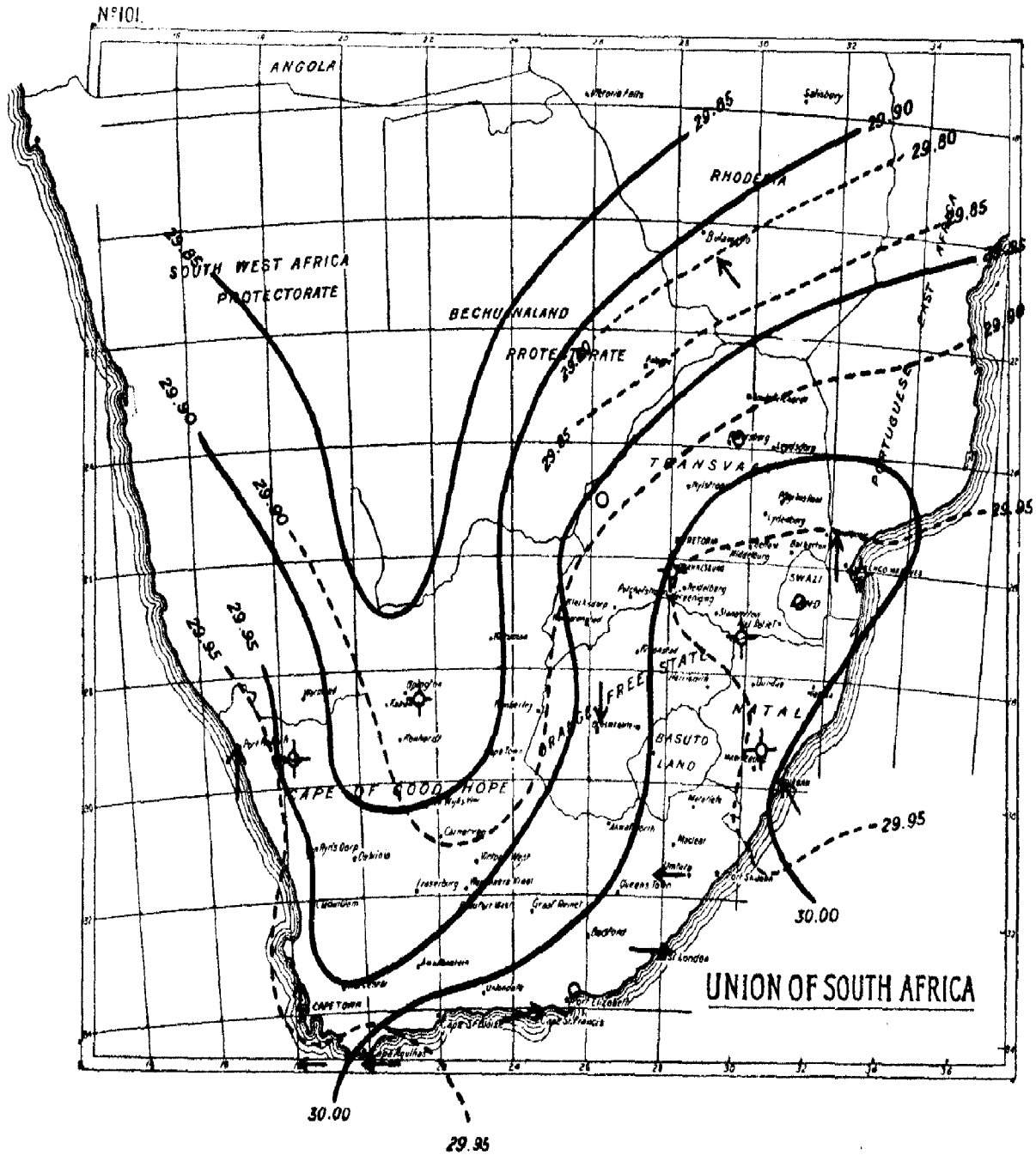
AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS) FEBRUARY, 1924.

Place.	Observer.	Month—Feb., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Transvaal—										
Barberton	W. Grubb	80·7	60·9	70·8	72·4	− 1·6	94·0	26th	53·0	15th and 19th.
Belfast	The Forester	69·0	46·0	57·5	62·4	− 4·9	80·0	27th	34·0	22nd.
Bloemhof	F. Osborne	85·9	60·6	73·3	72·0	+ 1·3	97·0	6th	50·0	11th.
Ermelo	The Forester	73·0	49·8	61·4	65·3	− 3·9	85·4	29th	42·5	18th.
Johannesburg (Observatory)	The Staff	72·9	52·4	62·6	64·4	− 1·8	82·2	1st	40·7	19th.
Klerksdorp (Strathmore)	Chas. Scott	83·2	57·9	70·6	72·7	− 2·1	94·0	29th	49·0	11th, 12th, and 13th.
Komatipoort	H. J. Evans	91·2	68·1	79·6	79·4	+ 0·2	103·0	4th	59·0	15th.
Louis Trichardt	C. L. Cope	75·5	56·9	66·2	69·9	− 3·7	90·0	5th and 27th	50·0	19th.
Middelburg	Dr. H. A. Spencer	76·4	52·1	64·3	68·1	− 3·8	85·0	27th	45·0	14th and 15th.
Nylstroom	G. Bakker	80·0	56·3	68·2	71·4	− 3·2	92·0	27th	46·0	19th and 21st.
Pietersburg	W. J. Frankleyne	79·9	55·3	67·6	69·6	− 2·0	92·0	5th and 27th	45·0	19th.
Piet Retief	J. Werner	75·1	53·5	64·3	67·1	− 2·8	86·0	3rd and 26th	45·2	13th.
Pigeonhole	Jno. McCallum	72·7	57·5	65·1	—	—	82·0	5th and 27th	49·0	19th.
Pilgrims Rest	E. M. Skea	74·6	54·6	64·6	67·0	− 2·4	87·0	26th	47·5	15th and 16th.
Potchefstroom (Exp. Farm)	The Manager	82·5	56·8	69·7	69·8	− 0·1	91·2	1st	47·2	13th.
Pretoria (Meteorological Office)	The Staff	77·4	56·9	67·2	70·6	− 3·4	87·6	27th	48·9	19th.
Rustenburg	J. Streatfield	82·8	57·0	69·9	73·2	− 3·3	99·0	17th	48·0	19th.
Standerton	W. J. Madge	78·4	49·4	63·9	66·4	− 2·5	86·8	29th	38·0	20th.
Zeerust	H. Dietrich	84·9	59·3	72·1	73·0	− 0·9	98·7	4th	50·2	15th.
Swaziland—										
Mbabane	Swaziland Police	74·2	55·9	65·0	66·8	− 1·8	85·0	27th	48·0	14th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	82·1	57·0	69·6	71·9	− 2·3	92·0	29th	47·0	13th.
Bloemfontein	G. A. Schepers	81·2	57·1	69·1	71·2	− 2·1	90·6	4th	44·5	12th.
Harrismith	The Forester	70·2	48·4	59·3	64·6	− 5·3	79·0	4th and 26th	35·0	19th.
Kroonstad	S. R. Northfield	80·6	56·6	68·6	71·4	− 2·8	90·2	29th	45·7	19th.
Ladybrand	The Forester	76·1	51·7	63·9	68·0	− 4·1	84·0	22nd and 29th	44·0	12th.
Lindley	—	—	—	—	68·4	—	—	—	—	—
Natal—										
Dundee	W. Thorrold	76·0	53·7	64·8	71·2	− 6·4	89·0	4th	43·0	14th.
Durban (Point)	The Port Captain	80·0	69·0	74·5	76·6	− 2·1	87·4	16th	60·4	11th.
Empangeni	The Forester	83·4	66·1	74·8	77·4	− 2·6	99·0	4th	57·0	12th.
Estcourt	The Town Clerk	78·1	56·0	67·0	71·0	− 4·0	88·0	4th	45·0	19th.
Hlabisa	—	—	—	—	73·4	—	—	—	—	—
Ladysmith	D. A. R. Leathern	80·9	58·8	69·8	76·3	− 6·5	91·0	4th	49·0	13th.
Maritzburg (Mental Hospital)	The Staff	78·9	60·1	69·5	73·4	− 3·9	93·2	4th	52·0	14th and 19th.
Stanger	C. C. Foss	82·1	66·0	74·1	77·2	− 3·1	91·0	25th	58·0	12th.
Weenen	The Gaoler	82·9	58·2	70·6	76·0	− 5·4	95·0	4th	48·0	18th.

AIR TEMPERATURES, FEBRUARY, 1924—(*continued*).

Place.	Observer.	Month—Feb., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
Transvaal—		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Allwal North	A. Alcock	82·5	54·7	68·6	69·2	− 0·6	80·5	25th	45·0	11th.
Bedford	T. C. Hall	81·5	56·8	69·2	70·7	− 1·5	95·0	25th	46·7	18th.
Capetown (Royal Observatory)	The Staff	81·7	61·5	71·6	69·7	+ 1·9	99·8	14th	55·8	3rd.
Carnarvon	A. P. Malherbe	86·7	58·2	72·4	69·4	+ 3·0	95·0	3rd	45·0	12th.
East London	The Port Captain	75·8	62·6	69·2	69·5	− 0·3	83·5	5th	56·0	29th.
Graaff-Reinet (Convent)	The Mother Superior.	87·3	58·8	73·0	74·0	− 1·0	98·3	2nd and 9th.	47·0	12th.
Grahamstown	The Vet. Res. Officer.	78·5	54·9	66·7	70·8	− 4·1	99·6	9th	42·6	13th.
Groot Drakenstein	L. Baker	88·1	61·4	74·8	72·6	+ 2·2	100·1	2nd	51·0	27th.
Kenhardt	R. Seydell	94·1	65·1	79·6	78·6	+ 1·0	102·0	3rd and 24th.	54·0	11th and 12th.
Kimberley	F. W. J. Schmidt	86·3	61·0	73·6	75·2	− 1·6	95·0	5th, 23rd, 24th, and 29th	49·0	11th.
Kingwilliamstown	W. Kindness	81·0	58·7	69·8	73·0	− 3·2	100·0	9th	50·0	13th.
Kokstad	H. D. Coyte	75·0	51·4	63·2	66·4	− 3·2	88·6	4th	41·0	19th.
Mafeking (Convent)	The Mother Superior.	84·5	58·6	71·6	72·9	− 1·3	93·8	5th	50·5	11th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	74·1	63·3	68·7	69·6	− 0·9	81·0	20th	56·0	10th.
Murraysburg	W. H. Rose-Innes	82·8	54·5	68·7	69·3	− 0·6	94·0	3rd	38·5	12th.
O'okiep	J. Burrows	87·1	61·5	74·3	72·2	+ 2·1	97·0	24th	47·5	27th.
Port Elizabeth	The Lightkeeper	75·4	62·8	69·1	69·8	− 0·7	80·0	3rd, 8th, 9th, and 24th	58·0	11th and 29th.
Port Nolloth	The Lightkeeper	67·5	53·4	60·5	60·1	+ 0·4	102·0	14th	48·0	11th.
Port St. Johns	The Lightkeeper	75·9	66·1	71·0	72·4	− 1·4	82·0	3rd	60·0	11th and 12th.
Queenstown	H. Holley	82·8	57·4	70·1	69·9	+ 0·2	95·0	25th	47·0	13th.
Somerset East	C. Harris	80·9	57·5	69·2	71·4	− 2·2	96·4	9th	48·4	12th.
Stutterheim	F. C. Bousfield	77·0	57·0	67·0	68·0	− 1·0	96·0	25th	46·5	13th.
Sydney's Hope	Rev. S. Rippon	78·1	57·7	67·9	70·2	− 2·3	92·0	21st	51·0	11th.
Uitenhage	H. Inggs	82·7	59·3	71·0	73·4	− 2·4	104·5	21st	52·6	29th.
Umtata	P. Hackett	80·5	58·3	69·4	70·6	− 1·2	97·9	25th	48·1	12th.
Vryburg	C. Butler	86·4	60·4	73·4	75·2	− 1·8	94·0	23rd	53·0	11th, 12th, and 13th.
Wynberg (Convent)	The Mother Superior.	81·1	61·5	71·3	68·8	+ 2·5	94·5	14th	57·0	27th.
Basutoland—										
Mafeking	F. Hodgson	76·5	53·3	64·9	70·8	− 5·9	85·0	24th	45·0	12th.

R K H JULY 1924



February, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for February.

RAINFALL, FEBRUARY, 1924.

Place.	Observer.	Month. Feb., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	4·47	4·41	+ 0·06	6·59	10·92	− 4·33	16·73	24·94	− 8·21
Belfast	The Forester	7·43	3·54	+ 3·89	12·25	9·69	+ 2·56	25·69	25·62	+ 0·07
Bethal	H. J. Joubert	4·17	3·87	+ 0·30	7·51	9·20	− 1·69	17·15	24·81	− 7·66
Bloemhof	F. Osborne	2·54	3·71	− 1·17	5·56	7·12	− 1·56	9·17	13·66	− 4·49
Ermelo	The Forester	2·16	3·15	− 0·99	7·32	9·27	− 1·95	16·85	26·39	− 9·54
Haenertsburg	S.A. Police	1·90	5·95	− 4·05	6·16	15·34	− 9·18	17·46	29·33	−11·87
Heidelberg	W. ter Horst	4·64	4·81	− 0·17	8·35	9·51	− 1·16	16·67	23·54	− 6·87
Johannesburg (Observatory)	The Staff	2·91	4·97	− 2·06	6·79	10·54	− 3·75	15·99	24·92	− 8·93
Klerksdorp (Strathmore)	C. Scott	1·49	3·94	− 2·45	3·46	8·00	− 4·54	7·43	17·80	−10·37
Komatipoort	H. J. Evans	1·99	5·66	− 3·67	3·94	10·66	− 6·72	10·12	20·57	−10·45
Louis Trichardt	C. L. Cope	2·69	5·87	− 3·18	4·63	12·24	− 7·61	14·59	24·15	− 9·56
Middelburg	Dr. H. A. Spencer	6·65	4·14	+ 2·51	11·86	9·39	+ 2·47	22·55	23·53	− 0·98
Nylstroom	G. Bakker	5·32	3·83	+ 1·49	6·95	9·03	− 2·08	14·00	19·79	− 5·79
Pietersburg	W. Franklyne	2·62	3·35	− 0·73	7·23	7·63	− 0·40	16·21	17·53	− 1·32
Piet Retief	J. Werner	3·76	4·99	− 1·23	8·22	11·54	− 3·32	18·67	29·58	−10·91
Pigeonhole (New Agatha)	J. McCallum	3·91	9·36	− 5·45	11·43	18·43	− 7·00	24·54	37·24	−12·70
Pilgrims Rest	E. M. Skea	3·21	7·84	− 4·63	6·40	16·21	− 9·81	18·24	30·55	−12·31
Potchefstroom (Exp. Farm)	The Manager	3·47	3·86	− 0·39	5·95	8·01	− 2·06	11·55	19·01	− 7·46
Pretoria (Meteorological Office)	The Staff	4·31	4·80	− 0·49	7·06	10·66	− 3·60	16·80	24·13	− 7·33
Rooiberg	N. H. Munro	4·39	3·57	+ 0·82	5·54	9·56	− 4·02	13·54	20·22	− 6·68
Rustenburg	A. Streatfield	4·20	4·23	− 0·03	7·93	9·26	− 1·33	15·00	21·21	− 6·21
Standerton	W. J. Madge	1·64	5·17	− 3·53	6·62	9·48	− 2·86	18·57	25·76	− 7·19
Wakkerstroom	J. Cilliers	2·85	4·85	− 2·00	—	—	—	—	—	—
Woodbush I.	The Forester	3·19	12·81	− 9·62	7·75	29·58	−21·83	23·67	55·66	−31·99
Zeerust	H. Dietrich	3·34	4·31	− 0·97	4·02	8·76	− 4·74	15·85	18·49	− 2·64
Swaziland—										
Mbabane	Swaziland Police	7·22	8·22	− 1·00	13·20	18·59	− 5·39	34·14	42·10	− 7·96
Orange Free State—										
Bethulie	J. J. Wardhaugh	1·87	3·22	− 1·35	3·42	5·86	− 2·44	7·96	12·05	−4·09
Bloemfontein	G. A. Schepers	1·32	3·31	− 1·99	5·15	7·07	− 1·92	9·79	14·86	− 5·07
Boshof	The Postmaster	1·58	2·77	− 1·19	5·12	5·82	− 0·70	7·87	13·18	− 5·31
Harrismith	The Forester	5·55	4·46	+ 1·09	10·74	9·50	+ 1·24	21·45	23·48	− 2·03
Kroonstad	S. R. Northfield	1·72	3·56	− 1·84	4·05	7·77	− 3·72	9·89	17·71	− 7·82
Ladybrand	The Forester	2·07	4·07	− 2·00	6·86	8·85	− 1·99	14·38	20·84	− 6·46
Lindley	—	—	3·57	—	—	7·83	—	—	18·49	—
Natal—										
Dundee	W. Thorrold	5·47	4·69	+ 0·78	12·55	10·73	+ 1·82	22·09	25·16	− 3·07
Durban (Point)	The Port Captain	4·65	4·69	− 0·04	12·41	9·05	+ 3·36	26·36	29·77	− 3·41
Empangeni	The Forester	3·15	5·26	− 2·11	4·48	11·14	− 6·66	14·97	32·98	−18·01
Estcourt	The Town Clerk	3·42	4·83	− 1·41	9·40	10·42	− 1·02	18·38	22·76	− 4·38
Hlabisa	The Gaoler	—	5·72	—	—	12·97	—	—	33·89	—
Howick	The Gaoler	4·88	5·49	− 0·61	10·09	10·73	− 0·64	21·32	25·76	− 4·44

RAINFALL, FEBRUARY, 1924—(*continued*).

Place.	Observer.	Month. Feb., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Ladysmith	D. A. R. Leathern	4·28	5·23	− 0·95	9·98	9·88	+ 0·10	18·63	22·13	− 3·50
Maritzburg (Mental Hospital)	The Staff	4·30	5·54	− 1·24	9·67	11·52	− 1·85	16·65	28·78	−12·13
Stanger	C. C. Foss	3·77	4·45	− 0·68	8·86	9·70	− 0·84	21·65	32·20	−10·55
Vrijheid	The Gaoler	3·64	4·65	− 1·01	8·74	11·54	− 2·80	21·46	28·31	− 6·85
Weenen	The Gaoler	4·13	4·31	− 0·18	6·89	9·83	− 2·94	14·30	21·93	− 7·63
Cape Province—										
Aliwal North	A. Alcock	1·27	3·40	− 2·13	3·09	6·29	− 3·20	7·13	14·05	− 6·92
Beaufort West	The Gaoler	2·10	1·22	+ 0·88	3·34	2·31	+ 1·03	6·11	5·81	+ 0·30
Bedford	T. C. Hall	3·36	3·50	− 0·14	5·73	6·87	− 1·14	12·26	17·88	− 5·62
Britstown	The Gaoler	0·92	1·93	− 1·01	1·34	3·07	− 1·73	3·00	6·31	− 3·31
Calvinia	The Gaoler	1·08	0·42	+ 0·66	1·56	0·79	+ 0·77	4·36	4·28	+ 0·08
Capetown (Royal Observatory)	The Staff	0·01	0·58	− 0·57	0·27	1·27	− 1·00	13·20	14·19	− 0·99
Ceres	A. Heatlie	0·16	0·55	− 0·39	0·57	1·57	− 1·00	18·51	24·36	− 5·85
Carnarvon	A. P. Malherbe	2·62	1·26	+ 1·36	3·74	2·28	+ 1·46	5·39	4·52	+ 0·87
Clanwilliam	The Gaoler	0·00	0·23	− 0·23	0·09	0·45	− 0·36	2·70	4·78	− 2·08
Concordia	F. H. Carstens	0·00	0·47	− 0·47	0·01	0·65	− 0·64	1·37	3·35	− 1·98
Driefontein (French Hoek)	The Forester	0·00	0·60	− 0·60	1·30	2·76	− 1·46	51·90	41·24	+10·66
East London	A. Downie	1·07	3·28	− 2·21	5·58	6·47	− 0·89	25·34	22·72	+ 2·62
Fraserburg	The Gaoler	1·35	0·94	+ 0·41	1·94	1·67	+ 0·27	3·42	3·67	− 0·25
Grahamstown	Vet. Res. Officer	1·99	2·79	− 0·80	3·88	5·32	− 1·44	12·31	19·12	− 6·81
George (Rectory)	Rev. Canon B. Price	1·91	3·50	− 1·59	4·01	6·58	− 2·57	15·19	23·04	− 7·85
Garies	The Gaoler	0·00	0·13	− 0·13	0·00	0·27	− 0·27	1·56	2·78	− 1·22
Graaff-Reinet (Convent)	The Mother Superior	1·18	1·82	− 0·64	2·81	3·19	− 0·38	8·16	8·86	− 0·70
Groot Drakenstein	Lionel Baker	0·05	0·61	− 0·56	1·02	1·71	− 0·69	24·08	20·29	+ 3·79
Griquatown	The Gaoler	2·01	2·21	− 0·20	3·80	3·97	− 0·17	4·15	7·66	− 3·51
Hanover	The Gaoler	0·64	2·10	− 1·46	1·90	3·75	− 1·85	3·40	7·82	− 4·42
Hopetown	The Gaoler	3·38	1·87	+ 1·51	4·21	3·76	+ 0·45	6·20	7·52	− 1·32
Kenhardt	R. Seydell	0·00	1·21	− 1·21	0·72	1·78	− 1·06	1·68	3·31	− 1·63
Kimberley	F. Schmidt	0·85	2·64	− 1·79	3·02	4·97	− 1·95	5·54	10·70	− 5·16
Knysna	The Gaoler	1·62	2·12	− 0·50	3·42	4·22	− 0·80	14·95	19·13	− 4·18
Kokstad	H. D. Coyte	5·01	4·24	+ 0·77	11·03	8·76	+ 2·27	23·95	20·41	+ 3·54
Kingwilliamstown	W. Kindness	1·55	3·29	− 1·74	4·03	5·83	− 1·80	19·23	17·49	+ 1·74
Kuruman	—	—	3·20	—	—	6·49	—	—	11·42	—
Mafeking (Convent)	The Mother Superior	3·47	3·69	− 0·22	5·16	7·92	− 2·76	12·75	17·18	− 4·43
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·93	1·46	− 0·53	2·37	2·64	− 0·27	8·74	11·13	− 2·39
Murraysburg	W. H. Rose-Innes	1·06	1·61	− 0·55	2·78	2·72	+ 0·06	5·72	6·29	− 0·57
O'okiep	J. Burrows	0·00	0·33	− 0·33	0·00	0·54	− 0·54	1·78	3·84	− 2·06
Philipstown	The Gaoler	2·75	2·19	+ 0·56	4·36	3·88	+ 0·48	5·54	8·04	− 2·50
Piquetberg	The Gaoler	0·08	0·48	− 0·40	0·77	1·03	− 0·26	9·39	12·46	− 3·07
Port Elizabeth	The Lightkeeper	0·92	1·34	− 0·42	2·83	2·54	+ 0·29	9·96	14·66	− 4·70
Port St. Johns	The Lightkeeper	3·89	5·81	− 1·92	12·52	10·73	+ 1·79	36·62	35·70	+ 0·92
Port Nolloth	The Lightkeeper	0·00	0·05	− 0·05	0·00	0·12	− 0·12	0·88	1·20	− 0·32
Prieska	The Gaoler	0·60	1·57	− 0·97	0·62	2·80	− 2·18	1·55	5·22	− 3·67
Queenstown	H. Holley	1·32	4·04	− 2·72	3·06	7·42	− 4·36	7·17	16·26	−11·09

RAINFALL, FEBRUARY, 1924—(*continued*).

Place.	Observer.	Month. Feb., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Steytlerville	The Gaoler	1·04	1·24	− 0·20	1·89	2·06	− 0·17	4·94	5·78	− 0·84
Sutherland	The Gaoler	0·43	0·67	− 0·24	1·14	1·17	− 0·03	4·02	5·14	− 1·12
Swellendam	The Gaoler	1·93	2·76	− 0·83	3·61	5·17	− 1·56	12·00	20·77	− 8·77
Sydneyshope	Rev. S. Rippon	3·34	2·01	+ 1·33	4·72	4·07	+ 0·65	12·71	14·99	− 2·28
Somerset East	C. Harris	2·91	3·26	− 0·35	4·78	6·05	− 1·27	13·25	17·26	− 4·01
Stutterheim	F. C. Bousfield	2·94	4·34	− 1·40	8·52	8·26	+ 0·26	24·90	21·47	+ 3·43
Uitenhage	H. Inggs	1·40	1·60	− 0·20	2·72	2·71	+ 0·01	10·92	11·15	− 0·23
Umtata	Miss N. Dix Peek	2·40	3·62	− 1·22	5·79	7·18	− 1·39	15·74	18·16	− 2·42
Uniondale	The Gaoler	0·33	0·95	− 0·62	0·87	1·63	− 0·76	5·32	8·01	− 2·69
Upington	The Gaoler	0·20	1·04	− 0·84	1·58	1·87	− 0·29	1·92	3·84	− 1·92
Victoria West	The Gaoler	1·61	1·90	− 0·29	2·49	2·95	− 0·46	4·31	6·13	− 1·82
Vryburg	Chas. Butler	0·41	3·61	− 3·20	2·30	7·76	− 5·46	9·89	13·66	− 3·77
Worcester	The Gaoler	0·00	0·35	− 0·35	0·18	0·60	− 0·42	3·97	7·26	− 3·29
Wynberg (Convent)	The Mother Superior	0·00	0·45	− 0·45	0·50	1·82	− 1·32	24·87	27·66	− 2·79
Basutoland—										
Mafeteng	F. Hodgson	2·95	4·61	− 1·66	5·44	10·09	− 4·65	20·76	22·42	− 1·66
South-West Africa—										
Aus	E. Marthins	0·23	0·58	− 0·35	0·23	0·67	− 0·44	2·98	1·83	+ 1·15
Bethanie	Rev. Peter	0·23	0·97	− 0·74	0·33	2·12	− 1·79	1·73	2·87	− 1·14
Duesternbrock	I. and R. Matthiessen	1·14	3·86	− 2·72	2·22	6·40	− 4·18	2·80	8·79	− 5·99
Franzfontein	H. Janson	0·93	2·41	− 1·48	2·28	4·19	− 1·99	2·97	6·29	− 3·32
Gabis	Rev. P. Rehor	0·61	0·75	− 0·14	0·61	0·86	− 0·25	2·31	2·14	+ 0·17
Garmais	F. Bertling	0·90	1·43	− 0·53	1·36	1·95	− 1·59	4·32	3·39	+ 0·93
Gibeon	Rev. Spellmeyer	0·91	1·70	− 0·79	1·19	3·09	− 1·90	1·81	7·18	− 5·37
Gobabis	Rev. Irle	2·07	3·76	− 1·69	4·34	7·77	− 3·43	6·83	11·63	− 4·80
Grootfontein	Pitkowski	5·41	5·77	− 0·36	6·66	11·38	− 4·72	10·07	18·00	− 7·93
Gr. Witvley	Maass	0·59	3·71	− 3·12	2·20	6·81	− 4·61	3·51	10·24	− 6·73
Haribes	Capt. Meyer	0·38	3·26	− 2·88	0·81	3·85	− 3·04	1·21	5·20	− 3·99
Heirachabis	Rev. P. Sroka	0·01	0·84	− 0·83	0·28	1·09	− 0·81	2·03	2·00	+ 0·03
Maltahoehe	E. Just	0·26	1·40	− 1·14	0·26	2·54	− 2·28	0·86	3·50	− 2·64
Neu-Heusis	Liebig's Extract Co.	1·46	4·21	− 2·75	2·42	7·43	− 5·01	3·12	10·35	− 7·23
Okandjose	Von Gossler	0·73	6·22	− 5·49	2·34	8·16	− 5·82	5·28	10·76	− 5·48
Okahandja	B. Templin	1·80	3·16	− 1·36	2·41	6·30	− 3·89	3·01	8·29	− 5·28
Okasangumingo	R. H. A. Schneider	3·01	5·17	− 2·16	5·19	7·78	− 2·59	9·36	12·87	− 3·51
Omaruru	The Postmaster	3·39	2·80	+ 0·59	4·02	6·21	− 2·19	4·56	8·34	− 3·78
Rehoboth	The Postmaster	0·40	2·30	− 1·90	0·71	4·69	− 3·98	0·71	6·77	− 6·06
Rietfontein	B. Leist	2·85	5·25	− 2·40	3·86	9·19	− 5·33	6·74	15·56	− 8·82
Swakopmund	The Gaoler	0·01	0·10	− 0·09	0·01	0·20	− 0·19	0·02	0·49	− 0·47
Tsumeb	Ing. Schetter	3·74	6·35	− 2·61	5·65	12·17	− 6·52	8·85	19·29	−10·44
Usakos	Rev. Diehl	0·33	1·29	− 0·96	0·41	2·38	− 1·97	0·41	3·37	− 2·96
Voigtsgrund	A. Voigts	3·28	2·80	+ 0·48	3·59	3·81	− 0·22	4·68	5·10	− 0·42
Waterberg	D. Hahn	1·48	4·80	− 2·32	3·33	9·59	− 6·26	7·12	14·63	− 7·51
Windhoek	Observatory	0·95	2·85	− 1·90	2·78	5·96	− 3·18	5·57	8·88	− 3·31

8396—11/12/24—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METERIOLOGICAL OFFICE.

Vol. V. MARCH, 1924. No. 51.

PRESSURE slightly above normal over the Free State and along the south and east coasts, normal over the centre and west of the Union; low day temperatures over the whole country, but with the nights warmer than usual in Natal, the Transvaal, Free State, and the districts of the Cape contiguous to the western borders of the last-mentioned Provinces; a cold spell at the end of the month, but no frost causing material damage; widespread rainfall, good both with regard to the intervals at which it fell and with amount, being above the normal over the Transvaal, Free State, the northern half of Natal, and the centre and north-east of the Cape; destructive hailstorms on the 1st, 4th, 11th, and 14th inst. in the Ladysmith (Natal), Queenstown, Colesberg, and Piet Retief Districts respectively; gales causing damage in the Barberton and Fauresmith Districts on the 14th and 21st; such were the most prominent features of the weather of March, 1924.

Pressure.—The mean pressure during March was practically normal over the centre and west, but slightly above the average on the south and east coasts, and over the east of the Free State. The equatorial depression was present on twenty-three days, but was less well-marked towards the end of the month. A series of high, alternating with low, pressure areas passed along the southern coasts. High pressure areas lay over the south to south-east and east on 1st to 2nd, 9th to 11th, 14th to 17th, 23rd to 24th, and 28th to 31st, and over the west on the 27th. Low pressures affected the south-west on the 2nd and 17th, the south to south-east and east on the 11th to 13th, 18th to 20th, 26th to 28th; the south on the 3rd and 22nd, and the south-east on the 6th.

Temperature.—The mean temperature during March was 67·6 degrees, or 0·9 degree lower than normal. The deficit was due to the mean day temperature (77·4 degrees) being 2·4 degrees lower than usual, whilst the mean night temperature (57·8 degrees) was 0·6 degree higher than the average. An excess in the temperature of the month was common to the Transvaal and the Free State, the former (with 68·0 degrees) being 0·7 degree, and the latter (with 65·2 degrees) being 0·2 degree warmer than the average. On the other hand,

APR 25 1925

the mean monthly temperatures of the Cape Province (67·0 degrees) and of Natal (70·5 degrees) were sub-normal by 1·8 degree and 1·9 degree respectively. Day temperatures lower than usual were common to all four Provinces. Thus, in the Transvaal, the mean maximum of 76·8 degrees, and the corresponding temperature (75·0 degrees) in the Orange Free State, were both 2·1 degrees less than the corresponding normals; the mean day temperature of 77·7 degrees in the Cape Province and 78·9 degrees in Natal were respectively 2·0 degrees and 4·8 degrees below the respective averages. An excess in the mean night temperatures occurred in three of the four Provinces, the Cape Province (with a mean minimum of 56·2 degrees) being 1·6 degree cooler than usual. In the Transvaal, the mean night temperature of 59·2 degrees was 3·4 degrees higher than the normal; in the Orange Free State the mean minimum (55·4 degrees) was 2·4 degrees above the average, whilst the corresponding value of 62·1 degrees in Natal was 1·0 degree in excess of the normal. Comparing the mean temperatures for this month at the individual stations over the country with their respective normals, it is seen that they were in excess of the usual values at most stations in the Transvaal, also in the north, east, and south of the Free State, the east of Kaffraria, and at Kenhardt in the Cape Province. In the Free State and the Cape the excesses were small, less than 1 degree, but in the Transvaal, including Swaziland, they were mostly over 1 degree, varying, however, from 2·7 degrees at Bloemhof to 0·1 degree at Johannesburg and Zeerust. Elsewhere the month was cooler than usual. In the extreme north, the south centre, and part of the south-west of the Transvaal, the north-east of the Free State, parts of the Transkei, of the south-east and midlands of the Cape Province, the south of Bechuanaland, and the coast of Namaqualand, and one or two stations in Natal, the deficits were less than 1 degree; over the remainder of the country the sub-normal amounts were generally between 2 and 3 degrees, ranging in Natal from 0·6 degree at Stanger to 2·8 degrees at Estcourt, and in the Cape Province from 0·4 degree at Vryburg to 4·9 degrees at Grahamstown. At Empangeni (Natal) the temperature of the month was normal. Supra-normal day temperatures were confined to portions of the south-east of the east-central Karroo and of the northern border of the Cape Province, also on the coast of Namaqualand; and in the Transvaal to the neighbourhood of Pietersburg in the north, where there was an excess of 1·3 degree. In the Cape Province, the excesses in the mean maximum temperature were all less than one degree, ranging from 0·1 degree at East London to 0·9 degree at Kenhardt. At Barberton, in the eastern low veld, the days were normal. The deficits were usually large—2–5 degrees. In the Transvaal, the deficits in the mean day temperatures were least in the east and south, and greatest over the centre, varying from 0·1 degree at Pilgrims Rest to 5·7 degrees at Rustenburg. In the Free State, the shortages were least in the east and south, greater over the centre and north, and greatest in the north-east, ranging from 1·1 degree at Ladybrand to 3·6 degrees at Harrismith. In Natal, the mean maxima were lower than usual, generally by 4–6 degrees, but varying from 2·3 degrees at Empangeni to 6·3 degrees at Ladysmith. In the Cape Province the sub-normal quantities lay mostly between 1 and 3 degrees, but varied from 0·2 degree at Umtata to 5·4 degrees at Mafeking. The nights were uniformly warmer than usual over the Transvaal, Free State, and Natal, also over those parts of the Cape bordering the other three Provinces. The only exceptions to this broad statement were Estcourt and Dundee, in Natal, where the night temperatures were slightly lower than usual. The excesses of the mean minima in the Transvaal were mostly between 2 and 4 degrees, varying, however, from 0·9 degree at Louis Trichardt in the north to 5·8 degrees at Bloemhof in the south-west. In the Free State, the excesses were generally over 2 degrees, being greatest

(3·6 degrees) at Kroonstad, and least (1·5 degrees) at Ladybrand. In Natal, the surplus amounts were generally between 1 degree and 2 degrees, the greatest positive departures being 2·3 degrees at Empangeni and the least (0·7 degrees) at Durban. In the Cape Province, the excesses in mean minimum temperatures were over 2 degrees, but less than 1 degree in the remainder of the area indicated above, being least (0·3 degree) at Aliwal North and greatest (2·8 degrees) at Vryburg. The deficits in night temperatures over the rest of the Cape Province were mostly between 2 and 3 degrees, but varied from 0·1 degree at Kenhardt to 6·1 degrees at Grahamstown. In the Transvaal, the mean temperature of the month varied between 77·4 degrees at Komatipoort and 60·0 degrees at Belfast, a difference of 17·4 degrees; in the Free State between 67·7 degrees at Kroonstad and 60·4 degrees at Harrismith, a difference of 7·3 degrees: in Natal from 73·9 degrees at Empangeni and 66 degrees at Dundee, a difference of 7·9 degrees; and in the Cape Province between 75·2 degrees at Kenhardt and 58·6 degrees at Port Nolloth, a difference of 16·6 degrees. The mean warmest station during March was, therefore, Komatipoort, with 77·4 degrees, and the mean coolest Port Nolloth, with 58·6 degrees, a difference of 18·8 degrees. The warmest days were experienced at Kenhardt, where the mean maximum for the month was 89·7 degrees; whilst the coolest nights were met with at Murraysburg, where the mean minimum was 48·7 degrees. The highest temperature readings were registered on eighteen days, viz., 1st, 2nd, 4th, 6th, 7th, 11th to 14th, 18th to 20th, 22nd, 23rd, 25th, 26th, 30th, and 31st, but principally on the 1st. The lowest temperatures occurred on twelve days: 9th, 10th, 12th, 14th to 16th, 22nd, 23rd, 28th to 31st, most widely on the last day of the month. Temperatures of 100 degrees or over were confined to the Cape Province, where 100 degrees occurred at Kenhardt on the 1st, and 101 degrees at Port Nolloth on the 31st. Extreme minima of 40 degrees or lower were met with only in the Cape Province, where the lowest reading (38·2 degrees) was noted at Grahamstown on the 15th. There was therefore an extreme range of 62·8 degrees over the Union during March. *Frost* on the 23rd, and two or three days later, caused damage to vegetables at Nelspoort (Beaufort West); this phenomenon was also reported to have occurred in the Somerset East District.

Precipitation.—Frequent good rains produced an excess over the greater part of the summer rainfall area, the Transvaal and Swaziland, with the exception of the south centre, the Free State, except in the north-west and north-east, Basutoland, the northern half of Natal, the north-east and portion of the south-east of the Cape Province, and of the east central Karroo, the east of the northern Karroo, the northern border, Gordonia and Bechuanaland; also isolated areas in the south-west of the Cape Province. The excesses in the Transvaal were mostly large, commonly from 2–6 inches, but varied from 0·61 inch (or 20 per cent.) at Rooiberg to 10·88 inches (or 168 per cent.) at Pigeonhole (New Agatha), in the Zoutpansberg Division. In the Free State, the surplus amounts increased from north to south, being 1·61 inch (or 46 per cent.) at Kroonstad and 6·89 inches (or 237 per cent.) at Bethulie. In Natal, the positive departures from normal lay between 0·12 inch (or 3 per cent.) at Ladysmith, and 2·06 inches (or 55 per cent.) at Vryheid and Empangeni. In the Cape Province, the plus amounts over the more easterly portions of the areas indicated above were mostly between 1 and 4 inches, but were generally less than 1 inch in the more westerly section; they ranged, however, from 0·07 inch (or 12 per cent.) at Piquetberg in the west to 5·91 inches (or 288 per cent.) at Aliwal North. Over the remainder of the Cape Province the rainfall was sub-normal, usually by amounts of less than 1 inch, but exceeding 1 inch in parts of the south coast, of the west central Karroo, and of Kaffraria.

The deficits there varied from 0·14 inch (or 54 per cent.) at Clanwilliam to 3·35 inches (or 60 per cent.) at Port St. Johns. In the southern half of Natal the shortages were generally between 1 and 2½ inches, and varied from 1·10 inch (or 37 per cent.) at Weenen to 3·06 inches (or 60 per cent.) at Durban (Point). In the Transvaal and Orange Free State, the minus quantities were mostly small, half an inch or less, the departures lying between 4 per cent. and 16 per cent. Absolute drought prevailed over the greater part of the west coastal area.

Thunderstorms appear to have been of greatest frequency and intensity in the north-east and south-east of the Cape Province, particularly in the Barkly East Division, where the thunder and lightning were described as terrific; several head of cattle were killed at Lauriston. A few *Hailstorms* occurred in the Free State, but no damage was reported. In the Klip River Division of Natal, some farmers suffered severe losses to crops by hail on the 1st. At Queenstown, a storm of this nature continued for half an hour on the 4th, causing damage to trees, plants, etc. Probably the most severe hailstorm of the month was that at Bell Rock (Colesberg Division) on the 11th, when stones fell to a depth of 4 inches on the level, killing eighty sheep and destroying all veld and trees, even the rain-gauge being damaged. At the Experimental Station, Piet Retief, the tobacco was destroyed by hail on the 14th.

In South-West Africa, there was a total absence of rain along the coast from Swakopmund through Aus to the neighbourhood of Gabis in the south. Over the southern half of the territory the totals were mostly less than an inch, but amounted to almost 2 inches at Garinais in the south-east and to 5·17 inches at Voigtsgrund in the south centre. Over the northern half, the month's precipitation was generally between 2 and 4 inches, increasing to 5–6 inches at Tsumeb and Waterberg, in the more northerly portion. Compared with the normals, an excess of rainfall occurred at most of the stations to the north-west, north and east of Windhoek, and in the southerly half, in the neighbourhood of Haribes, Voigstgrund, and Garinais. On proceeding from north to south, there is found a curious alternation of plus and minus quantities. Thus, at Tsumeb there is an excess of 2·27 inches, succeeded by small deficits of less than half an inch at Rietfontein and Grootfontein. A second area of surplus rainfall is met with at Waterberg and Okasangumingo, followed by a deficit at Okandjose. Thence to Windhoek the rainfall is higher than usual, but at Rehoboth it once more falls short of the average. Further south, at Haribes and Voigtsgrund, precipitation is once more in excess, but is in defect at Gibeon. A small surplus is again encountered at Garinais, with negative amounts to the west and south. Outside the "nil" area the deficits ranged from 7 per cent. at Grootfontein to 63 per cent. at Okandjose, whilst the actual negative quantities ranged from 0·27 inch at the former station to 1·45 inch (41 per cent.) at Rehoboth. The surplus amounts varied between 0·06 inch (or 4 per cent.) at Haribes and 3·68 inches (or 247 per cent.) at Voigtsgrund.

The accumulated rainfall since the 1st July, 1923, is in excess over very limited areas in the Union. Thus, in the Transvaal surplus amounts were confined to part of the eastern high veld, the neighbourhood of Pietersburg in the north, and of Zeerust in the west. The excesses there varied from 0·48 inch (or 2 per cent.) at Pietersburg to 4·04 inches (or 15 per cent.) at Middelburg. In the Free State, Bethulie in the south shows an excess of 2·80 inches (or 19 per cent.), and in Basutoland the total for this period was 5·81 inches, or 22 per cent. above the average. In the Cape Province, the excess areas were very patchy, occurring in the east of Kaffraria, portion of the south-east, the extreme east and south of the northern Karroo, and in the south-west. These surplus

amounts were mostly in the neighbourhood of 2 inches, varying from 1·55 inch (or 14 per cent.) at Philipstown to 11·27 inches (or 26 per cent.) at Driefontein, in the south-west. In South-West Africa, the few detached excess areas are confined to the southern half, viz., the neighbourhood of Aus, Voigtsgrund, and Garinais, where the plus quantities varied from 0·37 inch (or 14 per cent.) at the first to 3·26 inches (or 49 per cent.) at the second of these stations. Over the remainder of the country the gross totals for the nine months were generally considerably below the normals, the deficits being much greater, as a rule, than the surplus amounts. Thus, in the Transvaal the shortages were mostly between 3 and 7 inches, but ranged from 0·51 (or 2 per cent.) at Heidelberg in the south to 24·56 inches (or 37 per cent.) at Woodbush. In the Free State, the sub-normal quantities varied between 1·74 inch (or 9 per cent.) at Bloemfontein and 6·21 inches (or 29 per cent.) at Kroonstad. In Natal, the deficits were mostly large, 3–8 inches, ranging, however, from 2·53 inches (or 9 per cent.) at Dundee to 15·95 inches (or 42 per cent.) at Empangeni. In the Cape Province, the aggregates for the nine months were mostly between 1 and 3 inches, rising in portions of the south-east and south coastal area to 5, 7, and 8 inches. The deficits varied from 0·33 inch (or 2 per cent.) at Vryburg to 10·70 inches (or 45 per cent.) at Swellendam. At O'okiep, in Namaqualand, the total of 1·88 inch for this period was only 44 per cent. of the average, indicating the intensity of the drought there. In South-West Africa, a surplus rainfall was confined to the neighbourhood of Aus, Voigtsgrund, and Garinais in the southern half of the territory. The plus amounts varied from 0·37 inch (or 14 per cent.) at the first to 3·26 inches (or 49 per cent.) at the second of the above-mentioned stations. The rainfall over the rest of the country was sub-normal, commonly by 5–8 inches over the centre and north and 4 inches or under in the west and south, although at Windhoek and Gobabis the shortages were only between 2 and 3 inches. The actual deficits ranged from 0·10 inch (or 2 per cent.) at Franzfontein and 9·19 inches (or 47 per cent.) at Rietfontein. The cumulative rainfall for the first quarter of the year was sub-normal at about half the stations in the Transvaal, the greater portion of Natal, and the Cape Province, and the north and west of the Orange Free State. In the Transvaal, plus and minus quantities were distributed in irregular patches over the whole Province, deficits occurring in the eastern low veld, part of the Zoutpansberg, the south centre, parts of the west, south-west, and south-east. The shortages ranged from 0·11 inch (or about 1 per cent.) at Piet Retief to 14·40 inches (or 36 per cent.) at Woodbush; the minus quantities were greatest (6–9 inches) in the east, about 2–4 inches in the central parts, and less than 2 inches in the south-west and south-east. The excess amounts lay between 0·62 inch (or 5 per cent.) at Zeerust and 7·49 inches (or 58 per cent.) at Middelburg. In the Free State, the positive departures from normal were less than 1 inch in the north-east and east, greater than an inch in the centre, and exceeded 4 inches in the south, lying between 0·63 inches (or 5 per cent.) at Ladybrand and 4·45 inches (or 51 per cent.) at Bethulie. The deficiencies were 0·96 inch (or 10 per cent.) at Boshof and 2·11 inches (or 18 per cent.) at Kroonstad. Surplus amounts in Natal were confined to the middle, west, and to the coast at Durban, being 0·22 inch (or 2 per cent.) at Ladysmith and 2·36 inches (or 16 per cent.) at Dundee. The minus quantities were generally between 3 and 4 inches, but varied from 0·74 inches (or 5 per cent.) at Vryheid and 4·60 inches (or 28 per cent.) at Empangeni. In the Cape Province, the sub-normal area included all that portion of the country to the south and west of the innermost plateau, also Bechuanaland, the south-west of the northern Karroo, and parts of the northern border. The shortages were generally less than an inch in the west, and were mostly between 2 and 3 inches in the east and north, and in the south coast area. The minus quantities varied from 0·02 inch or less (than 1 per cent.) at

Sydney's Hope to 3·49 inches (or 42 per cent.) at Swellendam. Excesses were limited in distribution to parts of the east, west, and south of the northern Karroo, also portions of the northern border, Gordonia, the north-east and the extreme east of Kaffraria. The surplus quantities ranged from 0·01 inch (or less than 1 per cent.) at Kimberley to 4·53 inches (or 68 per cent.) at Philipstown. In South-West Africa, the actual sums of the first three months' precipitation were below normal, with the single exception of Voigtsgrund, where a surplus of 5·30 inches (or 65 per cent.) above normal occurred. The shortages were mostly between 1 and 3 inches, increasing to 4–5 inches in the more northerly section, and further to 5–6 inches east and west of Windhoek. The actual deficits varied between 0·28 inch at Swakopmund and Garinais, constituting 97 per cent. and 8 per cent. of the respective normals at these stations, and 7·65 inches (or 69 per cent.) of the average for Okandjose.

State of Country.—The abundant, soaking rains, which constituted a record for this month at a number of stations, caused a marked improvement in the veld all over the Transvaal, and were of material benefit to growing—and especially late—crops, and further enabled ploughing operations to be carried out. In some areas crops, trees, etc., made considerable growth, whilst in others the dull, cloudy, sunless weather and excessive moisture retarded growth, prevented the harvesting of hay, and in some cases damaged hay already cut. Although there were no crops in some of the more westerly districts, and some crops showed some effects of the previous drought, such as dwarfed growth, the improved conditions due to this month's rain induced a belief that fair and in some cases good average crops might yet be reaped, provided no early frosts occurred, whilst there was abundant winter pasture in some of the northern areas. Cattle generally were in fair to good condition, and showed the beneficial effects of the improvement in the veld. The other side of the picture is represented by a prevalence of insect pests in the Barberton District, a severe infestation of the army-worm throughout Swaziland, which is stated to have damaged all crops except cotton; the boll-worm was asserted to be bad in parts of the Zoutpansberg. Only isolated cases of horse-sickness were reported from the Rustenburg area. A heavy wind at Retreat (Barberton) on the 14th blew down a gum tree about thirty years old. In the Free State, similar good rains caused a wonderful improvement in the veld for winter grazing, although the grass was still exceptionally short in the Vrede District. There were prospects of fair crops of maize and hay, provided early frost did not occur. In the Bethulie District the rains were considered too late to improve the winter veld. Stock generally were in excellent condition, On the 21st, a windstorm occurred at Visserdrift, District of Fauresmith, about 9 p.m., uprooting large trees and totally destroying the roof of the house; it lasted about fifteen minutes. In Natal, the country was very dry, and good rains badly needed in the Ixopo District, where the mealies were "drought-stricken," also in Estcourt, where the grass was drying off, while the cost of stock feed for winter was likely to be very dear. In the Umvoti District, the grass was still short over wide areas, although the grazing had improved considerably in some localities; the rains there had been just sufficient to keep the mealies going. Cold and cloudy days had retarded the growth of crops at Strathearn (Nottingham Road), in the Weenen District; in the neighbourhood of Dundee and Ladysmith, the crops had made excellent progress, although mealies were backward in the area surrounding the former station, so that success was dependent on the absence of frost for some weeks yet. Stock were generally healthy, and there was very little horse-sickness in the Weenen District. In the Cape Province, abundant and excessive rains fell over parts of the east of the northern Karroo, and of the north-east, as in the Divisions of Colesberg.

Albert, and Barkly East, causing floods in some areas. There was consequently a marked improvement in the veld in these districts, also in Middelburg (Cape), Beaufort West, Mafeking, and the neighbourhood of the Orange River at Upington, and sowing was being carried out round about Venterstad. The rains, however, were generally too late for mealies and winter feed for stock. In the divisions of Tsolo, Queenstown, Bathurst, Uitenhage, and Murraysburg, the veld was drying up, owing to the absence of rain during the second half of the month, a condition aggravated by hot, drying winds in the Bathurst District. On the other hand, irrigated crops were in splendid condition. In the Murraysburg District, there was great mortality amongst sheep from geelziekte and eintjes, but stock generally were in fair condition, and were responding to the improved grazing in the Beaufort West District. On the 27th a violent wind did some damage to the ripening mealies. In Bechuanaland, although the grain crops were likely to prove very small, owing to the dry spell in December and January, grazing was generally good, cattle fattening rapidly, and the prospects for winter much more reassuring. In Basutoland the country was well soaked by the March rains, the veld looking splendid, and stock in first-class condition; owing to late planting, the few mealies would be of use only as green fodder.

State of Rivers and Water Supply.—At Riet Vallei (District of Lichtenburg), the Harts River came down on the 25th, and was still rising at the end of the month. In the Marico District, the well-distributed rains—the best of the season—yielded no run-off. At Retreat, in the Barberton District, a fall on the 14th of 2·89 inches in three hours caused damage to a cement dam, the centre being washed down the creek. From Southfield (Greytown), in Natal, it was reported that the springs were weak, and unless good autumn rains fell, would dry up during winter. In the Barkly East Division of the Cape Province, violent thunderstorms brought the rivers down in flood, two natives and nineteen oxen being drowned. According to a newspaper report, as a result of a series of heavy rains between the 19th and 22nd in the New England District of Barkly East, the river overflowed its banks, causing a considerable amount of damage to private and Government property; fences, telephone poles, and trees were swept away; dips and cattle kraals were washed away; potatoes, pumpkins, and other vegetables were carried down the stream; whilst the road was completely destroyed, having become the bed of the river, which had completely changed its course. The damage done to four farms in the Hoek was estimated at £2,000. The river reached its greatest height on the morning of Sunday, the 23rd. The heavy precipitation at Bell Rock (Division of Colesberg) on the 11th caused all dams to give way. The Orange River at Upington had risen to the top of its banks at the end of the month. At Mafeteng, in Basutoland, all dams were full and spruits running strongly.

MAY WEATHER CHARACTERISTICS.

Over the Cape Peninsula precipitation is now increasing rapidly, the average over this area being about 5 inches. Rainfall is now at its maximum; about 1·5 inch along the west coast, whilst along the south there is a slight increase over the preceding month. In all parts of the Union the rainfall seldom exceeds an inch, with the exception of those areas previously mentioned, together with Swaziland and Zululand; so that, generally speaking, the month of May may be described as sunny and dry.

The mean daily temperatures are still decreasing rapidly, particularly over the Karroo, the Orange Free State, and Basutoland. Over the high veld and the Karroo radiation frosts occur, and killing frosts may be expected. The highest mean temperatures now occur over Natal, where the average is

61 degrees; the southern coastal districts following with 60 degrees; the western, south-western, and south-eastern districts, with 59 degrees; the south-west of the Cape Province and the southern and east-central Karroo, with 58 degrees; Kaffraria and the Cape northern border, with 57 degrees; the Transvaal, with 54 degrees; the west-central Karroo, with 53 degrees; Basutoland, the northern Karroo, and the north-east of the Cape, with 52 degrees; and the Orange Free State, with 51 degrees.

In the south-east of the Cape Province there is a decrease of winds from all directions having an easterly component, and S. and S.W. winds, but an increase of northerly and all winds having westerly components, particularly of those from N.W., although those from W.S.W. have a slight excess over the other directions. Over the Cape Peninsula, north-westerly and south-westerly winds are about equally frequent, while over the northern border there is a marked increase of winds from S. and E.N.E., together with a decrease of all winds from N. round by W. to W.S.W., as well as of S.E. winds. The winds from S. are slightly in excess of those from E.N.E.; these constitute the principal directions during the month. On the high veld, on the other hand, the only directions showing an increased frequency are those between N. and W.N.W., and from S., all others showing a diminution in frequency; N.N.W. is the prevalent direction.

C. STEWART,

Chief Meteorologist.

Pretoria.

OBSERVERS' NOTES FOR MARCH, 1924.

TRANSVAAL.

Pigeonhole, New Agatha (Zoutpansberg).—The heavy rainfall for March is likely to be detrimental to mealie, nut, and cotton crops. Report says that the cotton boll-worm is bad in parts. Rainfall: 17·26 inches on twenty-one days.—J. McCallum.

Potchefstroom (School of Agriculture).—Cold weather deleterious to some crops, i.e. cowpeas, late maize, and sorghums. Potatoes and teff made good growth. Rainfall: 6·41 inches on eighteen days.—The Principal.

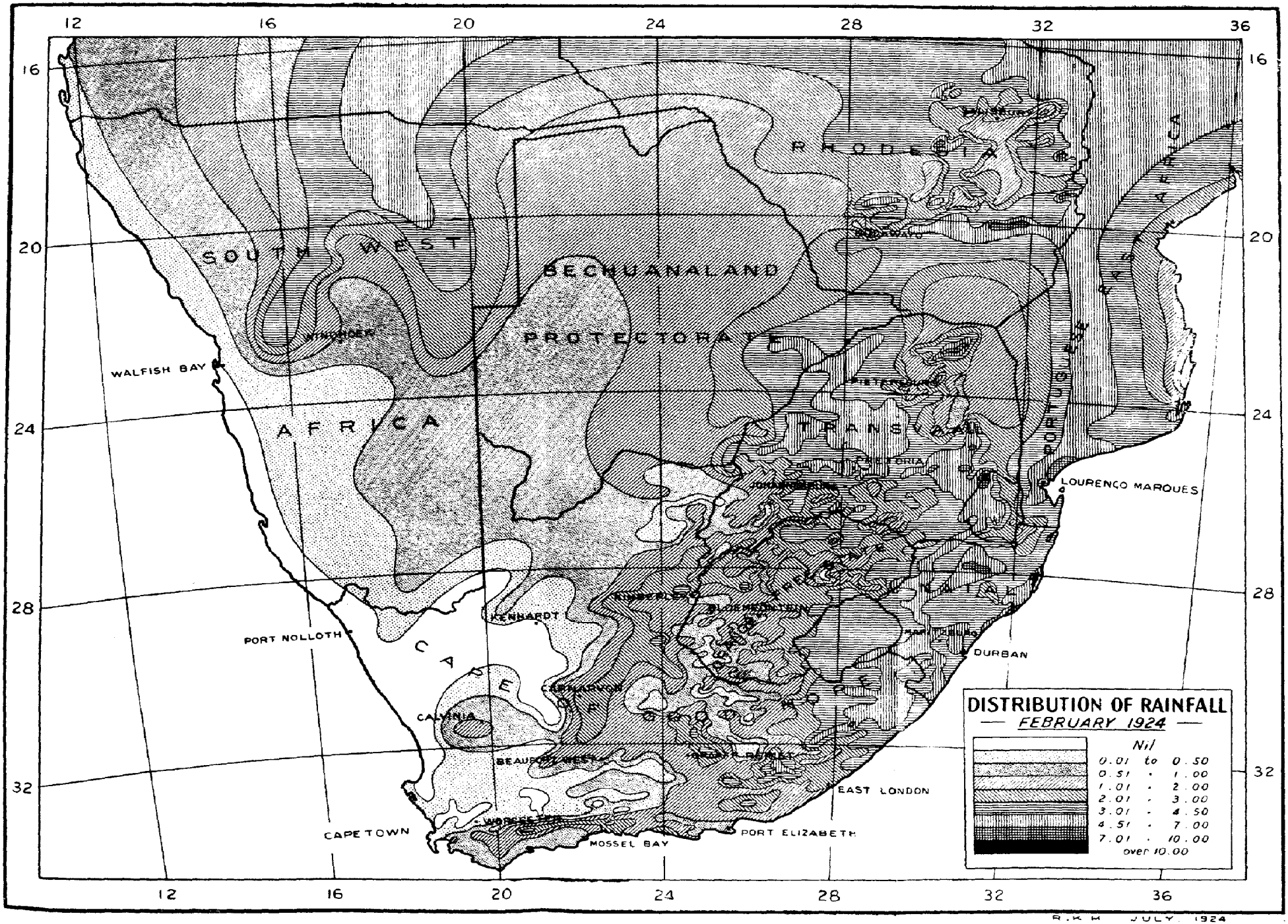
Bloemhof.—The veld is looking beauitful; cattle and small stock are in good condition.—F. Osborne.

Piet Retief (Experimental Station).—Have been unable to harvest hay on account of the heavy rainfall during March, and our tobacco was destroyed by hail on the 14th. Rainfall: 9·84 inches on sixteen days.—Officer in Charge.

Myrthley (Standerton).—The dull and wet weather during March damaged the cut hay, but was of benefit to all late crops. Rainfall: 4·72 inches on sixteen days.—J. D. Ellis.

Nooitgedacht No. 1739 (*Waterberg*).—The rainfall during March has been ample, and the veld is in fine condition; but the lack of heat has prevented the rapid growth hoped for, and maize crops are much behind. Rainfall: 5·81 inches on nineteen days.—G. G. Brown.

Retreat (Barberton).—14th: the rainfall of 2·89 inches on 14th lasted about three hours, and was accompanied by terrific wind. Considerable damage was done to the cement dam, the centre being washed down the creek, and a gum tree about thirty years old was blown down. Rainfall: 10·33 inches on fifteen days.—G. Duncan.



R.K.H. JULY 1924

Davel (*Bethal*).—Sunless days are putting back the growing of the crops and the cutting of hay. Rainfall: 7·40 inches on twenty days.—H. A. Wollenberg.

Rietvallei (*Lichtenburg*).—Hart River down on 25th, and is still rising. Rainfall: 5·34 inches on eleven days.—N. Johnston.

Klipdrift (*Lichtenburg*).—This has been a good month for farmers, but sowing was delayed on account of the drought and locusts: the latter have not disappeared. Rainfall: 4·08 inches on ten days.—P. Schutte.

Kaffirskraal (*Marico*).—This is the best rain we have had this season, being well distributed and no run-off. Rainfall: 4·26 inches on twelve days.—A. E. Schublé.

Crocodile Pools (*Marico*).—At last the grass is green, and cattle are improving rapidly. There have been heavy losses in stock, owing to the drought, which only broke at the beginning of this month. Rainfall: 4·56 inches on nine days.—H. Duke.

Mimosa Park (*Potchefstroom*).—Splendid rains, but quite too late for maize and kaffir corn. Rainfall: 5·88 inches on fourteen days.—J. G. Dixon.

Elandsfontein (*Potchefstroom*).—This has been a record month for rain; ploughs are going everywhere, and farmers are very hopeful for the future. Rainfall: 7·77 inches on fifteen days.—P. Davidtz.

Zandfontein No. 256 (*Rustenburg*).—Owing to the rains during March, there is every possibility of a fair average crop of mealies and kaffir corn being harvested. Only isolated cases of horse-sickness in this district. Rainfall: 7·65 inches on thirteen days.—R. Boon.

Elandshoek (*Waterberg*).—Cotton, tobacco, and mealie crops on the farm are looking well, and provided frosts do not set in soon, will give fair returns. Rainfall: 4·22 inches on ten days.—Mrs. Vickers Strutt.

Punda Maria (*Zoutpansberg*).—Crops very good. Rainfall: 11·48 inches on twelve days.—J. J. Coetser.

Chester (*Zoutpansberg*).—The rains of March were in time to bring some crops into bearing, but in a stunted condition, owing to the previous dry months; but cotton was unaffected by the drought, and is flourishing after these rains. Rainfall: 6·91 inches on twelve days.—A. Hallam Elton.

Driekoppies (*Zoutpansberg*).—The farmers are quite satisfied with the rains we have had, and crops and cattle are looking well. Rainfall: 4·91 inches on thirteen days.—N. R. Musgrove.

Macsvale (*Barberton*).—Owing to the cold and cloudy weather, cotton and maize are making practically no progress, and the latter is also suffering from the excessive flooding. The veld is in very good condition. There is a very marked prevalence of insect pests. Rainfall: 11·06 inches on twelve days.—E. J. S. Jolly.

Wakkerstroom.—Cattle are in good condition and crops are fair, but show signs of the long-delayed rains. Rainfall: 4·13 inches on sixteen days.—J. Cilliers.

Lichtenburg.—Mealies which are growing are in poor condition. Farmers have no harvesting to do. Rainfall: 4·36 inches on fifteen days.—The Gaoler.

Krugersdorp (*Witwatersrand*).—Practically all crops, trees, etc., have made almost phenomenal growth and if early frosts should occur a deal of damage must inevitably be done to late soft growths. Rainfall: 5·19 inches on twenty-three days.—H. Sharp.

Ermelo.—The rains during the month saved the crops from absolute ruin, and if frosts hold off for another fortnight, the average yield will be nearly normal. Rainfall: 6·99 inches on nineteen days.—J. Dean.

Mosdene (*Waterberg*).—Crops promise to be very good. There is abundant pasture for the winter, and live stock is in the best of condition. Rainfall: 4·60 inches on ten days.—E. Galpin.

Jackhalsfontein (*Zoutpansberg*).—The rains of March have greatly improved the crop prospect. Rainfall: 4·17 inches on eight days.—J. Palmer.

SWAZILAND.

Matendele.—A somewhat severe infestation of the army-worm throughout Swaziland began about 13th. Rainfall: 6·23 inches on fourteen days.—H. Parry.

Transvaalia.—Army-worm in large numbers damaged young mealies. Rainfall: 7·10 inches on fourteen days.—J. H. Coates.

Arizona.—Cotton fields look promising and growers expect to reap averages of 1,000 lb. seed cotton per acre. The army-worm did much damage to all crops, except cotton. Rainfall: 5·50 inches on nine days.—W. Mather.

ORANGE FREE STATE.

Klipfontein (*Bethulie*).—Lovely rainfall; just rather late for winter veld. Rainfall: 9·54 inches on twelve days.—Williams & Van Blerk.

Shannon (*Bloemfontein*).—Veld has made a wonderful recovery. There will now be plenty of winter feed where it is not grazed too heavily. Rainfall: 7·56 inches on fifteen days.—J. G. Hatchard, M.I.Mech.E.

Bordeaux (*Boshof*).—Veld lovely; stock generally healthy, and in good condition; crops poor, owing to late rains. Rainfall: 4·36 inches on nine days.—D. J. de Waal.

Vissersdrift (*Fauresmith*).—On night of 21st, about 9 o'clock, a terrific storm passed over my farm, uprooting big trees and totally destroying the roof of my house. The duration of the storm was about fifteen minutes. Estimated rainfall for month is 7·79 inches.—F. J. Mudd, J.P.

L'Esperance (*Ladybrand*).—Stock in excellent condition; maize crop only fair; hay crop good, if frost keeps off for three weeks. Rainfall: 6·22 inches on twenty days.—C. F. Casalis.

Woudzicht (*Vrede*).—This month has been very favourable for all crops. The grass veld, however, is still exceptionally short. Rainfall: 4·40 inches on twelve days.—J. N. Kohler.

Holfontein (*Kroonstad*).—Young mealies are coming on fast, and the crop will not be altogether a failure if the frost does not occur early. Stock in good condition, and no cases of horse-sickness or blue-tongue. Rainfall: 4·71 inches on thirteen days.—L. McInerney.

NATAL.

Leenane (*Ixopo*).—Mealies drought-stricken in this area. Rainfall: 0·59 inch on five days.—J. Pembrooke.

Summerford (*Ixopo*).—Country very dry, and good rains badly needed. Rainfall: 2·05 inches on twelve days.—D. Campbell, J.P.

Estcourt.—The rainfall for March has been below the usual, and the grass is drying off noticeably. Stock feed is likely to be very costly this winter. Rainfall: 1·71 inches on fourteen days.—The Town Clerk.

Dundee.—The growth of crops has been generally excellent this month, but mealies are very backward, and it is to be hoped an early frost will not occur. Rainfall: 4·45 inches on thirteen days.—W. Thorrold.

Greytown.—The rains this month have just been enough to keep mealies going, which, given more rain and sunshine, promise well. Grazing has improved considerably, but over wide areas the grass is very short, and the country is overstocked. Springs are weak, and unless autumn rains fall, will dry up this winter. Rainfall: 2·77 inches on eighteen days.—J. Handley.

Nottingham Road.—Stock are healthy, and there is very little horse-sickness. The cold and cloudy days of March have retarded the growth of crops.—E. Smythe.

Ladysmith.—Growing crops have improved wonderfully this month, and if frosts hold off, excellent mealie crops should be reaped in most parts of the district. Some farmers suffered severe loss in crops by the hail of 1st. Rainfall: 4·21 inches on seventeen days.—D. A. R. Leathern.

Cape Province.

Vineyard (*Albert*).—A record rainfall for any one month; cattle and sheep in very good condition. Rain came too late for mealies and winter feeding; floods in neighbouring districts. Rainfall: 8·37 inches on twelve days.—C. J. Hoar.

Lauriston (*Barkly East*).—Violent storms, terrific thunder and lightning; several head of cattle killed; rivers in flood; nineteen oxen and two natives drowned. Rainfall: 12·33 inches on fifteen days.—H. R. Giddy.

Klipkraal (*Richmond*).—The veld is looking fine, and stock in good condition. Rainfall: 4·56 inches on seven days.—J. F. Cilliers.

Bell Rock (*Colesberg*).—Very severe hailstorm, which measured 4 inches on the level; eighty sheep killed; all veld and trees destroyed—even the rain gauge suffered; then sharp showers set in; all dams broken. Rainfall: 5·95 inches on nine days.—J. Bell.

Doornkloof (*Venterstad*).—Heavy rains; veld looking fine; sowing in full swing; no locusts. Rainfall: 10·02 inches on eleven days.—J. v. d. Merwe.

Kraaipan (*Mafeking*).—March rainfall has improved the veld, but coming so late, there will not be much winter feed for stock. Rainfall: 2·94 inches on thirteen days.—W. Hart.

Louisvale (*Kenhardt*).—Veld much improved, in spite of many swarms of locusts. Rainfall: 1·39 inches on five days.—S. N. Smith.

Port Alfred.—Hot winds prevailed during the month, drying up everything, and the little rain that fell rather aggravated the position than relieved it. Stock generally remain healthy and in fair condition. Rainfall: 0·80 inch on seven days.—W. H. Pascoe.

Liwandi (*Uitenhage*).—The small rainfall for March was most disappointing, and the veld is showing signs of drought. Crops on irrigated lands are in splendid condition. The violent wind on 27th did some damage to isolated mealies just ripening. Rainfall: 0·31 inch on six days.—Major J. Kreft.

Tsolo.—Rain badly needed; veld drying up; cattle in fair condition. Rainfall: 2·12 inches on fourteen days.—H. P. Tillard.

Upington.—Veld is very nice and green. The Orange River is up to the top of the banks. Rainfall: 2·69 inches on eight days.—B. Etsebeth.

Nelspoort (Beaufort West).—The frost on 23rd and on two or three days later caused damage to vegetables. The stock is showing the result of the improved grazing. Rainfall: 0·94 inch on four days.—R. S. Cowie.

Grootfontein School of Agriculture (Middelburg).—The Karroo is looking beautiful. Young locusts are hatching on farms to east of this station. Rainfall: 3·03 inches on nine days.—The Principal.

Queenstown.—The last half of March was dry, and rain is needed as crops are drying up. Hail fell on 4th, from 5.45 p.m. to 6.15 p.m. and did considerable damage to trees, plants, etc. Rainfall: 5·04 inches on eleven days.—H. Holley.

Murraysburg.—There is rather a big mortality amongst sheep from geelziekte and eintjes. Rainfall: 4·49 inches on ten days.—W. H. Rose-Innes.

Somerset East.—The frequent rains during the first two weeks of March were accompanied by thunder and hail, and were followed by swarms of locusts. Frosts have been reported in the district. Rainfall: 3·33 inches on eleven days.—C. Harris.

Bechuanaland.

Mochudi Village.—Hardly any native crops this year, owing to dry spell December and January. Rainfall: 4·29 inches on ten days.—Rev. J. Reyneke.

Dikgatlong Ranch.—Grass is very luxuriant, and no locusts have appeared so far. The prospects for winter are very good. Rainfall: 9·37 inches on thirteen days.—P. Jousse.

Palapye Road.—The grain crop this season will be practically nil. Grazing is good, and cattle fattening rapidly. Rainfall: 3·86 inches on fourteen days.—T. W. Shaw.

Basutoland.

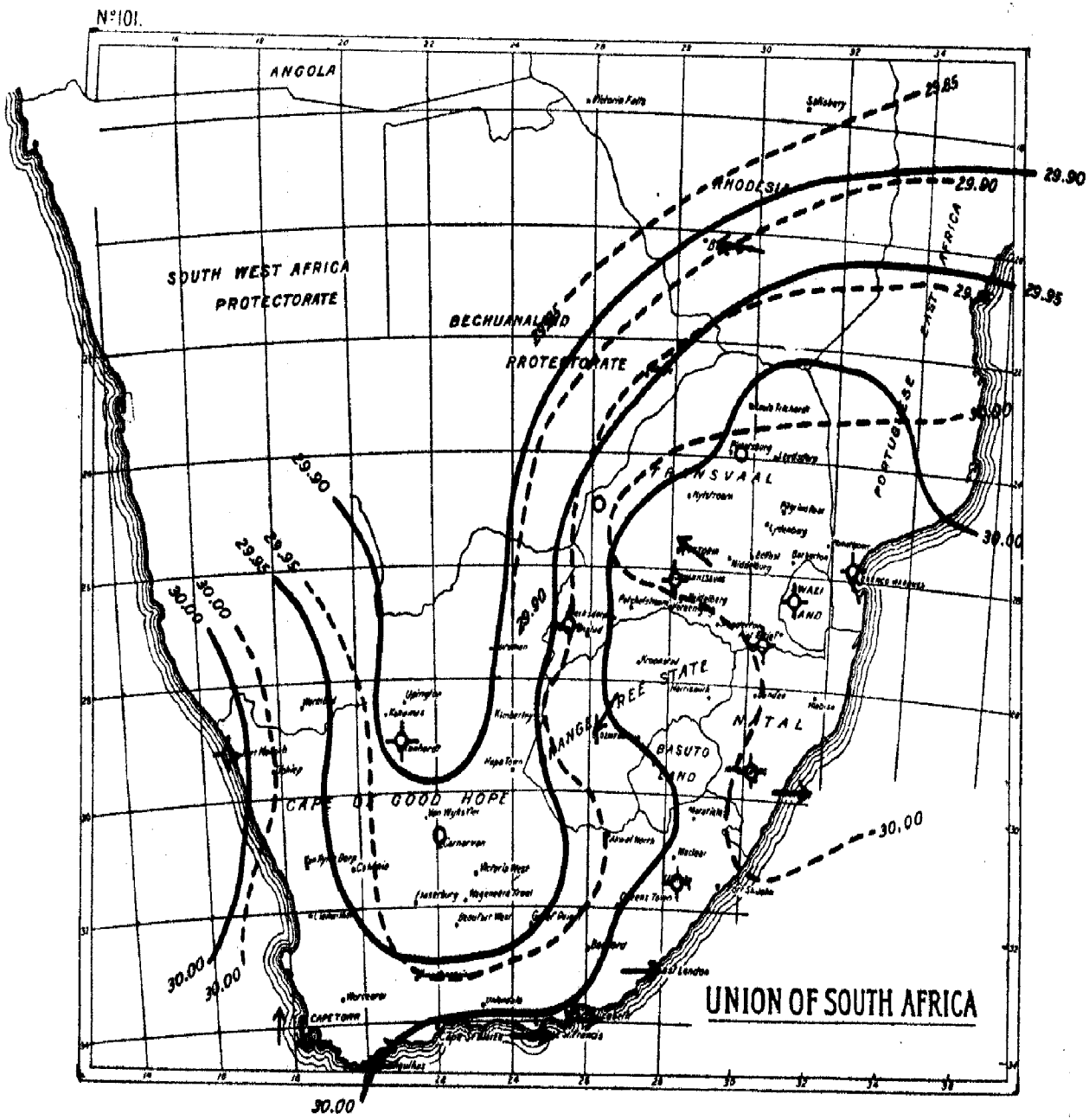
Mafeteng.—The country was absolutely soaked by the rains during March. Dams are full and spruits running strongly. Veld is looking splendid, and stock are in first-class condition. Few mealies were planted, and they can only be used for green fodder on account of late planting. Rainfall: 11·73 inches on eighteen days.—F. Hodgson.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), MARCH, 1924.

Station.	Observer.	Month—Mar., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Transvaal—										
Barberton	W. Grubb	79·9	63·6	71·8	70·6	+ 1·2	91·0	19th	57.0	30th.
Belfast	The Forester	69·0	51·0	60·0	59·8	+ 0·2	79·0	20th	43·0	31st.
Bloemhof	F. Osborne	82·1	60·9	71·5	68·8	+ 2·7	93·5	19th	50·0	31st.
Ermelo	The Forester	72·5	54·3	63·4	62·2	+ 1·2	87·3	1st	45·0	31st.
Johannesburg (Observatory)	The Staff	69·5	55·4	62·5	62·4	+ 0·1	82·2	23rd	42·6	31st.
Klerksdorp (Strathmore)	Chas. Scott	78·3	59·5	68·9	69·5	− 0·6	90·0	1st	48·0	28th and 31st.
Komatipoort	H. J. Evans	85·6	69·2	77·4	77·0	+ 0·4	99·0	1st and 14th.	61·0	31st.
Louis Trichardt	C. L. Cope	76·1	60·7	68·4	68·8	− 0·4	87·0	1st, 4th, and 23rd	53·0	31st.
Middelburg	Dr. H. A. Spencer	76·4	57·1	66·8	65·6	+ 1·2	88·0	23rd	48·0	31st.
Nylstroom	G. Bakker	78·5	61·0	69·7	68·4	+ 1·3	88·0	23rd	54·2	31st.
Pietersburg	W. J. Frankleyne	79·5	58·7	69·1	67·0	+ 2·1	91·0	20th	52·0	30th and 31st.
Piet Retief	J. Werner	74·0	58·3	66·1	65·2	+ 0·9	84·9	20th	49·0	31st.
Pigeonhole (New Agatha)	Jno. McCallum	70·9	59·9	65·4	—	—	88·0	14th	51·0	31st.
Pilgrims Rest	E. M. Skea	75·5	58·0	66·8	65·3	+ 1·5	88·0	22nd	51·5	31st.
Potchefstroom (Exp. Farm)	The Manager	78·6	58·4	68·5	66·9	+ 1·6	89·1	20th	45·9	31st.
Pretoria (Meteorological Office)	The Staff	74·8	59·9	67·3	67·8	− 0·5	84·2	23rd	50·5	31st.
Rustenburg	A. J. Streatfield	77·1	59·8	68·4	70·0	− 1·6	89·0	1st	50·0	31st.
Standerton	W. Madge	—	—	—	63·0	—	—	—	—	—
Zeerust	J. W. Dietrich	78·6	60·5	69·5	69·4	+ 0·1	91·4	1st	51·0	31st.
Swaziland—										
Mbabane	Swaziland Police	72·9	58·6	65·7	64·6	+ 1·1	86·0	22nd	45·0	10th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	78·8	56·2	67·5	66·8	+ 0·7	94·8	1st	44·4	10th.
Bloemfontein	G. A. Schepers	76·2	57·1	66·6	66·7	− 0·1	91·6	1st	45·3	29th.
Harrismith	The Forester	68·9	51·9	60·4	61·0	− 0·6	81·0	1st	42·0	31st.
Kroonstad	S. R. Northfield	77·4	58·1	67·7	67·0	+ 0·7	88·3	1st	46·0	28th.
Ladybrand	The Forester	73·8	53·8	63·8	63·6	+ 0·2	87·0	1st	43·0	31st.
Natal—										
Dundee	W. Thorrold	75·6	56·3	66·0	68·7	− 2·7	87·0	13th	49·0	29th and 31st.
Durban (Point)	The Port Captain	78·5	68·5	73·5	76·0	− 2·5	84·4	6th	60·6	10th.
Empangeni	The Forester	81·3	66·5	73·9	73·9	± 0·0	99·0	22nd	56·0	9th and 10th
Estcourt	The Town Clerk	76·6	56·6	66·6	69·4	− 2·8	87·0	13th and 26th	43·0	31st.
Hlabisa	—	—	—	—	70·0	—	—	—	—	—
Ladysmith	D. A. Leathern	78·4	61·2	69·8	72·0	− 2·2	91·0	1st	50·0	31st.
Maritzburg (Mental Hospital)	The Staff	77·8	61·2	69·5	71·4	− 1·9	92·0	26th	50·8	28th.
Stanger	C. C. Foss	81·1	66·5	73·8	74·4	− 0·6	93·0	22nd	56·6	9th.
Weenen	The Gaoler	81·7	60·0	70·8	73·2	− 2·4	95·0	22nd	48·0	31st.

AIR TEMPERATURES, MARCH, 1924—(*continued*).

Station.	Observer.	Month—Mar., 1924. Mean Max.	Month—Mar., 1924. Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Extremes. Date.	Extremes. Lowest.	Extremes. Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Cape Province—										
Aliwal North	A. Alcock	77·2	53·4	65·3	66·1	− 0·8	92·0	1st	40·5	31st.
Bedford	T. C. Hall	78·4	53·7	66·0	66·8	− 0·8	95·0	6th and 7th	41·0	15th.
Capetown (Royal Observatory)	The Staff	75·0	56·6	65·8	68·0	− 2·2	90·7	30th	51·0	25th.
Carnarvon	A. P. Malherbe	80·0	53·2	66·6	68·9	− 2·3	93·0	1st	39·0	28th.
East London	The Port Captain	74·0	61·0	67·5	68·7	− 1·2	82·9	12th	51·2	15th.
Graaff-Reinet	The Mother Superior	83·6	55·0	69·3	69·8	− 0·5	97·4	7th	41·0	15th.
Grahamstown	The Vet. Res. Officer	77·6	52·2	64·9	69·8	− 4·9	91·4	7th	38·2	15th.
Groot Drakenstein	L. Baker	79·3	55·3	67·3	69·4	− 2·1	94·8	31st	44·2	22nd.
Kenhardt	R. Seydell	89·7	60·7	75·2	74·8	+ 0·4	100·0	1st	50·0	28th.
Kimberley	F. W. J. Schmidt	81·6	60·0	70·8	72·0	− 1·2	95·0	1st	48·0	28th.
Kingwilliamstown	W. Kindness	79·8	57·9	68·8	72·0	− 3·2	93·0	6th and 7th	42·0	29th.
Kokstad	H. D. Coyte	74·2	53·1	63·7	63·6	+ 0·1	85·0	13th, 20th, 22nd & 25th	39·0	31st.
Mafeking (Convent)	The Mother Superior	78·7	60·3	69·5	70·9	− 1·4	87·8	1st	50·0	31st.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	70·9	60·1	65·5	68·6	− 3·1	89·0	31st	51·0	28th.
Murraysburg	W. H. Rose-Innes	78·7	48·7	63·7	66·4	− 2·7	88·0	2nd	38·4	30th.
O'okiep	J. Burrows	82·2	53·5	67·8	70·0	− 2·2	94·4	2nd	43·4	12th.
Port Elizabeth	The Lightkeeper	71·8	59·4	65·6	69·0	− 3·4	80·0	12th and 18th	50·0	28th.
Port Nolloth	The Lightkeeper	66·5	50·6	58·6	59·4	− 0·8	101·0	31st	39·5	25th.
Port St. Johns (Cape Hermes)	The Lightkeeper	75·4	64·7	70·0	71·6	− 1·6	83·0	18th	57·0	15th and 29th.
Queenstown	H. Holley	78·8	55·3	67·0	68·1	− 1·1	89·0	6th, 7th, and 22nd	40·0	28th.
Somerset East	C. Harris	77·7	53·9	65·8	69·5	− 3·7	91·0	6th	42·5	15th.
Stutterheim	F. C. Bousfield	78·2	54·3	66·2	67·0	− 0·8	91·4	26th	42·8	15th.
Sydney's Hope	Rev. S. Rippon	74·9	55·1	65·0	68·2	− 3·2	89·0	7th	45·5	28th.
Uitenhage	H. Inggs	78·6	55·7	67·2	70·0	− 2·8	96·0	31st	43·0	16th.
Umtata	P. Hackett	79·9	57·5	68·7	69·6	− 0·9	95·1	6th	40·5	29th.
Vryburg	C. Butler	80·4	60·4	70·4	70·8	− 0·4	90·0	1st	49·0	31st.
Wynberg (Convent)	The Mother Superior	75·9	56·0	66·0	67·2	− 1·2	87·5	11th	49·8	14th.
Basutoland—										
Mafeteng	F. Hodgson	72·0	53·5	62·7	65·7	− 3·0	85·0	1st	42·0	31st.



March, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for March.

RAINFALL, MARCH, 1924.

Place.	Observer.	Month. Mar., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	4·49	3·81	+ 0·68	11·08	14·73	− 3·65	21·22	28·75	− 7·53
Belfast	The Forester	5·22	4·41	+ 0·81	17·47	14·10	+ 3·37	30·91	30·03	+ 0·88
Bethal	H. F. Joubert	6·71	2·92	+ 3·79	14·22	12·12	+ 2·10	23·86	27·73	− 3·87
Bloemhof	F. Osborne	4·31	2·93	+ 1·38	9·87	10·05	− 0·18	13·48	16·59	− 3·11
Claremont	S.A. Police	7·93	2·57	+ 5·36	—	9·27	—	—	17·20	—
Ermelo	The Forester	7·80	3·20	+ 4·60	15·12	12·47	+ 2·65	24·65	29·59	− 4·94
Haenertsburg	S A Police	11·94	5·68	+ 6·26	18·10	21·02	− 2·92	29·40	35·01	− 5·61
Heidelberg	W. ter Horst	9·45	3·09	+ 6·36	17·80	12·60	+ 5·20	26·12	26·63	− 0·51
Johannesburg (Observatory)	The Staff	6·25	3·76	+ 2·49	13·04	14·30	− 1·26	22·24	28·68	− 6·44
Klerksdorp (Strathmore)	C. Scott	5·70	3·04	+ 2·66	9·16	11·04	− 1·88	13·13	20·84	− 7·71
Komatipoort	H. J. Evans	4·84	4·41	+ 0·43	8·78	15·07	− 6·29	14·96	24·98	−10·02
Louis Trichardt	C. L. Cope	11·54	3·14	+ 8·40	16·17	15·38	+ 0·79	26·13	27·29	− 1·16
Middelburg	Dr. H. A. Spencer	8·48	3·46	+ 5·02	20·34	12·85	+ 7·49	31·03	26·99	+ 4·04
Nylstroom	G. Bakker	7·34	3·35	+ 3·99	14·29	12·38	+ 1·91	21·34	23·14	− 1·80
Pietersburg	W. Frankleyne	4·21	2·41	+ 1·80	11·44	10·04	+ 1·40	20·42	19·94	+ 0·48
Piet Retief	J. Werner	7·06	3·85	+ 3·21	15·28	15·39	− 0·11	25·73	33·43	− 7·70
Pigeonhole (New Agatha)	J. McCallum	17·36	6·48	+10·88	28·79	24·91	+ 3·88	41·90	43·72	− 1·82
Pilgrims Rest	E. M. Skea	6·68	5·81	+ 0·87	13·08	22·02	− 8·94	24·92	36·36	−11·44
Potchefstroom (Exp. Farm)	The Manager	6·41	2·37	+ 4·04	12·36	10·38	+ 1·98	17·96	21·38	− 3·42
Pretoria (Meteorological Office)	The Staff	3·28	3·43	− 0·15	10·34	14·09	− 3·75	20·08	27·56	− 7·48
Roolberg	N. H. Monro	3·66	3·05	+ 0·61	9·20	12·61	− 3·41	17·20	23·27	− 6·07
Rustenburg	A. Stratfield	8·01	3·70	+ 4·31	15·94	12·96	+ 2·98	23·01	24·91	− 1·90
Wakkerstroom	J. Cilliers	4·13	3·61	+ 0·52	—	—	—	—	—	—
Woodbush	The Forester	17·62	10·19	+ 7·43	25·37	39·77	−14·40	41·29	65·85	−24·56
Zeerust	H. Dietrich	8·63	3·27	+ 5·36	12·65	12·03	+ 0·62	24·48	21·76	+ 2·72
Swaziland—										
Mbabane	Swaziland Police	14·03	6·64	+ 7·39	27·23	25·23	+ 2·00	48·17	48·74	− 0·57
Orange Free State—										
Bethulie	J. J. Wardhaugh	9·80	2·91	+ 6·89	13·22	8·77	+ 4·45	17·76	14·96	+ 2·80
Bloemfontein	G. A. Schepers	6·90	3·57	+ 3·33	12·05	10·64	+ 1·41	16·69	18·43	− 1·74
Boshof	The Postmaster	3·57	3·83	− 0·26	8·69	9·65	− 0·96	11·44	17·01	− 5·57
Harrismith	The Forester	3·04	3·60	− 0·56	13·78	13·10	+ 0·68	24·49	27·08	− 2·59
Kroonstad	S. R. Northfield	5·14	3·53	+ 1·61	9·19	11·30	− 2·11	15·03	21·24	− 6·21
Ladybrand	The Forester	5·95	3·33	+ 2·62	12·81	12·18	+ 0·63	20·33	24·17	− 3·84
Lindley	—	—	2·87	—	—	10·70	—	—	21·36	—
Natal—										
Dundee	W. Thorrold	4·45	3·91	+ 0·54	17·00	14·64	+ 2·36	26·54	29·07	− 2·53
Durban (Point)	The Port Captain	2·06	5·12	− 3·06	14·47	14·17	+ 0·30	28·42	34·89	− 6·47
Empangeni	The Forester	7·16	5·10	+ 2·06	11·64	16·24	− 4·60	22·13	38·08	−15·95
Estcourt	The Town Clerk	1·71	3·92	− 2·21	11·11	14·34	− 3·23	20·09	26·68	− 6·59
Hlabisa	The Gaoler	—	4·61	—	—	17·58	—	—	38·50	—
Howick	The Gaoler	2·63	4·26	− 1·63	12·72	14·99	− 2·27	23·95	30·02	− 6·07

RAINFALL, MARCH, 1924—(*continued*).

Place.	Observer.	Month. Mar., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Ladysmith	D. A. R. Leathern	4·21	4·09	+ 0·12	14·19	13·97	+ 0·22	22·84	26·22	− 3·38
Maritzburg (Mental Hospital)	The Staff	2·43	4·95	− 2·52	12·10	16·47	− 4·37	19·08	33·73	−14·65
Stanger	C. C. Foss	2·94	4·79	− 1·85	11·80	14·49	− 2·69	24·59	36·99	−12·40
Vryheid	The Gaoler	5·77	3·71	+ 2·06	14·51	15·25	− 0·74	27·23	32·02	− 4·79
Weenen	The Gaoler	1·89	2·99	− 1·10	8·78	12·82	− 4·04	16·19	24·92	− 8·73
Cape Province—										
Aliwal North	A. Alcock	9·05	3·14	+ 5·91	12·14	9·43	+ 2·71	16·18	17·19	− 1·01
Beaufort West	The Gaoler	0·69	1·83	− 1·14	4·03	4·14	− 0·11	6·80	7·64	− 0·84
Bedford	T. C. Hall	2·22	3·82	− 1·60	7·95	10·69	− 2·74	14·48	21·70	− 7·22
Britstown	The Gaoler	4·80	2·39	+ 2·41	6·14	5·46	+ 0·68	7·80	8·70	− 0·90
Calvinia	The Gaoler	0·08	0·80	− 0·72	1·64	1·59	+ 0·05	4·44	5·08	− 0·64
Capetown (Royal Observatory)	The Staff	0·74	0·92	− 0·18	1·01	2·19	− 1·18	13·94	15·11	− 1·17
Ceres	A. Heatlie	1·29	1·06	+ 0·23	1·86	2·63	− 0·77	19·80	25·42	− 5·62
Carnarvon	A. P. Malherbe	2·30	1·54	+ 0·76	6·04	3·82	+ 2·22	7·69	6·06	+ 1·63
Clanwilliam	The Gaoler	0·12	0·26	− 0·14	0·21	0·71	− 0·50	2·82	5·04	− 2·22
Concordia	F. H. Carstens	0·00	0·51	− 0·51	0·01	1·16	− 1·15	1·37	3·86	− 2·49
Driefontein (French Hoek)	The Forester	2·84	2·23	+ 0·61	4·14	4·99	− 0·85	54·74	43·47	+11·27
East London	A. Downie	2·98	3·61	− 0·63	8·56	10·08	− 1·52	28·32	26·33	+ 1·99
Fraserburg	The Gaoler	0·42	1·18	− 0·76	2·36	2·85	− 0·49	3·84	4·85	− 1·01
George (Rectory)	Rev. Canon B. Price	1·90	3·63	− 1·73	5·91	10·21	− 4·30	17·09	26·67	− 9·58
Grahamstown	The Vet. Res. Officer	1·73	3·18	− 1·45	5·61	8·50	− 2·89	14·04	22·30	− 8·26
Garies	The Gaoler	0·00	0·15	− 0·15	0·00	0·42	− 0·42	1·56	2·93	− 1·37
Graaff-Reinet (Convent)	The Mother Superior	2·36	2·18	+ 0·18	5·17	5·37	− 0·20	10·52	11·04	− 0·52
Groot Drakenstein	L. Baker.	1·03	1·19	− 0·16	2·05	2·90	− 0·85	25·11	21·48	+ 3·63
Griquatown	The Gaoler	3·39	2·58	+ 0·81	7·19	6·55	+ 0·64	7·54	10·24	− 2·70
Hanover	The Gaoler	3·83	2·54	+ 1·29	5·73	6·29	− 0·56	7·23	10·36	− 3·13
Hopetown	The Gaoler	6·63	2·73	+ 3·90	10·84	6·49	+ 4·35	12·83	10·25	+ 2·58
Kenhardt	R. Seydell	0·23	1·20	− 0·97	0·95	2·98	− 2·03	1·91	4·51	− 2·60
Kimberley	F. Schmidt	4·96	3·01	+ 1·95	7·99	7·98	+ 0·01	10·50	13·71	− 3·21
Knysna	The Gaoler	1·24	2·54	− 1·30	4·66	6·76	− 2·10	16·19	21·67	− 5·48
Kokstad	H. D. Coyte	1·81	3·53	− 1·72	12·84	12·29	+ 0·55	25·76	23·94	+ 1·82
Kingwilliamstown	W. Kindness	4·29	3·10	+ 1·19	8·32	8·93	− 0·61	23·52	20·59	+ 2·93
Kuruman	—	—	3·41	—	—	9·90	—	—	14·83	—
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·70	1·47	− 0·77	3·07	4·11	− 1·04	9·44	12·60	− 3·16
Mafeking (Convent)	The Mother Superior	3·63	3·28	+ 0·35	8·79	11·20	− 2·41	16·38	20·46	− 4·08
Murraysburg	W. H. Rose-Innes	4·49	2·09	+ 2·40	7·27	4·81	+ 2·46	10·21	8·38	+ 1·83
O'okiep	J. Burrows	0·01	0·43	− 0·42	0·01	0·97	− 0·96	1·88	4·27	− 2·39
Philipstown	The Gaoler	6·79	2·74	+ 4·05	11·15	6·62	+ 4·53	12·33	10·78	+ 1·55
Piquetberg	The Gaoler	0·63	0·56	+ 0·07	1·40	1·59	− 0·19	10·02	13·02	− 3·00
Port Elizabeth	The Lightkeeper	0·81	1·75	− 0·94	3·64	4·29	− 0·65	10·77	16·41	− 5·64
Port St. Johns	The Lightkeeper	2·24	5·59	− 3·35	14·76	16·32	− 1·56	38·86	41·29	− 2·43
Port Nolloth	The Lightkeeper	0·00	0·16	− 0·16	0·00	0·28	− 0·28	0·88	1·36	− 0·48
Prieska	The Gaoler	2·38	2·20	+ 0·18	3·00	5·00	− 2·00	3·93	7·42	− 3·49
Queenstown	H. Holley	5·04	3·43	+ 1·61	8·10	10·85	− 2·75	12·21	19·69	− 7·48

RAINFALL, MARCH, 1924—(*continued*).

Place.	Observer.	Month. Mar., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Steytlerville	The Gaoler	0·74	1·63	− 0·89	2·63	3·69	− 1·06	5·68	7·41	− 1·73
Sutherland	The Gaoler	0·75	0·94	− 0·19	1·89	2·11	− 0·22	4·77	6·08	− 1·31
Swellendam	The Gaoler	1·13	3·06	− 1·93	4·74	8·23	− 3·49	13·13	23·83	−10·70
Sydney's Hope	Rev. S. Rippon	1·66	2·33	− 0·67	6·38	6·40	− 0·02	14·37	17·32	− 2·95
Somerset East	C. Harris	3·33	3·64	− 0·31	8·11	9·61	− 1·50	16·58	20·90	− 4·32
Stutterheim	F. C. Bousfield	3·27	4·06	− 0·79	11·79	12·32	− 0·53	28·17	25·53	+ 2·64
Uitenhage	H. Inggs	1·13	2·08	− 0·95	3·85	4·79	− 0·94	12·05	13·23	− 1·18
Umtata	Miss N. Dix Peck	2·59	3·33	− 0·74	8·38	10·51	− 2·13	18·33	21·49	− 3·16
Uniondale	The Gaoler	0·64	1·47	− 0·83	1·51	3·10	− 1·59	5·96	9·48	− 3·52
Uplington	The Gaoler	2·69	1·92	+ 0·77	4·27	3·79	+ 0·48	4·61	5·76	− 1·15
Victoria West	The Gaoler	1·91	2·10	− 0·19	4·40	5·05	− 0·65	6·22	8·23	− 2·01
Vryburg	Chas. Butler	6·74	3·30	+ 3·44	9·04	11·06	− 2·02	16·63	16·96	− 0·33
Worcester	The Gaoler	0·00	0·54	− 0·54	0·18	1·14	− 0·96	3·97	7·80	− 3·83
Wynberg (Convent)	The Mother Superior	0·92	1·30	− 0·38	1·42	3·12	− 1·70	25·79	28·96	− 3·17
Basutoland—										
Mafeteng	F. Hodgson	11·73	4·26	+ 7·47	17·17	14·35	+ 2·82	32·49	26·68	+ 5·81
South-West Africa—										
Aus	E. Marthins	0·00	0·78	− 0·78	0·23	1·45	− 1·22	2·98	2·61	+ 0·37
Bethanie	The Rev. Peter	0·44	1·12	− 0·68	0·77	3·24	− 2·47	2·17	3·99	− 1·82
Duesternbrock	I. & R. Matthiessen	3·67	3·46	+ 0·21	5·89	9·86	− 3·97	6·47	12·25	− 5·78
Franzfontein	H. Janson	3·57	2·35	+ 1·22	5·85	6·54	− 0·69	6·54	6·64	− 0·10
Gabis	The Rev. P. Rehor	0·00	0·86	− 0·86	0·61	1·72	− 1·11	2·31	3·00	− 0·69
Garinais	F. Bertling	1·86	1·55	+ 0·31	3·22	3·50	− 0·28	6·18	4·94	+ 1·24
Gibeon	The Rev. Spellmeyer	0·80	1·39	− 0·59	1·99	4·48	− 2·49	2·61	8·57	− 5·96
Gobabis	The Rev. Irle	4·83	2·86	+ 1·97	9·17	10·63	− 1·46	11·66	14·49	− 2·83
Grootfontein	Pitkowski	3·65	3·92	− 0·27	10·31	15·30	− 4·99	13·72	21·91	− 8·19
Gr. Witvley	Maass	1·88	2·89	− 1·01	4·09	9·70	− 5·62	5·39	13·13	− 7·74
Haribes	Capt. Meyer	1·41	1·35	+ 0·06	2·22	5·20	− 2·98	2·62	6·55	− 3·93
Heirachabis	The Rev. P. Sroka	0·53	1·24	− 0·71	0·81	2·33	− 1·52	2·56	3·24	− 0·68
Maltshoehe	E. Just	0·66	1·59	− 0·93	0·92	4·13	− 3·21	1·52	5·09	− 3·57
Neu-Heusis	Liebig's Extract Co.	1·95	2·99	− 1·04	4·37	10·42	− 6·05	5·07	13·34	− 8·27
Okahandja	B. Tempin	3·67	3·36	+ 0·31	6·08	9·66	− 3·58	6·68	11·65	− 4·97
Okandjose	Von Gossler	1·08	2·91	− 1·83	3·42	11·07	− 7·65	6·36	13·67	− 7·31
Okasangumingo	R. H. A. Schneider	4·16	3·55	+ 0·61	9·35	11·33	− 1·98	13·52	16·42	− 2·90
Omaruru	The Postmaster	1·97	1·68	+ 0·29	5·99	7·89	− 1·90	6·53	10·02	− 3·49
Rehoboth	The Postmaster	0·94	2·39	− 1·45	1·65	7·08	− 5·43	1·65	9·16	− 7·51
Rietfontein	B. Leist	3·65	4·02	− 0·37	7·51	13·21	− 5·70	10·39	19·58	− 9·19
Swakopmund	The Gaoler	0·00	0·09	− 0·09	0·01	0·29	− 0·28	0·02	0·58	− 0·56
Tsumeb	Ing. Schetter	5·54	3·27	+ 2·27	11·19	15·44	− 4·25	14·39	22·56	− 8·17
Usakos	The Rev. Diehl	2·00	1·23	+ 0·77	2·41	3·61	− 1·20	2·41	4·60	− 2·19
Voigtsgrund	A. Voigts	5·17	1·49	+ 3·68	8·76	5·30	+ 3·46	9·85	6·59	+ 3·26
Waterberg	D. Hahn	6·10	3·37	+ 2·73	9·43	12·96	− 3·53	13·22	18·00	− 4·78
Windhoek	Observatory	3·87	2·84	+ 1·03	6·65	8·80	− 2·15	9·45	11·72	− 2·27

Blank page retained for pagination

8622—22/12/24—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METERIOLOGICAL OFFICE.

Vol. V. APRIL, 1924. No. 52.

MEAN atmospheric pressure above the average in the south and east, but practically normal in the west and centre; temperature very slightly below normal; a marked absence of killing frosts, but with light frosts at intervals throughout the month in low-lying areas; a shortage of rainfall common to the whole Union, with the exception of a few stations in Natal, Free State, and Cape Provinces; but with some good rains on the 18th, 29th, and 30th; a few destructive hailstorms on the 13th and 18th in the north and east of the Transvaal; conditions generally favourable to the ripening of late crops;—such were the outstanding features of the weather of April, 1924.

Pressure.—As may be seen from the accompanying map, pressure was about five hundredths of an inch above the average in the east and south, slightly higher than usual in the centre, and practically normal in the west. Anticyclonic conditions were persistent during the greater part of the month, the equatorial low pressure being well developed on only four days. High pressure areas lay over the west on the 8th, 12th, 14th, and 24th; over the south-west on the 9th and 15th; over the south on the 4th, 10th, and 18th; over the south-east and east on the 5th, 6th, 13th, 19th to 21st; and 25th to 28th; over the east on the 1st, 2nd, 7th, 11th, 16th, 22nd to 24th, and 29th. Low-pressure areas passed along the coast, lying over the south-west to south on the mornings of the 2nd, 6th, 7th, 11th, 22nd, and 29th; and over the south-east on the 17th and 30th.

Temperature.—The mean monthly temperature (63·2 degrees) was only 0·2 degree below the average, the days (with 75·8 degrees) being 0·1 degree and the nights (with 50·7 degrees) being 0·2 degree cooler than usual. In the case of the Provinces the temperature of the month was below normal in Natal and the Transvaal, and above the average in the Orange Free State and Cape. In the Transvaal the mean temperature (62·2 degrees) was 0·4 degree lower than usual. This difference was due to the mean maximum temperature (75·1 degrees) being 1·0 degree below, whereas the mean minimum (49·2 degrees) was 0·1 degree above the respective normals. The largest negative departures

APR 25 1925
Weather Bureau

from the usual conditions occurred in Natal, where the mean for this month (65·3 degrees) was cooler than usual by 2·6 degrees. This state of affairs was brought about by the mean day temperature of 76·8 degrees being 3·5 degrees, and the mean night temperature of 53·9 degrees being 1·6 degree below the corresponding average values. The small excess of 0·3 degree in the April mean (59·1 degrees) for the Orange Free State was due to the mean maximum (72·3 degrees) being 0·3 degree, and the mean minimum (45·9 degrees) being 0·2 degree higher than the respective averages. In the Cape Province, the larger excess of 0·6 degree in the monthly temperature (64·2 degrees) was entirely due to higher day temperatures, the mean maximum (76·5 degrees) being 1·2 degree above the normal, whereas the mean minimum or night temperature (51·8 degrees) was the same as usual. An excess in mean temperature at the separate stations was common to the greater part of the Cape Province, the north and south of the Orange Free State, the south and south-west of the Transvaal. Temperature was normal at Komatipoort in the Transvaal, and at Port St. Johns and Somerset East in the Cape Province. In the Transvaal, the excess amounts varied between 0·3 degree at Zeerust and 2·4 degrees at Potchefstroom. In the Free State, Kroonstad was warmer than usual by 2·0 degrees, and Bethulie by only 0·6 degree. Over the Cape Province, the surplus amounts lay between 0·1 degree at Umtata and Queenstown and 4·0 degrees at O'okiep, but were generally between 1 and 2 degrees. The deficits in mean temperature in the Transvaal were mostly less than 1 degree, varying, however, from 0·1 degree at Pretoria to 2·3 degrees at Belfast. In the Orange Free State, the stations in the north-east, east, and centre were cooler than the average by 0·4 degree, but Mafeteng, in Basutoland, showed a deficit of 2·6 degrees. In Natal, the sub-normal amounts lay mostly between 2 and 4 degrees, but ranged from 0·5 degree at Stanger to 4·1 degrees at Dundee. Both days and nights were warmer than usual over parts of the south and south-west of the Transvaal, the north and south of the Orange Free State, the Cape Peninsula, and parts of the south coast of the Cape Province, also over the northern Karroo, part of the east central Karroo, of Bechuanaland, and the interior of Namaqualand. In direct contrast to these, the mean maximum and mean minimum temperatures were both lower than usual in parts of the east, north, centre, and west of the Transvaal, the whole of Natal, with the exception of Durban, in Basutoland, as well as a few stations in the south-east and south of the Cape Province. At most of the remaining stations the days were warmer and the nights cooler than usual, the few exceptions being Port St. Johns, Durban, Harrismith, Bloemhof, Potchefstroom, Pretoria, Ermelo, and Piet Retief, where the opposite conditions obtained, the days being cooler and the nights warmer than the average. The excesses in the day temperatures varied, in the Transvaal, from 0·1 degree at Barberton to 1·9 degree at Potchefstroom; in the Orange Free State, from 0·4 degree at Ladybrand to 2·1 degrees at Kroonstad; and in the Cape Province from 0·1 degree at Kokstad and Somerset East to 5·6 degrees at Groot Drakenstein. The surplus amounts in the night values ranged from 0·1 degree at Johannesburg to 5·2 degrees at Bloemhof; in the Orange Free State, from 0·2 degree at Bethulie to 1·9 degree at Kroonstad; in the Cape Province, from 0·8 degree at Kimberley to 4·0 degrees at O'okiep; and at Durban, Natal, there was an excess of 0·7 degree in the mean minimum. The deficits in the day temperatures lay, in the Transvaal, between 0·1 degree at Middelburg and 3·8 degrees at Belfast; in the Free State, between 1·2 degree at Ladybrand and 1·4 degree at Bloemfontein; in Natal, between 0·2 degree at Stanger and 4·5 degrees at Dundee; and in the Cape Province between 0·2 degree at Stutterheim and 3·6 degrees at Kenhardt. The mean warmest station in the Union during April was Komatipoort, with a temperature of 73·0 degrees, and the mean coolest station,

Belfast, with 53·5 degrees, a difference of 19·5 degrees, both stations situated in the Transvaal. In the Orange Free State, the difference between the warmest station, Kroonstad (temperature, 60·9 degrees), and the coolest, Harrismith (55·6 degrees), was only 5·3 degrees. In Natal, the temperature of the warmest station, Stanger (71·0 degrees), exceeded that of the coolest station, Dundee (60·5 degrees), by 10·5 degrees. In the Cape Province, both extremes were to be found in Namaqualand, a somewhat unusual occurrence, the warmest station, O'okiep, having a temperature of 69·8 degrees, and the coolest, Port Nolloth, having 58·6 degrees, a difference of 11·2 degrees. Kenhardt, which is frequently the warmest station, was second on this occasion with a temperature of 68·8 degrees. The highest mean maximum (85·8 degrees) occurred at Komati Poort, and the lowest mean minimum (39·2 degrees) at Belfast, both in the Transvaal. The corresponding values in the other Provinces are: in the Orange Free State, 75·1 degrees at Kroonstad and 44·4 degrees at Harrismith, a difference of 30·7 degrees; in Natal, 80·5 degrees at Stanger and 47·3 degrees at Dundee, a difference of 33·2 degrees; in the Cape Province, 83·4 degrees at Kenhardt and 43·5 degrees at Murraysburg, a difference of 39·9 degrees. During the month there was an outstanding warm period, the highest readings of the thermometer being recorded on nineteen days, viz., 1st, 2nd, 5th to 17th, 23rd, 26th, 29th, and 30th, most numerously on the 7th, 12th, and 17th. The lowest temperatures were registered on twenty days of the month, 1st, 3rd, 9th to 11th, 13th, 14th, 16th, 18th to 24th, and 26th to 30th, most widely on the 10th, mainly over the Cape Province, and on the 29th over parts of the Transvaal, Natal, and Bechuanaland. The extreme maxima over the Transvaal varied between 75·4 degrees at Johannesburg on the 12th, and 99·0 degrees at Komatipoort on the same date, the majority of stations recording between 80 and 90 degrees. In the Free State, the highest readings were between 74·0 degrees at Harrismith on the 8th and 14th, and 82·2 degrees at Kroonstad on the 17th; in Natal they lay between 82·0 degrees at Dundee on the 12th, 14th, and 17th, and 90·0 degrees at Stanger and Weenen on the 17th and 30th respectively. In the Cape Province, these temperatures mostly exceeded 90·0 degrees, but varied between 80·0 degrees at Aliwal North on the 7th and 17th, and 102·2 at Uitenhage on the 7th. Temperatures of 100 degrees or over were confined to the Cape Province, 100·0 degrees occurring at Port Nolloth on the 1st, 100·3 degrees at Groot Drakenstein on the 6th. The extreme minima were mostly in the neighbourhood of 40 degrees in the Transvaal, rising, however, to 51·0 degrees at Komatipoort on the 23rd, and falling to 30·0 degrees at Belfast on the 30th. Similarly, the lowest readings in the Free State varied between 36·0 degrees at Harrismith on the 1st and 20th, and 40·3 degrees on the 27th at Kroonstad. In Natal, the lowest readings ranged from 37·0 degrees at Dundee and Estcourt on the 20th, 29th, and 30th, to 59·8 degrees on the 19th at Durban. In the Cape Province the extreme minima were in many instances below 40 degrees, but showed a variation between 55·0 degrees at Port St. Johns on the 10th and 29th, and 33·2 degrees at Grahamstown on the 10th. The extremes over the Union were, therefore, 102·2 at Uitenhage and 30·0 at Belfast, a range of 72·2 degrees during the month. Ground *Frosts* were infrequent and generally slight, being confined almost entirely to low-lying ground, valleys, and vleis, and causing little or no damage. They were reported as occurring on the 1st, 2nd, 10th, 11th, 13th to 17th, 19th, 20th, 22nd, 28th to 30th. They were noted in the Carolina, Middelburg, Standerton, Ermelo, and Witwatersrand Divisions of the Transvaal; in the Harrismith, Vrede, Ladybrand, and Philippolis Districts of the Orange Free State; at Nottingham Road, Newcastle, and Rongpoort (District of Weenen), in Natal; in the Queenstown, Kokstad, Middelburg, Cathcart, and Somerset East Divisions of the Cape Province, and in Basutoland. The only damage

reported was at Irenedale (Standerton District) on the 15th, when mealies were nipped; on the same date at Grootfontein (Division Middelburg), in the Cape, where mealies and pumpkins were scorched; at Buckland Downs (District Harrismith) on the 19th, when mealies and tender plants were killed; on the 22nd at Woudzicht (District Vrede), when mealies were killed along the rivers and spruits.

Precipitation.—During this month showers—more or less local—occurred over the Transvaal at intervals throughout the month, being most widespread about the 18th and 30th. The number of rain days over the various divisions were generally about five or six over the most of the districts, but varied from two in Carolina and Standerton to eight in Barberton and Lydenburg. In the Free State light showers were fairly general on the 18th, 19th, and 30th, whilst good rains occurred over the greater part of the Province on the 22nd and 23rd. In Natal, mainly light rains fell during the first three weeks of the month; moderate amounts in parts on the 4th, 5th, 9th, and good general rains on the 18th. In the Cape Province, light showers fell at intervals throughout the month over the south-west, south coast, the southern Karroo, Bechuanaland, the north-east, south-east, and Kaffraria. Over the northern border showers fell at frequent intervals from the 18th to the end of the month; over the central Karroo on the 22nd, 29th, and 30th; over the Peninsula on the 11th, 29th, and 30th, and on the last day of the month over the west coastal area. An excess of rainfall was confined during April to very limited areas in the south of Natal, the south of the Orange Free State, and the adjoining portion of the north-east of the Cape Province, and the neighbourhood of Hopetown in the northern border, and of Wakkerstroom in the south-east of the Transvaal. The rainfall at Kenhardt was normal. With these exceptions, precipitation was lower than usual, generally by amounts of an inch or under. The deficits, however, exceeded 1 inch in portions of the east, south, and south-west of the Transvaal, the north and east of the Free State, portions of the north and west of Natal and of the east of the Cape Province, including Kaffraria. In portions of the south-west and of the Cape Province, the shortages were over 2 inches. In the Transvaal the sub-normal amounts varied from 0·05 inch (or 2 per cent.) at Pigeonhole (Zoutpansberg) and 1·75 inch (or 78 per cent.) at Pilgrims Rest. No rainfall was reported from a number of stations in the Barberton, Standerton, Potchefstroom, Waterberg, and Zoutpansberg Divisions. In the Free State, the minus quantities ranged from 0·01 inch (or less than 1 per cent.) at Boshof to 1·39 inch (or 78 per cent.) of the normal at Kroonstad; in Natal, from 0·55 inch (or 15 per cent.) at Empangeni to 1·47 inch (or 69 per cent.) at Vryheid. In the Cape Province, the shortages lay between 0·03 inch (or 12 per cent.) at Port Nolloth and 2·33 inches (or 55 per cent.) of the average at Driefontein, in the French Hoek area. The supra-normal amounts in the Union were less than an inch, ranging from 0·01 inch (or 1 per cent.) at Hopetown to 0·75 inch (or 56 per cent.) at Bethulie.

A few *Thunderstorms* and *Hailstorms* occurred during the month. The latter type of storm occurred on the 13th at Hermanusdoorns (Division Waterberg) and Driekoppies (Division Zoutpansberg), causing damage to mealies, crops, and grazing. At the latter station, the stones were 2 inches in circumference, and the path of the storm 1½ miles wide. On the 18th, similar storms were reported from Davel (Division Bethal), Welgelegen (Division Ermelo), causing some damage. On the 19th, a hailstorm occurred at Ballengeich, in the Newcastle Division of Natal, and at De Rots and in the Hoopstad District, but no damage was noted; and on the 20th at Glückstadt, in the Vryheid Division, where some damage was reported, but no details given. On the 22nd, hail at Le Roux (District of Oudtshoorn) caused slight damage to tobacco.

In South-West Africa, the amounts registered during April were less than an inch, except at Voigtsgrund, where 1·37 inch was recorded. "Nil" amounts were confined to the extreme north of the territory, and to the neighbourhood of Bethany in the south. Excesses over normal were confined to Haribes and Voigtsgrund in the north of the southern half of the country, where the actual surplus amounts were 0·19 inch (or 33 per cent.) and 0·83 inch (or 154 per cent.) respectively. The deficits lay between 0·01 inch (or 25 per cent.) at Swakopmund and 1·73 inch (or 99 per cent.) at Waterberg.

The gross totals since the 1st July, 1923, were mostly below the averages, the largest deficits being in the east and south of the Union, and the least in the west. In the Transvaal, the minus quantities lay mostly between 4 inches and 9 inches, but fell below the lower value in the north, centre, and south-west, and exceeded the higher value in the middle of the more easterly portion and the Woodbush area. The deficiencies varied from 0·35 inch (or more than 1 per cent.) at Belfast and 25·41 inches (or 31 per cent.) at Woodbush. In the Orange Free State, the shortages were greatest in the north and west, less in the east, and least in the centre, varying from 7·60 inches (or 33 per cent.) at Kroonstad to 2·54 inches (or 13 per cent.) at Bloemfontein. In Natal, the sub-normal amounts were everywhere large, and showed considerable variation, being 3·43 inches (or 11 per cent.) at Dundee and 16·50 inches (or 39 per cent.) at Empangeni. In the Cape Province, the largest negative amounts were found in parts of the south-east, north-east, and south-west, where they lay between 7 inches and 12 inches. Deficits between 4–6 inches occurred in portions of the Cape Peninsula, the south-west, the south-east, the Karroos, and the north of Bechuanaland; elsewhere they were mostly between 2 and 3 inches. Over this Province, they ranged from 0·51 inch (or 32 per cent.) at Port Nolloth to 11·45 inches (or 43 per cent.) at Swellendam. In South-West Africa, the totals for the ten months were generally between 6 and 10 inches less than the normals in the northern half, between 4 and 6 inches in the more northerly portion of the southern half, and between 3 inches and a few hundredths of an inch in the more southerly parts. In the western portion of the northern half, the deficits lay between 3 inches and half an inch. The actual minus quantities ranged from 0·05 inch (or less than 2 per cent.) to 10·41 inches (or 50 per cent.) at Rietfontein. A few detached areas showing surplus rainfall for this period were to be found in all the Provinces except Natal, as well as in South-West Africa. Thus, in the Transvaal, an excess of 3·43 inches (or 12 per cent.) occurred at Middelburg, and of 2·57 inches (or 11 per cent.) at Zeerust in the west. In the Orange Free State, Bethulie, in the south, had a surplus of 3·55 inches (or 22 per cent.) over normal. In the Cape Province, plus amounts occurred in the east of the Transkei, parts of the south-east, in portions of the centre, south-east, and east of the northern Karroo, and in the south-west. These excesses varied from 0·77 inch (or 3 per cent.) at Kokstad to 8·94 inches (or 19 per cent.) at Driefontein (French Hoek), in the south-west, but were mostly between 1 and 2 inches. In South-West Africa, supra-normal amounts were limited to Garinais in the south-east and Voigtsgrund in the north of the southern half of the territory, the excesses at these stations being 0·85 inch (or 15 per cent.) and 4·09 inches (or 57 per cent.) respectively.

The cumulative rainfall for the first four months of the year was mostly less than usual over the greater part of the Union, although the stations affected by plus amounts were much more numerous in the Transvaal than was the case for the ten-months' period. Thus, totals in excess of the average occurred at many stations in the east and the middle south of the high veld, the west of the central middle, the middle of the central low veld, and portions of the Zoutpansberg. The plus quantities ranged from 0·36 inch (or 3 per cent.) at

Pietersburg to 6·88 inches (or 49 per cent.) at Middelburg. Over the remainder of the Transvaal Province, the gross totals for the four-months were less than usual, the deficits being greatest in the east and north, and least in the extreme north and north-west, ranging from 0·43 inch (or 4 per cent.) at Bloemhof to 15·25 inches (or 35 per cent.) at Woodbush. In the Orange Free State, excess amounts were registered in the centre and south, Bloemfontein having a plus amount of 0·61 inch (or 5 per cent.) and Bethulie plus 5·20 inches (or 51 per cent.). In the east, north-east, and west, the rainfall during the four months was lower than usual by less than one inch, but in the north Kroonstad had 3·50 inches (or 27 per cent.) less than the normal. In Natal, the precipitation for this period was lower than the average by amounts generally between 2 and 5 inches, except at Dundee, where a surplus of 1·46 inch (or 8 per cent.) was recorded. The other stations had sub-normal totals, the deficits lying between 0·57 inch (or 4 per cent.) and 5·15 inches at Weenen and Empangeni, where they constituted 36 per cent. and 26 per cent. respectively of the normals at these stations. In the Cape Province, the areas having excess rainfall were even more limited than those similarly affected during the ten months' period, being confined to the centre, east, and south-east of the northern Karroo, and a portion of the north-east. The excesses there varied from 1·80 inch (or 38 per cent.) at Carnarvon to 4·43 inches (or 56 per cent.) at Philipstown. The shortages over the remainder of the Province were greatest (3–4 inches) in portions of the south-east and south-west and Bechuanaland; elsewhere they were generally between 1 and 3 inches, but decreasing in a few instances to less than 1 inch; they varied from 0·15 inch (or 2 per cent.) at Britstown to 4·24 inches (or 38 per cent.) at Swellendam. In South-West Africa, the only station showing an excess was Voigtsgrund, with plus 4·29 inches (or 73 per cent.). In the northern half, the deficits were mostly between 4 and 7 inches, decreasing to 2–3 inches in the west and east. In the southern half, the totals were sub-normal by amounts of from 4 inches to less than half an inch. The deficits lay between 0·29 inch (or 88 per cent.) at Swakopmund and 8·63 inches (or 71 per cent.) at Okandjose.

State of Country.—The fine weather prevailing during the month, together with the absence of any general severe frost and a fairly humid atmosphere, were favourable to the growth and ripening of crops in the Transvaal, particularly in the east and north. The mealie crop at Ermelo was considered safe; crops at Mosdene, in the Waterberg Division, promised to be a record, and mealies were ripening in this and the Standerton Divisions. Cotton-picking had commenced in part of the Waterberg Division, and a good yield of cotton was anticipated at La Cotte, in the Zoutpansberg; the nut crop at Pigeonhole (Zoutpansberg Division) was stated to be very good, whilst other crops had improved with the late rains. Ploughing operations had started in parts of the Waterberg Division. In the Rustenburg Division, the cotton crop was reported to be very poor, owing to the unfavourable distribution of rain and sunshine, as well as insects, whilst kaffir corn and maize crops there were very disappointing, and in some places so young that fears were expressed that they might be destroyed by early frost. At Potchefstroom, temperature was too low for the maximum growth of crops, and at Barberton more rain would prove beneficial, although crops were looking well. In Lichtenburg, there were no crops to be reaped. Veld and cattle generally continued in good condition. In Swaziland the grazing was still good, and sheep farmers from the Transvaal high veld had begun to enter the country for winter grazing. The satisfactory condition of the veld was no doubt due, in part at least, to frequent heavy dews and mists, both in Swaziland and the Standerton District. In the Free State, the most unsatisfactory reports as to the state of the country

emanated from the Kroonstad and Vrede Districts. The mealie crops were about half or less than half that of the previous year; there was hardly any grazing in the Kroonstad District, so that some farmers were already trekking with their stock; while in the Vrede District, owing to the absence of forage, the outlook for winter feed for stock was serious. In parts of the Harrismith District, crops were somewhat backward, and in others, as well as portions of Vrede, frost had killed mealies and tender plants in low-lying parts and valleys. In other parts of the north and east of the Orange Free State, the mild weather had enabled growth to continue to an unusually late date, causing a brighter outlook than was anticipated. In Frankfort the hay crop was poor; drought had played havoc with forage crops, and the mealie crop was expected to yield only about three-fifths of that of the previous season. Nevertheless, this district was considered to be in a much better position than most as regards winter feed. At Heilbron the maize, although young in parts, was still safe, and fodder appeared to have been harvested in abundance. In Ladybrand District the late crops were looking well, and in Philippolis frost had not been sufficiently severe to affect vegetation. Stock were generally in fair condition, and had improved considerably in some areas, sheep being reported as in prime condition at Belladale (Frankfort District). In Natal, more rain was required, the veld in many parts turning brown, and assuming a wintry appearance. Nevertheless, stock feeding was plentiful in Maritzburg Division and fair in others. The absence of frost materially benefited the mealie crop at Dundee, and saved the crops at Middelton (Umvoti Division); but the maize was beginning to die off at Mid-Illovo. At Greytown, another fortnight of warm, frostless weather was required to enable large areas of mealies to ripen. In the Klip River District all crops were ripening well, and the green winter crops were good at Nottingham Road. At Summerford (Ixopo Division), the rain and mist together sufficed to keep vegetation going. At Rongpoort (Weenen), the crops were poor, owing to drought. Stock was generally in good condition, although a few cases of dikkop were reported as occurring in the Mid-Illovo District. In the Cape Province there was an almost universal lack of sufficient rain, particularly over the summer rainfal area; stock were going off in condition in the Tsolo and Stutterheim Divisions, owing to the veld drying up. In the Queenstown Division there was no veld, and forage for winter feeding was drying up, except where irrigation could be carried on, with the result that most of the large stock and numbers of sheep had been transferred to areas where the veld was still good. In Murraysburg, some areas benefited by rains at the end of the month, but in others there was a continuation of the drought of previous months. A serious deficiency of rain was also common to the Division of Bedford, causing a gloomy outlook for winter in the matter of both feed and water. In Bathurst, owing to a continuance of the drought, gardens, orchards, and crops were practically a failure, whilst the veld was burnt up, and stock getting in poor condition. At Grootfontein (Middelburg), crops, e.g. mealies, did not reach the fruiting stage, owing to late sowing. In the south and south-west, high temperatures occurred at intervals during the month, so that some days were warmer than in January and February, and the country continued dry until the end of the month, when some good soaking showers occurred. In parts of Kenhardt the veld was very poor, owing partly to a scanty rainfall and partly to the ravages of locusts. There were no crops in portions of Somerset East. More rain was required in the Oudtshoorn District for ploughing the dry lands; whilst this was stated to be one of the worst seasons ever experienced at Glen Roy, in the Tarkastad Division. A pleasing contrast to these unsatisfactory conditions are the reports from Sydney-on-Vaal, which state that the veld had recovered considerably, and live stock showed a marked improvement all round; from Aliwal North, where it is reported that

the prospects for winter were good; from Kilcullen (Barkly East), where both large and small stock were in prime condition; and from Louisvale (Kenhardt Division), where the agricultural farmer is said to have had a good season. Satisfactory conditions extend to Bechuanaland and Basutoland, where the winter veld was excellent, and stock in good condition.

Water Supply.—Few reports were made as to the state of the water supply, and those received were far from reassuring. At Roadside (District Vrede), the water holes had dried; at Rongpoort (District Weenen), water was low; at Summerford (Ixopo Division) the rain had been insufficient to bring up springs; from Grootfontein (Division Middelburg) it was stated that the Drooge River had ceased to flow on the 29th, but plenty of water was to be found below the surface; irrigation in the town of Somerset East was being restricted to nine hours per week.

JUNE WEATHER CHARACTERISTICS.

June is a dry, sunny month, and over no part of the Union, except the western, southern, and south-eastern coasts, and in the extreme south-west of the Cape Province, does the rainfall exceed 1 inch. On the high veld and Karroo it is not infrequently quite rainless.

The rainfall in the Cape Peninsula is, however, still increasing, approximating 6 inches, whilst over the adjoining south-western districts the monthly maximum of 3·5 inches is reached. Along the west coast there is a slight decrease, but both there and along the south coast the variation from the May rainfall is inconsiderable. Thunderstorms are now at their minimum.

The mean air temperature continues to decrease rapidly, the days, except on the northern Karroo and in the Transvaal, being the coldest of the year. The Transvaal low veld is now the warmest part of the Union, with a mean temperature of about 59·5 degrees, and Basutoland the coldest with 45·5 degrees. Between these are Natal and the south coast, with a normal of 57 degrees; the Cape Peninsula, with 56 degrees; the south-eastern districts of the Cape, with 55 degrees; the west coast, with 54 degrees; Kaffraria, with 53 degrees; the north-eastern districts and the east-central Karroo, with 53·5 degrees; the southern Karroo, with 51·5 degrees; the northern borders, with 51 degrees; the west-central Karroo, with 50 degrees; the Transvaal high veld, with 49·4 degrees; and the Orange Free State, northern Karroo, and Cape north-eastern districts, with 46 degrees. Sharp night frosts are a characteristic of the high veld during this month, and killing frosts may be experienced.

The prevailing winds over the Cape Peninsula are from N.W. and S., both directions, however, showing a decrease in frequency compared with the preceding month. Over the northern borders of the Cape, the prevalent direction has changed to S.S.E. from S. during May, thus causing a considerable increase in the number of S.S.E. winds, and a corresponding diminution in those from S. Over this area, moreover, there is a lower percentage of winds from those points of the compass from W.N.W. round by N. to E.N.E., as well as S. and S.W., but an increased percentage of winds from all other directions. Notwithstanding a considerable diminution in the frequency of north-westerly (W.N.W.–N.N.W.) winds and a slight increase in all other directions (except S.W. and S.S.W.), the prevailing wind over the high veld continues to blow from a north-north-westerly direction. Over the Cape south-eastern districts the prevalent direction is W.N.W., as a consequence of a falling-off in frequency of north-easterly and south-westerly winds, together with an actual increase of those from north-westerly directions.

C. STEWART,
Chief Meteorologist.

Pretoria.

OBSERVERS' NOTES FOR APRIL, 1924.

TRANSVAAL.

Carolina.—Fine and pleasant weather, with a few mild frosty nights, doing no damage. Rainfall : 0·58 inches on two days.—G. F. Mijnhardt.

Kopje Alleen (*Waterberg*).—The unexpected thunderstorm (1·12 inch) on the night of the 18th supplied most of the month's rainfall. It is the heaviest fall in twenty-four hours during April for five years. Temperatures : mean maximum, 78·3 degrees ; mean minimum, 48·7 degrees ; mean, 63·5 degrees ; highest, 84·9 degrees on 13th ; lowest, 41·3 degrees on 29th. Ploughing is actively proceeding, and the acreage of new land is being considerably increased, as the opening of the new railway to Tuinplaats has encouraged farmers to prepare for larger crops next season. Monkey nuts are mostly harvested. Cotton-picking commenced during the latter part of the month, and mealies are ripening fast. Rainfall : 1·18 inch on three days.—J. Lyall Soutter.

Groeneboom (*Rustenburg*).—This month day and night temperatures were generally on the low side ; nights gradually becoming cooler. Cotton crop is reported to be very small, owing to bad distribution of rain and sunshine, and also through insects. Maize still very young, and it is feared that crops will be caught if frosts occur early. Veld and cattle in good condition. Flying locusts are reported to be in neighbourhood. Rainfall : 0·02 inch on one day.—F. N. van Nouhuys.

Krugersdorp.—During April weather conditions were more or less normal, and it may be classed as having been a very fine month. No frost was recorded either in screen or on ground level. Rainfall : 0·86 inch on six days.—H. Sharp.

Gemboksfontein (*Middelburg*).—The days began to get cooler towards the close of the month. Although no frost has been registered in the screen, frosts have been experienced in the vleis. Rainfall : 0·33 inch on five days.—L. C. Skead.

Amatava (*Potgietersrust*).—Fine cool weather throughout the month. Rainfall : 0·15 inch on three days.—A. Troye.

Nooitgedacht (*Warmbaths*).—Nothing special to record ; not much wind. The mean maximum of the month is almost identical with that of March, but the nights have been distinctly cooler. The veld keeps in good condition : no locusts. Rainfall : 0·66 inch on three days.—G. Gordon Brown.

Jakhalsfontein (*Pietersburg*).—Dry, with cold nights ; crops promise a moderate harvest. Rainfall : 0·16 inch on one day.—Rev. James C. Palmer.

Myrthley (*Standerton*).—Heavy dews each morning, with mist at times ; general lowering of temperatures during the month, with slight frosts in low exposed places. Rainfall : 0·74 inch on two days.—J. L. Ellis.

Mosdene (*Naboomspruit*).—A rather cold and dry month, the mean temperature being 2·0 degrees below the average, and the rainfall 0·10 inch on two days, as compared with an average for April of 0·42 inch. There has been no frost ; crops have come on well, and promise to be a record.—Ernest E. Galpin.

Lichtenburg.—With the small amount of rain we have had, the outlook for winter is not very bright. No frost as yet, which does not matter, as the farmers have nothing to reap. Rainfall : 0·27 inch on three days.—E. Newton.

Barberton.—Dry, cool weather has prevailed generally throughout the month. The crops are looking well, although a little more rain would be beneficial. Rainfall : 0·43 inch on four days.—Walter Grubb.

Bloemhof.—The weather has been very changeable this month: more or less mild in the morning until about 9 or 10 o'clock, from then onwards very hot, otherwise windy until the afternoon, when suddenly the sky would become overcast with threatening clouds. A few slight showers of rain, followed by very cold weather. Rainfall: 0·85 inch on six days.—F. Osborne.

Ermelo.—With the exception of a few days in the middle of the month, the weather has been very mild, and the mealie crop is now safe. A slight frost occurred on the night of the 27th–28th, but not severe enough to be recorded in the screen. Rainfall: 0·88 inch on four days.—J. Dean.

Middelburg.—During the month the winter has settled in, the days getting colder, and especially the nights. In the middle of the month came a few days of drizzle, uncertain weather, and finally a good fall of rain, which ushered in a complete change to cold overcast days and regular winter nights; but frost held off until the night of 28th–29th, the grass being well frosted in the mornings. More mild weather appears now to have arrived. Rainfall: 0·72 inch on seven days.—Dr. H. A. Spencer.

Piet Retief.—Perfect weather conditions throughout month. Rainfall: 1·25 inch on five days.—J. Werner.

Pigeonhole (New Agatha, Zoutpansberg).—Crops improved with late rains; nut crops very good. Rainfall: 2·26 inches on fourteen days.—Jno. McCallum.

Potchefstroom (Experimental Farm).—Month has been characterized by cool, sunny weather, with three slight showers. Temperatures have been low for the maximum growth of crops. Rainfall: 0·39 inch on three days.—D. Moses.

Parktown North (Johannesburg).—Winter appeared early this month, the ground being covered with hoar frost on the 1st. The weather was somewhat changeable during the month: a few nice days, the rest being cloudy and overcast. Rain fell on the 18th, 20th, and 30th. Rainfall: 0·65 inch on three days.—G. S. Garnett.

Hermansdoorns (Waterberg).—13th April: heavy hail between 2.30 p.m. and 4.30 p.m., doing damage to mealies. Rainfall: 0·92 inch on two days.—F. C. Adamson.

Davel (Bethal).—18th: Severe hail, doing much damage. Rainfall: 3·70 inches on three days.—H. A. Wollenberg.

Welgelegen (Ermelo).—18th: Hailstorm; great damage to crops. Rainfall: 2·65 inches on one day.—G. Swart.

Doornpoort No. 550 *(Rustenburg).*—28th April: A big swarm of locusts flying some four miles to the west. Rainfall: 0·39 inch on three days.—F. Davey.

Boschfontein No. 607 *(Rustenburg).*—3rd April: Tobacco crops in good condition. Rainfall: 0·71 inch on three days.—O. Glatthaar.

Middelkop No. 839 *(Rustenburg).*—Cotton crops in this vicinity are very poor and late. The kaffir and mealie crops have also been very disappointing. Rainfall: Nil.—W. J. Retief.

Weltevreden (Standerton).—A fine month, giving mealies a chance to ripen. Cattle and grass are good. Rainfall: 0·47 inch on one day.—D. Lane.

Irenedale (Standerton).—15th April: Mealies nipped by frost. Rainfall: 0·12 inch on one day.—E. von Musschenbroek.

La Cotte (Zoutpansberg).—Cotton crops will be reaped in about three weeks' time, and good yields are expected, in spite of January and February drought. Rainfall: 0·30 inch on one day.—W. Andrews.

Broederstroomdrift (*Zoutpansberg*).—Something in the atmosphere this season which has been very good for crops. Rainfall : 0·73 inch on seven days. —G. van Velden.

Driekoppies (*Zoutpansberg*).—13th : Hail about 2 inches circumference fell during the storm, which travelled in a breadth of about one and a half miles. A lot of damage was done to mealies, crops, and grazing. Rainfall : 0·36 inch on two days.—N. R. Musgrove.

SWAZILAND.

Mbabane.—The grazing is still quite good. Sheep farmers have commenced to enter Swaziland for winter grazing. Rainfall : 2·20 inches on ten days.—R. C. S. Markham.

Hlatikulu.—For the month of April we have had very heavy mists, which are very unusual for this time of the year in this part. The grass is still quite green, and cattle are looking well ; farmers have not yet moved their cattle to the Bushveld on account of this. Sheep farmers from the Transvaal high veld have now made a start at trekking in for winter grazing. Rainfall : 1·01 inch on eleven days.—J. Pullen.

ORANGE FREE STATE.

Holfontein (*Kroonstad*).—This is going to be a very hard year. Some farmers are already trekking to other parts with their stock ; hardly any grazing is to be had in this district. The mealie crop is poor, and is about 50 per cent. below that of last year. Rainfall : 0·72 inch on three days.—L. C. McInerney.

Belladale (*Frankfort*).—This has been a very favourable month as regards the weather. Stock have improved in condition ; sheep especially are in prime condition. The hay crop is poor : drought played havoc with all forage crops ; at the same time we are in a much better position as regards winter feed than most districts. Mealies have come on quite a bit, and the frost, in keeping off, will add many more bags to reap ; but nevertheless I should say the yield will be about 40 per cent. less than last season. Winter crops looking well. Rainfall : 1·01 inch on two days.—D. McCalman.

Stanleyvale (*Harrismith*).—A fair month ; crops a little backward ; stock fair. Rainfall : 1·16 inch on four days.—G. C. Atkins.

Buckland Downs (*Harrismith*).—19th : Frost in low-lying parts and valleys, killing mealies and tender plants. Rainfall : 1·19 inch on five days.—G. Southey.

Heilbron.—From all accounts the outlook is brighter than anticipated. No frost has been observed yet, although some cold winds have been encountered, and the maize crops, in some parts young, are still safe. Stock fair, and fodder appears to have been harvested in abundance. No diseases have been reported. Rainfall : 0·86 inch on four days.—P. A. du P. Naude.

Waterland (*Ladybrand*).—Perfect April : warm days ; all growth maintained to an unusually late date. Slight hoar frosts reported, but the temperature has not gone low enough to check even a dahlia ; fairly heavy dew each morning. Rainfall : 0·62 inch on five days.—K. C. Johnson.

Hobhouse (*Ladybrand*).—Very nice weather ; warm days ; no frosts ; late crops lovely. Rainfall : 0·65 inch on one day.—J. B. de Villiers.

Driekop (*Philippolis*).—Weather beautifully mild and warm throughout the whole month. Slight fall of frost on 10th inst., but it had no adverse effect on growth of vegetation. Rainfall : 1·21 inch on nine days.—J. J. v. Ellinckhuizen.

Roadside (*Vrede*).—Veld very dry; mealie crops 60 per cent. under last year. No forage in these parts; water holes dried up; serious outlook for feeding for stock in winter. Rainfall: 1·23 inch on one day.—W. B. Fry.

Woudzicht (*Vrede*).—This month was favourable for all crops until 22nd, when some lands got frost, which killed mealies along rivers and spruits. Rainfall: 0·74 inch on one day.—J. N. Kohler.

NATAL.

Maritzburg (*Mental Hospital*).—Seasonable weather has prevailed throughout the month, with beneficial rains. Stock feeding plentiful. Rainfall: 2·61 inches on nine days.—The Staff.

Ladysmith.—A very dry month, and the country is already taking on a wintry aspect, although there have been no frosts. Rainfall: 0·66 inch on three days.—D. A. R. Leathern.

Dundee.—A very fine autumn month; frost keeping off will materially affect the local mealie crops, which are, generally speaking, backward. Rainfall: 1·16 inch on two days.—West Thorrold.

Newcastle.—Ideal month for farmers. Rainfall: 0·95 inch on three days.—H. Ellis.

Mid-Illovo.—Country still in need of more rain; maize crops dying off in places; a few cases of "dikkop" in district; no local frosts, but grass inclined to get brown, though grazing still fair. Rainfall: 3·29 inches on nine days.—Lieut.-Col. J. W. V. Montgomery, C.M.G., D.S.O.

Nottingham Road.—Frost in patches on 2nd, then no more till 28th; veld is very brown; green winter crops good; all stock healthy. Rainfall: 1·70 inch on thirteen days.—Miss E. Smythe.

Newcastle (*Convent*).—The weather during the latter part of month was very cold; very little frost, however. Rainfall: 0·89 inch on two days.—The Mother Superior.

Paulpietersburg.—Normal weather conditions prevailed during the month. Rainfall: 1·56 inch on six days.—Dr. Niel Lipscomb.

Greytown.—Locally, general conditions improved, owing to rainfall; mealie crop quite good, but another fortnight of warm weather is required if big areas of mealies are to ripen. Rainfall: 2·61 inches on nine days.—J. M. Handley.

Paddock.—Very dry; warm, bright days; seems as if winter has set in properly. Rainfall: 1·67 inch on six days.—G. Victor Merriman.

Bluebank (*Klip River*).—No frost yet, and very dry; but all crops are ripening well. Rainfall: 0·35 inch on two days.—T. N. Niland.

Middelton (*Umvoti*).—Crops saved, owing to late frost. Rainfall: 1·16 inch on six days.—O. L. Nel.

Nogeya (*Lower Umfolozi*).—Ground very dry and baked; no water has penetrated this season, and outlook for winter is very bad. Rainfall: 1·97 inch on seven days.—J. S. Scott.

Rongpoort (*Weenen*).—Exceedingly dry; grass quite brown, and water low; very slight frost on 20th, but no damage done at all; stock in good condition; crops poor, owing to drought. Rainfall: 0·59 inch on three days.—J. H. Bartholomew.

Sawoti (*Umzinto*).—Country getting very dry, and rain badly needed. Rainfall : 1·35 inch on eight days.—Archibald & Co.

Summerford (*Ixopo*).—Enough rain and mist to keep vegetation going, but not to bring up springs. Rainfall : 1·75 inch on five days.—D. Campbell.

CAPE PROVINCE.

Tsolo.—Rain badly wanted ; cattle are well, but are falling off in condition, owing to the veld drying up. Rainfall : 0·49 inch on four days.—H. P. Tillard.

Ceres.—Weather generally fine and hot. Rainfall : 1·0 inch on three days. —A. Heatlie.

Kraaipan (*Mafeking*).—A comparatively mild month, as we have not yet had any frost. Rainfall : 0·25 inch on three days.—P. J. Hart.

Jansenville.—Fairly strong north and north-west winds during the month, although not at 8.30 a.m. Rainfall : Nil.—W. C. S. Albertyn.

Stutterheim.—Rain badly needed ; stock falling off in condition. Rainfall : 1·62 inch on twelve days.—F. C. Bousfield.

Somerset East.—Abnormally high atmospheric pressure prevailed throughout the month. The air has been very dry. There has been little rain and a remarkable absence of dew. Unless rain falls at once, the prospects for the winter will be bad. Irrigation in town is restricted to nine hours per week. Rainfall : 0·62 inch on five days.—C. Harris.

Murraysburg.—An unusual April, rainless for all days in the month but the last, when 0·53 inch fell. Reports in show that in the district some farmers were more fortunate, and registered considerably over an inch. Unfortunately, most of the farms mentioned in the last month's report are still without rain, and matters are very unfavourable for those unfortunate farmers.—W. H. Rose-Innes.

Queenstown.—A mild month, with bright sunny days, and but two hoar frosts ; some dust storms ; very dry ; no veld ; forage for winter feeding drying up, except where irrigated. Most of the large stock have been removed from district for grazing where veld is to be had. Numbers of sheep have also been removed for same reason. Rainfall : 0·68 inch on four days.—H. Holley.

Kokstad.—Very dry ; some slight frosts. Rainfall : 0·56 inch on six days. —H. D. Coyte.

Kenhardt.—Rain has fallen in some parts of the district, but hardly sufficient to relieve the drought there. Locusts have made their appearance, and the prospects are very precarious. Rainfall : 0·63 inch on three days.—R. Seydell.

Bedford.—The temperature has been very variable, summer heat and winter cold alternating. The last rain month has passed ; the winter outlook is very gloomy, both for feed and water. Rainfall : 1·06 inch on six days.—Thos. C. Hall.

Aliwal North.—A fine mild month ; no frost ; prospects for the winter good. Rainfall : 1·71 inch on five days.—Alex. Alcock.

Queenstown.—Fall of frost just failed on three occasions, enabling whatever crops there are to reach greater maturity ; a mild month, typical of autumn. A good soaking rain is yet needed to make up for the shortage of summer. Rainfall : 0·58 inch on four days.—J. F. C. Rein.

Grootfontein (*Middelburg*).—With rain not continuing from last month, country is looking dry; temperatures generally high for April; crops like mealies did not come to fruit, owing to late sowing. Ground frost on 15th scorched pumpkins and mealies. Plenty of water below surface, but Drooge River ceased flowing on the 29th. Towards end of month cold weather set in. Rainfall: 0·45 inch on three days.—E. J. van Meerten.

Rietfontein (*Aliwal North*).—Fairly warm month; no frosts. Rainfall: 1·51 inch on seven days.—A. G. Smith.

Port Alfred.—Drought continues, and is becoming very serious; gardens, orchards and crops practically a failure; veld is burnt up, and stock getting in poor condition. Rainfall: 0·80 inch on seven days.—W. H. Pascoe.

Sydney-on-Vaal (*Barkly West*).—Temperate month; veld recovered considerably, and live stock showing improvement all round. Redwing partridges still hatching eggs at end of month. No frosts recorded in immediate neighbourhood, though temperature dropped considerably after rain on 30th, and wind veering to south. Rainfall: 1·31 inch on seven days.—J. G. Richards

Darling.—Very dry during month, but welcome break in the weather at the end. Rainfall: 0·56 inch on three days.—P. H. Drake.

Catheart.—A dry month, with variable winds. A slight frost on the 10th. Rainfall: 0·95 inch on nine days.—C. E. Whibley.

Kaffir Kop (*Knysna*).—If the hot, dry weather of the 28th and 29th, following on the drought, had continued, serious forest fires might have occurred. The drought was broken by nice rains that fell from the 30th April to 1st May. Rainfall: 2·21 inches on five days.—J. L. Jordaan.

Liwandi, Addo (*Uitenhage*).—We experienced three spells of hot weather during the month, with a range of temperature from 102·2 degrees to 37·8 degrees within three days during one spell. There were several duststorms and much wind during middle of month. Rainfall: 0·67 inch on eight days.—Major J. Kreft.

Louisvale (*Kenhardt*).—The month closed with a cold snap, and summer seems to be passed. Owing to scanty rains, plus locusts, the winter veld is very poor. The agricultural farmer, however, has had a good season. Rainfall: 0·20 inch on one day.—Stuart N. Smith.

Vruchtbaar (*Wellington*).—Very dry and warm month; we had warmer days in April than January or February. The rain on the 29th was most welcome, and more so as it was a soaking rain of over seven hours' duration. Rainfall: 0·92 inch on four days.—P. J. Cillie.

Le Roux Station (*Oudtshoorn*).—Thunder showers, north wind, hail on the 22nd—slight damage to tobacco; much more rain needed for ploughing dry lands. Rainfall: 1·44 inch on four days.—O. H. Wright.

Rietfontein (*Somerset East*).—No crops; very dry weather; very cold by night, and frosts in the mornings. Rainfall: 0·32 inch on one day.—H. J. Pietersen.

Glen Roy (*Tarkastad*).—One of the worst seasons ever experienced here, and the outlook is a very poor one; the few crops there are, are very poor. Rainfall: 0·18 inch on one day.—R. M. Arnold.

Kilcullen (*Barkly East*).—Stock small and large in prime condition. Rainfall: 0·19 inch on two days.—O. A. S. Vorster.

Bechuanaland.

Palapye Road.—Grazing for cattle quite good here, and cattle keeping in good condition. Rainfall: Nil.—Thos. W. Shaw.

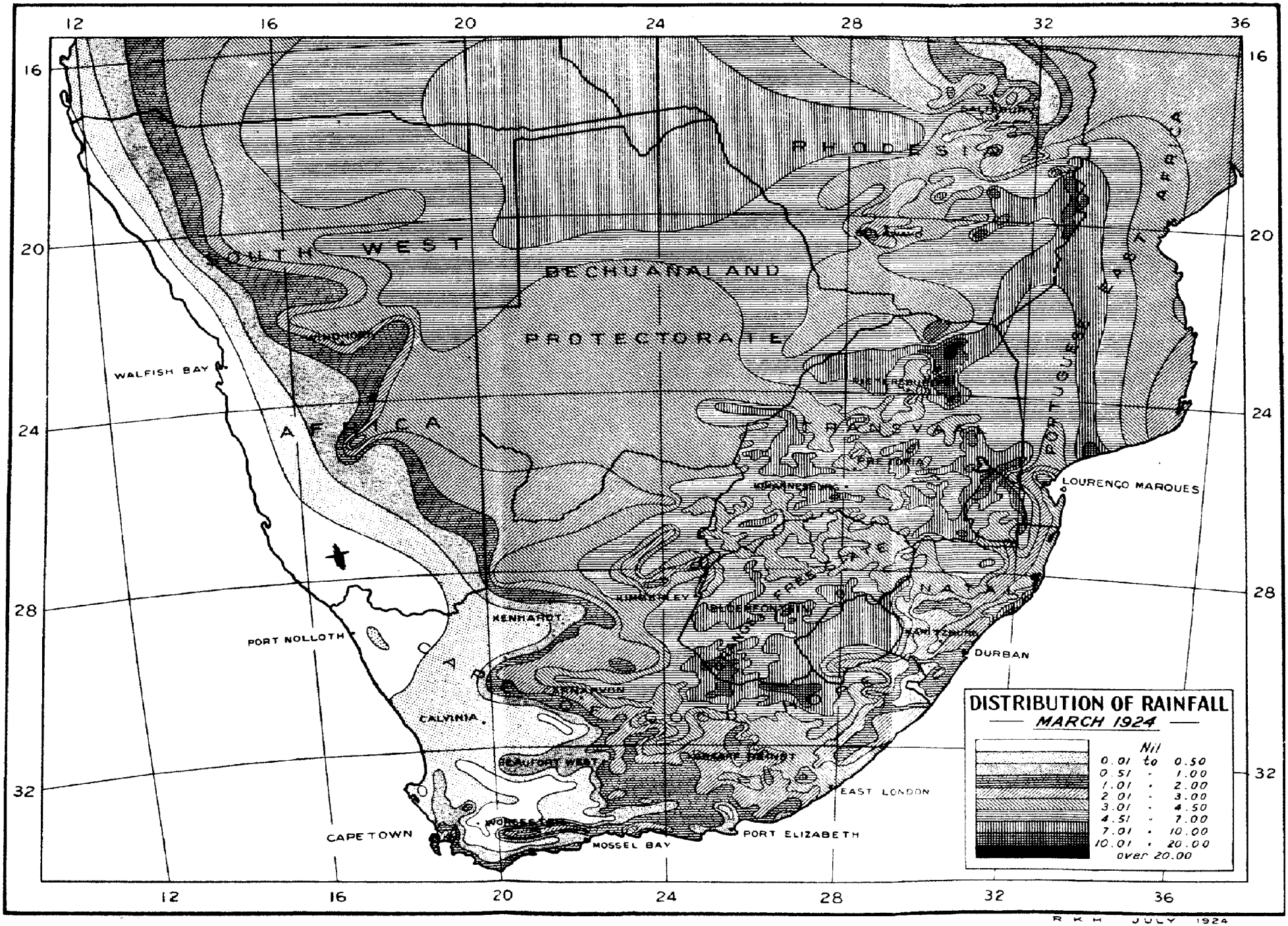
Dikgatlong Ranch.—Nothing to report; winter veld excellent; no locusts. Rainfall: 0·01 inch on one day.—Paul Jousse.

Basutoland.

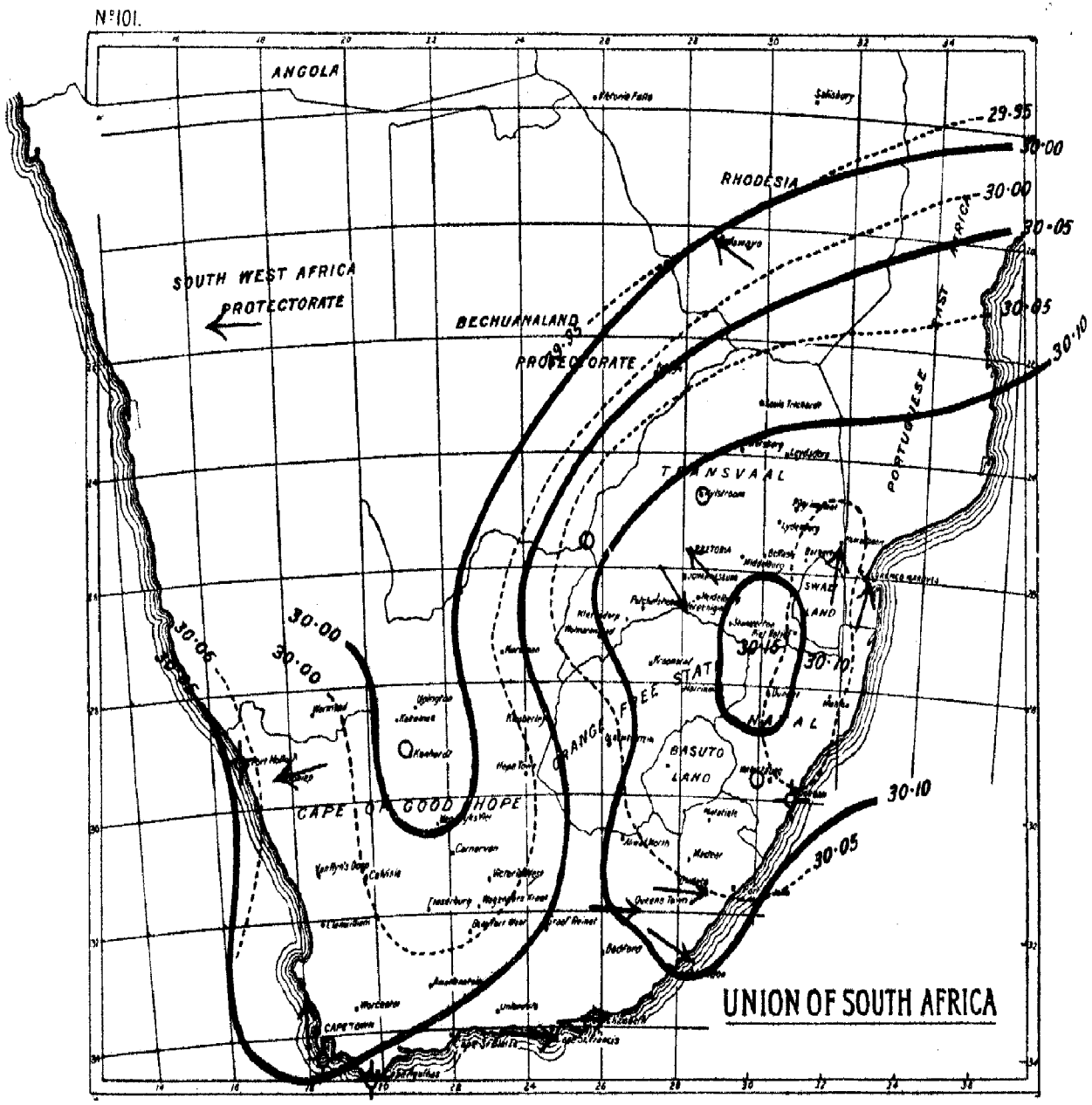
Mafeteng.—Fine calm days, with light clouds; nice showers 22nd to 24th; no frost recorded during the month in the screen; ground frosts on 10th, 11th, 13th to 17th and on 19th; no damage done; veld good; stock in first class condition. Rainfall: 0·94 inch on five days.—F. Hodgson.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), APRIL, 1924.

Place.	Observer.	Month—April, 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Transvaal—										
Barberton	Walter Grubb	77·4	56·0	66·7	67·0	− 0·3	90·0	12th	50·0	28th.
Belfast	The Forester	67·8	39·2	53·5	55·8	− 2·3	78·0	8th	30·0	30th.
Bloemhof	F. Osborne	75·3	51·5	63·4	62·0	+ 1·4	87·0	16th	41·0	29th.
Ermelo	J. Dean	67·9	43·9	55·9	57·3	− 1·4	75·6	14th	35·2	28th.
Johannesburg (Observatory)	The Staff	69·5	49·6	59·6	58·8	+ 0·8	75·4	12th	41·5	22nd.
Klerksdorp (Strathmore)	Chas. Scott	76·4	48·0	62·2	63·1	− 0·9	84·0	12th, 16th, and 17th	42·0	28th and 29th.
Komatipoort	H. J. Evans	85·8	60·3	73·0	73·0	± 0·0	99·0	12th	51·0	23rd.
Louis Trichardt	C. L. Cope	73·8	53·0	63·4	64·2	− 0·8	84·0	9th and 12th.	46·0	24th and 30th.
Middelburg	Dr. H. A. Spencer	74·8	44·5	59·6	60·2	− 0·6	84·0	15th	36·0	28th.
Nylstroom	G. Bakker	77·2	47·9	62·6	64·4	− 1·8	84·0	10th and 13th	39·0	29th.
Pietersburg	R. Roos	77·6	48·6	63·1	63·4	− 0·3	84·0	12th, 15th, and 17th	41·0	22nd.
Piet Retief	J. Werner	70·8	49·9	60·4	60·8	− 0·4	82·0	12th	40·0	21st.
Pigeonhole (New Agatha)	Jno. McCallum	67·6	54·5	61·0	—	—	77·0	9th	48·0	22nd.
Pilgrims Rest	E. M. Skea	72·1	47·4	59·8	61·6	− 1·8	83·0	17th	39·5	3rd and 28th.
Potchefstroom (Exp. Farm)	The Manager	78·1	47·7	62·9	60·5	+ 2·4	86·3	15th	41·4	29th.
Pretoria (Meteorological Office)	The Staff	75·5	50·0	62·8	62·9	− 0·1	82·7	15th	44·9	28th.
Rustenburg	A. Streatfield	78·1	49·7	63·9	65·2	− 1·3	87·0	14th	43·0	29th.
Standerton	—	—	—	—	58·0	—	—	—	—	—
Zeerust	H. Dietrich	79·1	49·0	64·0	63·7	+ 0·3	88·0	10th	41·8	29th.
Swaziland—										
Mbabane	Swaziland Police	69·8	50·4	60·1	62·6	− 2·5	82·0	12th and 17th	43·0	28th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	74·5	46·6	60·6	60·0	+ 0·6	81·0	14th	38·0	10th.
Bloemfontein	G. A. Schepers	73·0	46·0	59·5	59·9	− 0·4	80·5	13th	39·4	14th.
Harrismith	The Forester	66·9	44·4	55·6	56·0	− 0·4	74·0	8th and 14th.	36·0	1st and 20th.
Kroonstad	S. R. Northfield	75·1	46·7	60·9	58·9	+ 2·0	82·2	17th	40·3	27th.
Ladybrand	The Forester	71·8	45·8	58·8	59·2	− 0·4	78·0	13th, 14th, and 15th.	40·0	10th.
Natal—										
Dundee	West Thorrold	73·7	47·3	60·5	64·6	− 4·1	82·0	12th, 14th, and 17th	37·0	29th and 30th.
Durban (Point)	The Port Captain	76·9	64·0	70·4	72·4	− 2·0	83·2	30th	59·8	19th.
Estcourt	The Town Clerk	75·4	49·4	62·4	64·2	− 1·8	86·0	17th	37·0	20th and 30th.
Hlabisa	—	—	—	—	69·6	—	—	—	—	—
Ladysmith	D. A. R. Leathern	76·7	50·7	63·7	67·4	− 3·7	87·0	12th	42·0	20th.
Maritzburg (Mental Hospital)	The Staff	75·0	54·2	64·6	67·8	− 3·2	84·2	14th	45·0	20th.
Stanger	Cecil C. Foss	80·5	61·5	71·0	71·5	− 0·5	90·0	30th	55·0	29th.
Weenen	The Gaoler	79·6	50·1	64·8	67·6	− 2·8	90·0	17th	41·0	29th.



R K H JULY 1924



April, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for April.

AIR TEMPERATURES, APRIL, 1924—(*continued*).

Place.	Observer.	Month—April, 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Cape Province—										
Allwal North	Alex. Alcock	74·0	43·8	58·9	59·0	− 0·1	80·0	7th and 17th.	33·5	11th.
Bedford	Thos. C. Hall	76·4	49·3	62·8	63·2	− 0·4	91·0	7th	37·0	19th.
Capetown (Royal Observatory)	The Staff	74·8	55·8	65·3	63·0	+ 2·3	93·6	6th	46·6	10th.
Carnarvon	A. P. Malherbe	76·0	48·1	62·0	60·2	+ 1·8	84·0	5th	40·0	10th, 14th, and 18th.
Clanwilliam	—	—	—	—	67·2	—	—	—	—	—
East London	The Port Captain	73·1	57·4	65·2	66·2	− 1·0	79·0	23rd	49·5	10th.
Graaff-Reinet (Convent)	The Mother Superior	80·8	53·4	67·1	64·1	+ 3·0	92·2	7th	38·0	10th.
Grahamstown	The Vet. Res. Officer	74·5	47·4	61·0	63·9	− 2·9	93·0	7th	33·2	10th.
Groot Drakenstein	Lionel Baker	80·4	51·9	66·2	64·0	+ 2·2	100·3	6th	35·0	26th.
Kenhardt	R. Seydell	83·4	54·2	68·8	66·2	+ 2·6	92·0	5th and 14th.	43·0	13th.
Kimberley	F. W. J. Schmidt	78·2	51·8	65·0	63·6	+ 1·4	87·0	13th and 14th	46·0	10th.
Kingwilliamstown	W. Kindness	78·9	51·9	65·4	66·4	− 1·0	95·0	7th	39·0	16th.
Kokstad	H. D. Coyte	73·1	44·0	58·6	59·4	− 0·8	82·0	8th	34·8	20th.
Mafeking (Convent)	The Mother Superior	78·8	49·9	64·4	63·5	+ 0·9	85·5	12th, 13th, and 15th	43·2	29th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	71·9	59·1	65·5	64·4	+ 1·1	98·0	29th	51·0	13th.
Murraysburg	W. H. Rose-Innes	75·8	43·5	59·6	60·2	− 0·6	83·0	6th and 7th	33·5	10th.
O'okiep	J. Burrows	81·0	58·7	69·8	65·8	+ 4·0	91·0	5th and 6th	44·5	9th.
Port Elizabeth	The Lightkeeper	74·0	57·7	65·8	65·5	+ 0·3	96·0	2nd	47·0	11th.
Port Nolloth	The Lightkeeper	67·9	49·4	58·6	58·8	− 0·2	100·0	1st	41·0	10th.
Port St. Johns (Cape Hermes)	The Lightkeeper	74·8	62·1	68·4	68·4	± 0·0	83·0	26th	55·0	10th and 29th.
Queenstown	H. Holley	75·8	48·2	62·0	61·9	+ 0·1	85·0	7th	36·0	10th and 11th.
Somerset East	C. Harris	76·5	50·6	63·6	63·6	± 0·0	90·4	7th	36·8	10th.
Stutterheim	F. C. Bousfield	76·9	51·1	64·0	62·4	+ 1·6	89·5	1st	38·0	10th.
Sydney's Hope	The Rev. S. Rippon	74·5	54·6	64·6	65·2	− 0·6	92·8	7th	42·0	10th.
Uitenhage	H. Inggs	80·5	51·4	66·0	67·2	− 1·2	102·2	7th	39·0	11th.
Umtata	P. Hackett	79·9	49·2	64·6	64·5	+ 0·1	92·3	7th	38·0	10th.
Vryburg	Chas. Butler	77·5	48·5	63·0	63·1	− 0·1	88·0	11th	42·0	29th and 30th.
Wynberg (Convent)	The Mother Superior	76·6	55·3	66·0	62·8	+ 3·2	94·0	6th	47·5	11th.
Basutoland—										
Mafeteng	F. Hodgson	68·7	45·3	57·0	59·6	− 2·6	74·0	13th and 17th	37·0	10th.

RAINFALL, APRIL, 1924.

Place.	Observer.	Month. Apr., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
Transvaal—		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Barberton	W. Grubb	0·43	1·89	− 1·46	11·51	16·62	− 5·11	21·65	30·64	− 8·99
Bethal	H. F. Joubert	0·80	1·21	− 0·41	15·02	15·33	+ 1·69	24·66	28·94	− 4·28
Belfast	The Forester	0·42	1·65	− 1·23	17·89	15·75	+ 2·14	31·33	31·68	− 0·35
Bloemhof	F. Osborne	0·85	1·10	− 0·25	10·72	11·15	− 0·43	14·33	17·69	− 3·36
Claremont	S.A. Police	0·08	1·07	− 0·99	—	—	—	—	—	—
Ermelo	The Forester	1·50	1·20	+ 0·30	16·62	13·67	+ 2·95	26·15	30·79	− 4·64
Haenertsburg	S.A. Police	0·00	1·44	− 1·44	18·10	22·46	− 4·36	29·40	36·45	− 7·05
Heidelberg	W. ter Horst	0·27	1·21	− 0·94	18·07	13·81	+ 4·26	26·39	27·84	− 1·45
Johannesburg (Observatory)	The Staff	1·08	1·27	− 0·19	14·12	15·57	− 1·45	23·32	29·95	− 6·63
Klerksdorp (Strathmore)	C. Scott	0·97	1·72	− 0·75	10·13	12·76	− 2·63	14·10	22·56	− 8·46
Komati Poort	H. J. Evans	0·09	1·67	− 1·58	8·87	16·74	− 7·87	15·05	26·65	−11·60
Louis Trichardt	C. L. Cope	0·23	1·54	− 1·31	16·40	16·92	− 0·52	26·36	28·83	− 2·47
Middelburg	Dr. H. A. Spencer	0·72	1·33	− 0·61	21·06	14·18	+ 6·88	31·75	28·32	+ 3·43
Nylstroom	G. Bakker	0·41	1·15	− 0·74	14·70	13·53	+ 1·17	21·75	24·29	− 2·54
Pietersburg	R. Roos	0·00	1·04	− 1·04	11·44	11·08	+ 0·36	20·42	20·98	− 0·56
Piet Retief	J. Werner	1·25	2·04	− 0·79	16·53	17·43	− 0·90	26·98	35·47	− 8·49
Pigeonhole (New Agatha)	J. McCallum	2·26	2·31	− 0·05	31·05	27·22	+ 3·83	44·16	46·03	− 1·87
Pilgrims Rest	E. M. Skea	0·49	2·24	− 1·75	13·57	24·26	−10·69	25·41	38·60	−13·19
Potchefstroom (Exp. Farm)	The Manager	0·39	1·48	− 1·09	12·75	11·86	+ 0·89	18·35	22·86	− 4·51
Pretoria (Meteorological Office)	The Staff	0·39	1·26	− 0·87	10·73	15·35	− 4·62	20·47	28·82	− 8·35
Rooiberg	N. H. Munro	0·30	0·87	− 0·57	9·50	13·48	− 3·98	17·50	24·14	− 6·64
Rustenburg	A. Streatfield	0·78	0·88	− 0·10	16·72	13·84	+ 2·88	23·79	25·79	− 2·00
Wakkerstroom	J. Cilliers	1·72	1·37	+ 0·35	—	15·93	—	—	31·33	—
Woodbush	The Forester	2·29	3·14	− 0·85	27·66	42·91	−15·25	43·58	68·99	−25·41
Zeerust	H. Dietrich	1·18	1·33	− 0·15	13·83	13·36	+ 0·47	25·66	23·09	+ 2·57
Swaziland—										
Mbabane	Swaziland Police	2·20	2·65	− 0·45	29·43	27·88	+ 1·55	50·37	51·39	− 1·02
Orange Free State—										
Bethulie	J. J. Wardhaugh	2·09	1·34	+ 0·75	15·31	10·11	+ 5·20	19·85	16·30	+ 3·55
Bloemfontein	G. A. Schepers	1·02	1·82	− 0·80	13·07	12·46	+ 0·61	17·71	20·25	− 2·54
Boshof	The Postmaster	1·46	1·47	− 0·01	10·15	11·12	− 0·97	12·90	18·48	− 5·58
Harrismith	The Forester	0·25	1·48	− 1·23	14·03	14·58	− 0·55	24·74	28·56	− 3·82
Kroonstad	S. R. Northfield	0·39	1·78	− 1·39	9·58	13·08	− 3·50	15·42	23·02	− 7·60
Ladybrand	The Forester	0·68	1·83	− 1·15	13·49	14·01	− 0·52	21·01	26·00	− 4·99
Lindley	—	—	1·65	—	—	12·35	—	—	23·01	—
Natal—										
Dundee	W. Thorrold	1·16	2·06	− 0·90	18·16	16·70	+ 1·46	27·70	31·13	− 3·43
Durban (Point)	The Port Captain	2·66	3·58	− 0·92	17·13	17·75	− 0·62	31·08	38·47	− 7·39
Estcourt	The Town Clerk	0·10	1·48	− 1·38	11·21	15·82	− 4·61	20·19	28·16	− 7·79
Empangeni	The Forester	3·24	3·79	− 0·55	14·88	20·03	− 5·15	25·37	41·87	−16·50
Hlabisa	The S.A. Police	—	3·01	—	—	20·59	—	—	41·51	—
Howick	The Gaoler	2·16	2·13	+ 0·03	14·88	17·12	− 2·24	26·11	32·15	− 6·04

RAINFALL, APRIL, 1924—(*continued*).

Place.	Observer.	Month. Apr., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Ladysmith	D. A. R. Leathern	0·66	1·45	− 0·79	14·85	15·42	− 0·57	23·50	27·67	− 4·17
Maritzburg (Mental Hospital)	The Staff	2·61	2·10	+ 0·51	14·71	18·57	− 3·86	21·69	35·83	−14·14
Stanger	C. Foss	2·18	2·75	− 0·57	13·98	17·24	− 3·26	26·77	39·74	−12·97
Vrijheid	The Gaoler	0·66	2·13	− 1·47	15·17	17·38	− 2·21	27·89	34·15	− 6·26
Weenen	The Gaoler	0·56	1·67	− 1·11	9·34	14·49	− 5·15	16·75	26·59	− 9·84
Cape Province—										
Aliwal North	A. Alcock	1·71	1·61	+ 0·10	13·85	11·04	+ 2·81	17·89	18·80	− 0·91
Beaufort West	The Gaoler	0·35	0·87	− 0·52	4·38	5·01	− 0·63	7·15	8·51	− 1·36
Bedford	T. C. Hall	1·06	2·35	− 1·29	9·01	13·04	− 4·03	15·54	24·05	− 8·51
Britstown	The Gaoler	0·79	1·62	− 0·83	6·93	7·08	− 0·15	8·59	10·32	− 1·73
Calvinia	The Gaoler	0·29	0·97	− 0·68	1·93	2·56	− 0·63	4·73	6·05	− 1·32
Capetown (Royal Observatory)	The Staff	0·88	1·94	− 1·06	1·89	4·13	− 2·24	14·82	17·05	− 2·23
Ceres	A. Heatlie	1·00	2·95	− 1·95	2·86	5·58	− 2·72	20·80	28·37	− 7·57
Carnarvon	A. P. Malherbe	0·46	0·88	− 0·42	6·50	4·70	+ 1·80	8·15	6·94	+ 1·21
Clanwilliam	The Gaoler	0·33	0·72	− 0·39	0·54	1·43	− 0·89	3·15	5·76	− 2·61
Concordia	F. R. Carstens	0·12	0·63	− 0·51	0·13	1·79	− 1·66	1·49	4·49	− 3·00
Driefontein (French Hoek)	The Forester	1·90	4·23	− 2·33	6·04	9·22	− 3·18	56·64	47·70	+ 8·94
East London	A. Downie	0·93	2·67	− 1·74	9·49	12·75	− 3·26	29·25	29 00	+ 0·25
Fraserburg	The Gaoler	0·36	0·88	− 0·52	2·72	3·73	− 1·01	4·20	5·73	− 1·53
George (Rectory)	Rev. Canon B. Price	2·51	2·66	− 0·15	8·42	12·87	− 4·45	19·60	29·33	− 9·73
Grahamstown	The Vet. Res. Officer	0·68	2·29	− 1·61	6·29	10·79	− 4·50	14·72	24·59	− 9·87
Garies	The Gaoler	0·30	0·49	− 0·19	0·30	0·91	− 0·61	1·86	3·42	− 1·56
Graaff-Reinet (Convent)	The Mother Superior	0·71	1·11	− 0·40	5·88	6·48	− 0·60	11·23	12·15	− 0·92
Groot Drakenstein	L. Baker	1·01	2·80	− 1·79	3·06	5·70	− 2·64	26·12	24·28	+ 1·84
Griquatown	The Gaoler	—	1·53	—	—	8·08	—	—	11·77	—
Hanover	The Gaoler	0·83	1·43	− 0·60	6·56	7·72	− 1·16	8·06	11·79	− 3·73
Hopetown	The Gaoler	1·10	1·09	+ 0·01	11·94	7·58	+ 4·36	13·93	11·34	+ 2·59
Kenhardt	R. Seydell	0·63	0·63	± 0·00	1·58	3·61	− 2·03	2·54	5·14	− 2·60
Kimberley	F. Schmidt	0·81	1·41	− 0·60	8·80	9·39	− 0·59	11·31	15·12	− 3·81
Knysna	The Gaoler	1·86	2·22	− 0·36	6·52	8·98	− 2·46	18·05	23·89	− 5·84
Kokstad	H. D. Coyte	0·56	1·61	− 1·05	13·40	13·90	− 0·50	26·32	25·55	+ 0·77
Kingwilliamstown	W. Kindness	0·75	2·16	− 1·41	9·07	11·09	− 2·02	24·27	22·75	+ 1·52
Kuruman	—	—	1·31	—	—	11·21	—	—	16·14	—
Mafeking (Convent)	The Mother Superior	0·08	1·72	− 1·64	8·87	12·92	− 4·05	16·46	22·18	− 5·72
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·82	1·74	− 0·92	3·89	5·85	− 1·96	10·26	14·34	− 4·08
Murraysburg	W. H. Rose-Innes	0·53	1·06	− 0·53	7·80	5·87	+ 1·93	10·74	9·44	+ 1·30
O'oklep	J. Burrows	0·11	0·63	− 0·52	0·12	1·60	− 1·48	1·99	4·90	− 2·91
Philipstown	The Gaoler	1·16	1·26	− 0·10	12·31	7·88	+ 4·43	13·49	12·04	+ 1·45
Piquetberg	The Gaoler	0·74	1·60	− 0·86	2·14	3·19	− 1·05	10·76	14·62	− 3·86
Port Elizabeth	The Lightkeeper	0·53	1·92	− 1·39	4·17	6·21	− 2·04	11·30	18·33	− 7·03
Port St. Johns	The Lightkeeper	2·72	3·87	− 1·15	17·48	20·19	− 2·71	41·58	45·16	− 3·58
Port Nolloth	The Lightkeeper	0·21	0·24	− 0·03	0·21	0·52	− 0·31	1·09	1·60	− 0·51
Prieska	The Gaoler	0·76	1·36	− 0·60	3·76	6·36	− 2·60	4·69	8·78	− 4·09
Queenstown	H. Holley	0·68	1·64	− 0·96	8·78	12·49	− 3·71	12·89	21·33	− 8·44

RAINFALL, APRIL, 1924—(*continued*).

Place.	Observer.	Month. Apr., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Steytlerville	The Gaoler	0·04	0·89	− 0·85	2·67	4·58	− 1·91	5·72	8·30	− 2·58
Sutherland	The Gaoler	0·56	0·98	− 0·42	2·45	3·09	− 0·64	5·33	7·06	− 1·73
Swellendam	The Gaoler	2·04	2·79	− 0·75	6·78	11·02	− 4·24	15·17	26·62	−11·45
Sydney's Hope	The Rev. S. Rippon	1·04	2·16	− 1·12	7·42	8·56	− 1·14	15·41	19·48	− 4·07
Somerset East	C. Harris	0·62	2·12	− 1·50	8·73	11·81	− 3·08	17·20	23·02	− 5·82
Stutterheim	F. C. Bousfield	1·62	2·30	− 0·70	13·41	14·62	− 1·21	29·79	27·83	+ 1·96
Uitenhage	H. Inggs	0·52	1·65	− 1·13	4·37	6·44	− 2·07	12·57	14·88	− 2·31
Umtata	P. Hackett	0·19	1·81	− 1·62	8·57	12·32	− 3·75	18·52	23·30	− 4·78
Uniondale	The Gaoler	0·52	1·22	− 0·70	2·03	4·32	− 2·29	6·48	10·70	− 4·22
Upington	The Gaoler	0·06	0·85	− 0·79	4·33	4·64	− 0·31	4·67	6·61	− 1·94
Victoria West	The Gaoler	0·42	0·98	− 0·56	4·82	6·03	− 1·21	6·64	9·21	− 2·57
Vryburg	Chas. Butler	0·91	1·37	− 0·46	9·95	12·43	− 2·48	17·54	18·33	− 0·79
Worcester	The Gaoler	0·29	1·09	− 0·80	0·47	2·23	− 1·76	4·26	8·89	− 4·63
Wynberg (Convent)	The Mother Superior	0·61	2·90	− 2·29	2·03	6·02	− 3·99	26·40	31·86	− 5·46
Basutoland—										
Mafeteng	F. Hodgson	0·94	2·75	− 1·81	18·11	17·10	+ 1·01	33·43	29·43	+ 4·00
South-West Africa—										
Aus	E. Marthins	0·13	0·55	− 0·42	0·36	2·00	− 1·64	3·11	3·16	− 0·05
Bethanie	Rev. Peter	0·00	0·61	− 0·61	0·77	3·85	− 3·08	2·17	4·60	− 2·43
Duesternbrock	J. and R. Matthiessen	0·32	1·17	− 0·85	6·21	11·03	− 4·82	6·79	13·42	− 6·63
Franzfontein	H. Janson	0·00	1·08	− 1·08	5·85	7·62	− 1·77	6·54	7·72	− 1·18
Gabis	Rev. P. Rehor	0·13	0·84	− 0·71	0·74	2·56	− 1·82	2·44	3·84	− 1·40
Garinais	F. Berthing	0·35	0·74	− 0·39	3·57	4·24	− 0·49	6·53	5·68	+ 0·85
Gibeon	Rev. Spellmeyer	0·44	0·50	− 0·06	2·43	4·98	− 2·55	3·05	9·07	− 6·02
Gobabis	Rev. Irle	0·02	1·09	− 1·07	9·19	11·72	− 2·53	11·68	15·58	− 3·90
Grootfontein	Pitkowski	0·00	1·45	− 1·45	10·31	16·75	− 6·44	13·72	23·37	− 9·65
Gr. Witvley	Maass	0·06	1·14	− 1·08	4·14	10·84	− 6·70	5·45	14·27	− 8·82
Haribes	Capt. Meyer	0·77	0·58	+ 0·19	2·99	5·78	− 2·79	3·39	7·13	− 3·74
Heirachabis	Rev. P. Sroka	0·10	0·45	− 0·35	0·91	2·78	− 1·87	2·66	3·69	− 1·03
Maltahoeke	E. Just	0·26	0·80	− 0·54	1·18	4·93	− 3·75	1·78	5·89	− 4·11
Neu-Heuris	Liebig's Extract Co.	0·02	0·72	− 0·70	4·39	11·14	− 6·75	5·09	14·06	− 8·97
Okahandja	B. Templin	0·11	1·50	− 1·39	6·19	11·16	− 4·97	6·79	13·15	− 6·36
Okandjose	Van Gossler	0·12	1·10	− 0·98	3·54	12·17	− 8·63	6·48	14·77	− 8·29
Okasangumingo	R. H. A. Schneider	0·01	0·87	− 0·86	9·36	12·20	− 2·84	13·53	17·29	− 3·76
Omaruru	The Postmaster	0·11	1·06	− 0·95	6·10	8·95	− 2·85	6·64	11·08	− 4·44
Rehoboth	The Postmaster	0·05	1·07	− 1·02	1·70	8·15	− 6·45	1·70	10·23	− 8·53
Rietfontein	B. Leist	0·00	1·22	− 1·22	7·51	14·43	− 5·92	10·39	20·80	−10·41
Swakopmund	The Gaoler	0·03	0·04	− 0·01	0·04	0·33	− 0·29	0·05	0·62	− 0·57
Tsumeb	Ing. Schetter	0·00	1·33	− 1·33	11·19	16·77	− 5·58	14·39	23·89	− 9·50
Usakos	Rev. Diehl	0·01	0·56	− 0·55	2·42	4·17	− 1·75	2·42	5·16	− 2·74
Voigtsgrund	A. Voigts	1·37	0·54	+ 0·83	10·13	5·84	+ 4·29	11·22	7·13	+ 4·09
Waterberg	D. Hahn	0·01	1·74	− 1·73	9·44	14·70	− 5·26	13·23	19·74	− 6·51
Windhoek	Observatory	0·26	1·40	− 1·14	6·91	10·20	− 3·29	9·69	13·12	− 3·43

277—9/1/25—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. **MAY, 1924.** **No. 53.**

ATMOSPHERIC pressure lower than usual in the east, practically normal in the west and south; mean temperature over half a degree lower than usual, the days being 1 degree cooler than the average and the nights almost normal; weather generally mild, with an absence of severe, killing frosts except in more low-lying areas, when they occurred principally at the beginning and during the fourth week of the month; occasional hot winds; a few windy days and dust storms; an excess of precipitation over practically the whole of the Transvaal, Bechuanaland, and limited areas in Natal and the Cape Province; a sub-normal rainfall elsewhere, with absolute drought over the greater part of the northern and central Karroos, the north-east of the Cape Province, also in the south and parts of the north-east of the Free State; a few thunderstorms with unusually late hailstorms in the Transvaal, Free State, and Natal, causing damage in some instances; such were the principal features of the weather of May, 1924.

Pressure.—The mean pressure for May was practically normal in the west and south, but lower than usual by about five hundredths of an inch over the Transvaal, Free State, Natal, and the north of the Cape Province. In Rhodesia pressure was slightly higher than usual. Anticyclonic conditions prevailed during the greater part of the month and on only a few occasions were low pressure areas in evidence. A somewhat unusual occurrence at this season of the year was the appearance on the 18th of a low pressure area in the north over South-West Africa and Bechuanaland; on the 19th this "low" had pushed further south covering the centre of the Cape Province; it then moved to the east and north-east, causing widespread rains over the centre, south, and east of the Union. Low pressure areas passed along the coast, lying over the east on the 1st, and over the south to south-east on the 7th, 10th, 11th, 15th, and 26th.

Temperature.—The mean temperature of the Union during May was 57·0 degrees or 0·7 degree less than usual. This deficiency in the monthly temperature was mainly due to the mean maximum (70·0 degrees) being 1·1 degree, whilst the mean minimum (44·0 degrees) was only 0·2 degree

lower than the corresponding averages. With the exception of the Orange Free State, where this month's temperature, 52·2 degrees, was half a degree in excess of the normal, the mean temperature was lower than usual over the Provinces. Thus the Transvaal with a mean of 57·2 degrees was 0·2 degree, Natal with 60·8 degrees was 0·3 degree, and the Cape Province with 56·7 degrees was 1·4 degree lower than the respective averages. The excess in the Free State was owing to both days and nights being warmer than usual, the former with a temperature of 66·2 degrees being 0·4 degree, and the latter with 38·2 degrees being 0·7 degree higher than usual. On the other hand, the relation of the day and night temperatures in the Cape Province to the normals was directly opposite, the mean maximum of 69·1 degrees being 1·3 degree, and the mean minimum of 44·3 degrees being 1·4 degree less than usual. In the Transvaal, the mean day temperature, 71·2 degrees, was 0·7 degree lower, and the mean night temperature, 43·1 degrees, was 0·3 degree higher than the average. A similar relationship existed in Natal where the mean maximum, 73·0 degrees, was 2·5 degrees in defect, and the mean minimum, 48·7 degrees, was 2·0 degrees in excess of normal. Considering the individual stations, it is found that the mean temperature during May was in excess of normal at those places situated in the more easterly portions of the Transvaal, also in the extreme north, the south-centre, and part of the south-west, in the north, north-east, and east of the Orange Free State; portions of the west and north coast of Natal, on the Kaffrarian coast, the south of Bechuanaland and part of the northern border. Elsewhere, temperature was lower than usual, except at East London and Carnarvon where it was normal. The amount of excess temperature varied, in the Transvaal, from 0·2 degree at Pilgrims Rest to 2·0 degrees at Potchefstroom; in the Free State, from 1·3 degree at Kroonstad to 3·0 degrees at Harrismith; in Natal, from 0·6 degree at Stanger to 1·0 degree at Ladysmith; whilst in the Cape Province the super-normal amounts lay between 1 and 1½ degrees. The deficits in the Transvaal were mostly less than 1 degree, but ranged from 0·1 degree at Johannesburg and Pietersburg to 2·9 degrees at Belfast and Rustenburg; in the centre and south of the Free State the means were less than usual, 1·0 degree at Bloemfontein and 2·1 degrees at Bethulie. In Natal, the shortages varied from 0·5 degree at Estcourt and 2·0 degrees at Dundee. The deficits in the Cape Province were mostly between 2 and 3 degrees in the south-east and south-west, approached 5 degrees in Namaqualand, but elsewhere were generally less than 1 degree; they ranged from 0·2 degree at Murraysburg and Stutterheim to 4·8 degrees at O'okiep. The excesses in the monthly temperature were principally due to both days and nights being warmer than usual. In the Transvaal, the mean maximum and minimum temperatures were in excess of the average in the east and part of the south-west. At Louis Trichardt, the day temperatures were normal and the night temperatures higher than usual. Johannesburg was the only station having slightly warmer days and cooler nights. In the south-east, part of the south-west, the south-centre and part of the north the mean maxima were lower, and the mean minima were higher than the corresponding average values. Both days and nights were sub-normal in the west, the centre, and part of the east of the High Veld. The surplus amounts in the case of the mean maxima varied from 0·2 degree at Johannesburg and Pilgrims Rest to 2·0 degrees at Barberton, and the deficits from 0·2 degree at Pietersburg to 3·6 degrees at Rustenburg. In the Orange Free State, hotter days and nights were warmer than usual in the north and east; in the centre and south the days were warmer and the nights cooler, whereas in the north-east the reverse held, the days being cooler and the nights considerably warmer than the average. The excesses in the mean maximum ranged from 0·3 degree

at Bethulie in the south to 1·2 degree in the north, whilst at Harrismith the mean day temperature was below normal by 0·7 degree. In the case of the night temperature the surplus amounts lay between 1·5 degree at Kroonstad and 6·7 degrees at Harrismith, whilst the deficits ranged from 2·9 degrees at Bloemfontein to 4·4 degrees at Bethulie. In Natal, days and nights were both sub-normal at Dundee, but at all the other stations the days were cooler and the nights warmer than usual. The sub-normal amounts in the case of the day temperatures varied from 1·2 degree at Stanger to 3·8 degrees at Maritzburg; and the super-normal quantities of the night temperatures from 1·6 degree at Maritzburg to 4·5 degrees at Ladysmith. In the Cape Province by far the greater number of stations had both mean maximum and mean minimum temperatures lower than usual. In parts of Kaffraria, the south-east and the northern Karroo, the days were warmer and the nights cooler than the average. On the Kaffrarian and part of the south coasts, in portion of the northern border and in Bechuanaland, the days were cooler and the nights warmer than usual. Kimberley was the only station in which both day and night temperatures exceeded the normal. The deficits in the day temperatures varied between 0·3 degree at Aliwal North and 4·9 degrees at Port Nolloth; and those in the night temperatures from 0·6 at Graaff-Reinet to 5·2 degrees at O'okiep. The excesses in the mean maxima were mostly between 1 and 2 degrees, ranging from 0·5 degree at Umtata to 2·2 degrees at Kimberley; in the mean minima the surplus amounts lay between 0·1 degree at Kimberley and 3·9 degrees at Port St. Johns. The mean warmest station was Komatipoort with a temperature of 69·0 degrees, and the mean coolest, Belfast with 48·3 degrees, a difference of 20·7 degrees. Both of these stations are situated in the Transvaal. The least difference in the other provinces is shown by the Free State where Kroonstad had a mean of 53·5 degrees and Bethulie 51·0 degrees, a range of only 2·5 degrees. The other provinces showed a range between that of the Transvaal and that of the Orange Free State, the warmest station in Natal being Stanger with a temperature during May of 67·6 degrees, and the coolest Dundee with 56·0 degrees, a range of 11·6 degrees; in the Cape Province the highest mean monthly temperature was 66·0 degrees at Port St. Johns, and the lowest 50·4 degrees at Murraysburg, showing a range of 15·6 degrees over that Province. The highest mean maximum was 83·0 degrees at Komatipoort, and the lowest mean minimum 32·6 degrees at Belfast. The highest readings during the month were registered principally between the 6th and 14th, but also at a few places on the 1st, 4th, 17th, 23rd, and 26th. These extremes were most numerously reported and that almost wholly over the Transvaal, Free State, and Natal on the 11th, and over the Cape Province on the 7th. The lowest temperatures were mostly confined to the period between the 21st and 28th, although a few occurred also between the 1st and 4th and on the 17th. These were most widely reported on the 22nd and 23rd. The extreme readings taken during May were 95·0 degrees at East London on the 7th and 22·0 degrees at Belfast on the 23rd and 24th and at Murraysburg on the 25th. There was, therefore, an extreme range of 73·0 degrees during this month.

Frosts were by no means common or widespead until about the 22nd or 23rd when many stations were affected for the first time this season. A few fairly sharp frosts occurred at the beginning of the month, e.g. on the 1st at Bankpan No. 51, in the Bethal District, where all growth was killed; on the 2nd at Stanleyvale (District Harrismith) when a considerable amount of damage was done; a light frost occurred on the 3rd at Cathcart. Generally speaking, the frosts were unusually light, as at Middelburg on the Transvaal High Veld, where they were not sufficiently severe to affect materially the ripening crops. No frosts had been noted yet at Mochudi in Bechuanaland.

The damage caused was generally slight. At Gemboksfontein (District Middelburg) frosts towards the end of the month caused grass to turn colour; at Zand River No. 209 (Waterberg), that on the 23rd caused slight damage to cotton and mealies; at Waaikraal No. 206 (Rustenburg Division) all mealies were killed on the same date; at Tarbert (Division Ermelo) tomatoes were killed on the 22nd; at Prospect (Division Vrede) a large percentage of mealies was killed; in Natal severe frosts were experienced at Ladysmith on the 22nd and 23rd in the low-lying parts of the town, whilst at Rongpoort (Division Weenen) they were too light to affect any growing crops; similarly, at Sydney-on-Vaal hardy vegetation was unaffected; whilst some killing frosts occurred at Kokstad, and at Liwandi (Division Uitenhage) a ground-frost of 4 degrees intensity occurred on the 28th.

Precipitation.—Rainfall during May was above normal in almost the whole of the Transvaal including Swaziland, parts of the north, west, and coast of Natal, in Bechuanaland, and small detached areas in the northern border, the north-east, the south coast, and the south-west of the Cape Province, and the south-east of South-West Africa. Elsewhere precipitation was less than usual. A state of absolute drought prevailed in portions of the Bethlehem, Senekal, Smithfield, Rouxville, Bethulie, Philippolis, Fauresmith, and Bloemfontein Districts of the Free State, one or two stations in Natal, in the central Karroo, the greater part of the northern Karroo and the north-east of the Cape Province, and in South-West Africa with the exception of a small portion in the south and south-east. The excess amounts of rainfall in the Transvaal were generally about half an inch or less, but approached about three-quarters in the east and at Louis Trichardt in the north, rising to between 1½ and 2 inches at Pietersburg and Nylstroom. These quantities varied from plus 0·13 inch or 19 per cent. at Piet Retief to 1·83 inch or 469 per cent. at Nylstroom. The negative amounts were small, being 0·09 inch or 14 per cent. at Potchefstroom and 0·23 inch or 30 per cent. at Zeerust. In the Free State, the deficits, exclusive of those areas with no rainfall, ranged from 0·22 inch or 31 per cent. at Harrismith to 0·92 inch or 87 per cent. at Bloemfontein. In Natal, the excesses were all less than half an inch, varying from 0·18 inch or 30 per cent. at Ladysmith to 0·44 inch or 24 per cent. at Durban. On the other hand, the negative departures lay between 0·12 inch or 16 per cent. at Howick to 1·80 inch or 61 per cent. at Empangeni. In the Cape Province, the surplus amounts were under 1 inch, being 0·01 inch or 1 per cent. at Queenstown and 0·92 inch or 161 per cent. at Vryburg in excess of the normal. The shortages were generally less than an inch, but were between 1 and 2 inches in portions of the Karroos and of the south-west, increasing to 2–4 inches at certain stations in the latter area. The actual deficits varied from 0·03 inch or 6 per cent. at Upington to 4·13 inches or 67 per cent. at Ceres in the south-west. In South-West Africa, Heirachabis was the only station where this month's rainfall was in excess of the average, the total being slightly more than double the usual amount. The actual shortages were mostly less than half an inch, varying from 0·03 inch at Swakopmund to 0·61 inch at Gabis in the south, whilst the percentage deficits ranged from 100 per cent. over the greater portion of the Territory to 76 per cent. at Aus in the south-west. The accumulated rainfall since the 1st July, 1923, is mostly considerably lower than normal. The exceptional areas are mostly small, being confined to isolated patches in three of the four provinces. Thus in the Transvaal, excess amounts occurred in part of the east of the High Veld, the south of the Zoutpansberg Highlands, and the west of the Central Middle Veld. The plus amounts ranged from 0·93 inch or 4 per cent. at Pietersburg to 3·96 inches or 14 per cent. at Middelburg. In the Free State, the total for these eleven

months at Bethulie in the south was 2·75 inches or 16 per cent. above the average. In the Cape Province, stations with a surplus rainfall were confined to portions of the east of Kaffraria, of the south-east, of the south and east of the northern Karroo, of the south-west and the south of Bechuanaland. These excesses were principally less than 1 inch but varied from 0·13 inch, or less than 1 per cent. at Vryburg to 7·08 inches or 13 per cent. at Driefontein in the French Hoek area of the south-west. Generally speaking, the plus amounts were much smaller than the minus quantities in all parts of the Union. Thus in the Transvaal, the deficits were commonly between 4 and 8 inches, but increasing in some instances to over 10 inches; they varied from 0·71 inch or 3 per cent. at Nylstroom to 24·83 inches or 35 per cent. at Woodbush. Over the Free State the sub-normal amounts lay between 3·46 inches or 16 per cent. of the average at Bloemfontein and 7·99 inches or 33 per cent. at Kroonstad. In Natal, the shortfalls showed considerable range, being frequently between 3 and 8 inches, but increasing in portions of the west, south, and the north coast to 13–18 inches; they lay between 3·68 inches or 12 per cent. at Dundee and 18·30 inches or 41 per cent. at Empangeni. In the Cape Province the deficits for the eleven months were mostly between 2 and 5 inches over the interior, increasing to between 6 and 11 inches in parts of the east, south-east, and south coast, and still further to over 13 inches in the south-west; the shortages varied from 0·51 inch or 2 per cent. at East London to 13·31 inches or 45 per cent. at Swellendam. In South-West Africa there was a general deficiency over this period, the shortages generally increasing from the coast eastwards and from south to north. Thus the deficiencies in the south were generally from 2½ inches and under, over the central parts from 4 to 6 inches or over, and in the extreme north about 10 inches. Again, going from west to east it is found that Swakopmund has a deficit of 0·60 inch; Usakos, 3·95 inches; Deusternbrook, 7·20 inches, and Groot Witvlei, 9·35 inches. The deficiencies ranged from 0·18 inch or 5 per cent. at Aus to 10·81 inches or 45 per cent. at Tsumeb. The gross totals from the 1st January, 1924, were in excess of the average over a considerable portion of the Transvaal, including Swaziland, part of the north-west of Natal, the south of the Free State, and the adjoining part of the Cape Province, together with small portions in the centre and east of the northern Karroo. The area affected by a surplus rainfall in the Transvaal, consisted of the more southerly and easterly parts of the High Veld, part of the Zoutpansberg, the neighbourhood of the Waterberg Highlands, and the west of the Central Middle Veld. The excesses were least, under an inch, in the north and south-west, and were principally from 2–4 inches elsewhere, ranging, however, from 0·24 inch or about 2 per cent. at Zeerust to 7·41 inches or 50 per cent. at Middelburg. The deficits were mostly in the neighbourhood of 4 to 5 inches, increasing to more than 7 inches at Komatipoort and about 15 inches in the Woodbush. These sub-normal amounts varied from 0·77 inch or 4 per cent. at Piet Retief to 14·67 inches or 33 per cent. at Woodbush. In the Orange Free State, Bethulie was 4·40 inches or 40 per cent. in excess of normal. The shortages were less than 1 inch in the north-east and centre, exceeded 1 inch in the east and west and about 4 inches in the north. Range, from *minus* 0·31 inch or 2 per cent. at Bloemfontein to *minus* 3·89 inches or 28 per cent. at Kroonstad. In Natal, Dundee shows a surplus for the first five months of 1·21 inch or 7 per cent.; elsewhere the departures showed considerable variation in a negative direction, being *minus* 0·18 inch or 1 per cent. at Durban and 6·95 inches or 30 per cent. at Empangeni. In the Cape Province the excess amounts lay between 0·91 inch or 1 per cent. at Murraysburg and 3·60 inches or 41 per cent. at Philipstown. The deficits in this Province were mostly between 1 and 3 inches, increasing to 4–6 inches in parts of Kaffraria, of the south-east and south-west;

the shortages varied from 0·34 inch or 7 per cent. at Upington to 7·45 inches or 62 per cent. at Wynberg, in the Cape Peninsula. In South-West Africa, the gross totals for the first five months of the year were everywhere below the average. The percentage departures from normal varied from 20 per cent. at Garinais in the south-east to 89 per cent. at Swakopmund, and the actual departures from 0·32 inch at Swakopmund to 9·78 inches or 73 per cent. at Okandjose, north of Windhoek. The minus quantities were usually less than 3 inches in the west and south, between 3 and 6 inches in the central parts and 6 and 7 inches in the north. During May a few *thunderstorms* occurred on the 1st, 3rd, 12th, and 19th in parts of the Transvaal and Bechuanaland. During a storm on the 12th the residence of Sir Thomas Graham at Weltevreden in the Waterberg Division was struck by lightning and burnt down. A few *hailstorms*, unusually heavy for the month, occurred on the 1st. Thus at Zwartkopjes in the Heidelberg Division, some stones were 1¼ inch in diameter and a large number the size of pigeons' eggs. Again, on the same day, the Parktown North and Rosebank suburbs of Johannesburg were covered with small and large hailstones, the latter the size of a good-sized marble. No damage was reported as resulting from these storms. A heavy storm of this character occurred at Woudzicht (District Vrede) on the 12th. At Umzimkulwana (Alfred), during a heavy hailstorm stones 1½ inch in length fell, causing damage to trees, vegetation, and windows. A fall of 1·78 inch was noted in 45 minutes.

State of Country—Transvaal.—Rain was practically general over the Province on the 3rd, 11th, and 19th, and more partial on the 1st to the 2nd, 12th, 14th, 16th, 20th, 21st, 28th, and 31st. These good rains, more abundant in some instances than for a number of years past, together with the unusually mild weather and the late occurrence of frost, helped the veld to remain green in a number of places to a much later date than usual, and enabled a fair amount of winter ploughing, as well as some planting of wheat to be carried out, and incidentally benefiting late and winter crops, but impeding the harvesting of mealies. Stock generally were doing well. In the Lichtenburg and Bloemhof Divisions the veld was very dry, and owing to there being no grass for cattle, consequent on the ravages of locusts, a trying winter was predicted for all animals. Excellent crops were being harvested in parts of the Waterberg Division and farmers in the Middelburg Division were generally satisfied with the prospects. At Nooitgedacht No. 1738 (Waterberg Division), however, the maize planted at the end of the drought and promising well, was badly cut up by locusts; while as a result of "Rosette" in monkey-nuts, the crop was very poor, and but little better elsewhere. As already noted, frosts about the 22nd and 23rd caused considerable damage to crops in portions of the Bethal, Ermelo, Rustenburg, and Waterberg Divisions, as well as causing the veld to turn colour in part of Middelburg. In Swaziland, fair average crops were being reaped.

Orange Free State.—Sheep were reported to be in good condition in the Boshof District and stock generally fair elsewhere. In Vrede a considerable amount of hay was harvested, and at Quaggavlakte (Hoopstad District), owing to the weather being too cold to promote growth, mealies had to be cut for fodder. At Woudzicht (District Vrede) owing to the rains preventing the mealies drying as much as usual, reaping was delayed; at Prospect in the same district a large proportion of the mealie crop was destroyed by frost. In the north and east light rains fell on the 1st, 11th, and 19th, and in parts on the 20th; in the south-west and centre mainly on the 19th and 31st.

Natal.—Similar light rains fell in Natal on the 1st, 3rd, 11th, 19th, 20th, and 28th, with some good showers on the 19th. Some strong winds were

experienced during the month at Ladysmith, Howick, and Cape St. Lucia, particularly the last. The rains this month, it was anticipated, would keep grazing in the neighbourhood of Ladysmith in good condition during the early part of the winter. In the Umvoti Division the mealie crop was considered generally safe from frost, but the grass, although green, was short, so that the outlook for stock was poor. In parts of the Klip River Division late, unripe crops were killed by frost on the 21st and 22nd, but no damage was caused thereby at Rongpoort (Division Weenen). At Mid-Illovo, the maize crops were dying off, also the veld at Nottingham Road and in the Port Shepstone and Umzinto Divisions. In the latter, the sugar-cane was suffering badly, but conditions had improved in the Ixopo Division. Stock were in good to fair condition, and but little blue-tongue or horse-sickness in the Klip River Division.

Cape Province.—Except over a few favoured areas, adverse weather conditions prevailed over the Cape Province, the month being generally exceptionally dry, with strong and occasional hot winds in the east; e.g. gales blew on the 20th at Port Alfred and at Cathcart on the 21st. On the other hand, at Mochudi the days were exceptionally calm, the air movement being insufficient to work windmills. Even over the winter rainfall area the rains were light and largely local, so that ploughing was impracticable in Namaqualand, while some difficulty was experienced in this connexion in the Caledon District, and the turning up of the soil had to be discontinued in the Paarl District. In the Bathurst Division the drought was becoming serious, but was relieved to some extent by rains between the 18th and 21st, which enabled ploughing to be undertaken. At Tsolo cattle were falling off in condition owing to want of feeding; farmers had trekked with stock from the Queenstown and Murraysburg Districts. Late rains in Bechuanaland enabled the ripening grass to continue green for a longer time than usual, where it had not been attacked by locusts; and the coast veld in the Bathurst Division was showing signs of improvement. At Carnarvon the veld was still in good condition, but with these exceptions the veld was either bare or in poor condition, so that the outlook for winter grazing was far from reassuring. At Ezelsfontein (Division De Aar), the crops were fairly good, but the most pleasing report received this month from the Cape Province is that from Lauriston in the Barkly East Division, where, it is stated, stock of every description are very fat, large quantities of green feeding are still on the lands and the stores are full of lucerne hay. In this respect it presents a marked contrast to the report from Queenstown where the only green crops to be seen were those under irrigation. Stock were generally in fair condition to start the winter.

State of Rivers and Water Supply.—The few remarks made on this subject are in much the same vein as those on the state of the country. Thus, from Nottingham Road (Natal), it is reported that the streams are low; the Orange River at Kakamas was also low for the time of year, whilst it was feared that the fountains at Ezelsfontein (Division De Aar) would not hold out long after winter, owing to the small amount of rain that had fallen this season.

OBSERVERS' NOTES FOR MAY, 1924.

TRANSVAAL.

Middelburg.—Warm, mild weather by day, with cold and sometimes frosty nights, has obtained during the month which appears to have been just about the average. Samples of the cold, windy days which will come later have not been wanting, nor of the warm summer weather now left behind in

the rapidly-setting-in winter weather. Rain fell to the amount of 1·10 inch in five days which materially helped to green the veld for stock. Frosts, happily, came late in the month, and were not severe enough to make any difference in the still-ripening crops; farmers appear, pretty generally here, to be well satisfied with prospects in consequence.—Dr. H. A. Spencer.

Barberton.—Dry weather; warm days and cold nights have prevailed during the month. Rainfall: 1·35 inch on three days.—Walter Grubb.

Kopje Alleen No. 1052 (*Waterberg*).—The rainfall for the month, 1·45 inch on four days, is the heaviest experienced during the past five years, well over half an inch being registered during each of the thunderstorms which visited the Springbok Flats on the 3rd (0·70 inch), and 19th (0·64 inch). During the storm on the 12th, the fine residence belonging to Sir Thomas Graham, Weltevreden, some 20 miles to the north, was struck by lightning and burnt down. Although a heavy hoar frost occurred on the 23rd, no actual frost has been recorded yet. Mean maximum temperature, 74·2 degrees; mean minimum temperature, 44·5 degrees; mean temperature, 59·4 degrees; highest temperature, 84·1 degrees on the 11th; lowest temperature, 32·9 degrees on the 23rd. Heavy mists fell on the 4th and 20th, when objects 500 and 200 yards could not be seen on these mornings. An early peach tree was observed in blossom on the 30th.—J. Lyall-Soutter.

Krugersdorp.—The month of May has been a normal month in most respects—no extremes of temperature have been experienced and the rainfall has been well distributed and above the average. The total rainfall was 1·24 inch on six days, against an average 0·64 inch for the month during the past 22 years. Up to date of writing no locusts have invaded the immediate neighbourhood of the town.—H. Sharp.

Lichtenburg.—Very cold during the evening and warm during the day, with an occasional cool breeze. Visitations of swarms of locusts. Farmers planting their wheat. The veld is very dry; no grass for the cattle. Rainfall: 0·86 inch on two days.—E. Newton.

Christiana.—Nothing unusual to report. Very cold month. A severe and scarce winter is predicted for animals on account of the locusts. Rainfall: 0·43 inch on one day.—W. J. Meintjes.

Arbury (*Rustenburg*).—Highest temperature for the month (82·0 degrees) recorded on the 11th, and lowest (30·0 degrees) on the 23rd. A couple of swarms of locusts visited the farm, the first one flying by, but the second settled and did considerable damage to the winter grazing and the green mealies, eating off all the cob husks, and then eating the grain. Rainfall: 1·18 inch on two days.—G. F. Mills.

Amatava (*Waterberg*).—Perfect weather with two nice rains. Cold mornings with here and there frosts visible on the grass since the 23rd. Rainfall: 1·42 inch on two days.—A. R. Troye.

Pretoria (*T.U.C. Experiment Farm*).—The rainfall of 1·09 inch which fell on three days during the month is of great value to winter irrigation crops and also allows of a fair amount of winter ploughing to be done; it was, however, too late to affect the summer crops. Frost came late, and consequently the veld is still in good condition and stock doing well.—The Manager.

Jakhalsfontein (*Pietersburg*).—Occasional sharp changes with some rain. Calm and pleasant on the whole. Rainfall: 1·72 inch on four days.—Rev. James C. Palmer.

Mosdene (*Waterberg*).—A fine bright month. On the 23rd 0·7 degree of frost was registered, the only frost we have had so far. 1·23 inch rain fell on three days, the heaviest May rainfall recorded during the past eight years. This has been useful for ploughing, but has rather impeded the harvesting of the mealies. Excellent crops are being reaped and the veld is in very good condition for the winter. Total rainfall since the 1st July, 1923, 24·09 inches.—Ernest E. Galpin.

Nooitgedacht (*Waterberg*).—Slight frosts on three nights commencing the 22nd. Cattle in good condition. Monkey-nuts on this farm badly affected by "Rosette"; crop very poor; a little better elsewhere. Maize planted at the end of the drought promised well, but badly cut up by locusts on the 25th. Locust swarms within reach have been energetically dealt with. Rainfall: 0·83 inch on five days.—G. Gordon-Brown.

Zwartkopjes Pumping Station (*Heidelberg*).—A heavy hailstorm occurred on the early evening of the 1st, some stones being 1¼-inch in diameter, and large numbers the size of pigeon eggs. An unusually nice rain, amounting to 1·02 inch, fell on the night of the 19th which was useful for the early ploughing. Rainfall: 1·59 inch on three days.—E. Taylor.

Gemboksfontein (*Middelburg*).—The weather was dull and overcast at the beginning of the month. It has been warm during the day, but rather cold in the shade. Towards the end of the month frosts prevailed, which is causing the grass to rapidly turn its colour. Rainfall: 1·29 inch on four days.—L. C. Skead.

Myrthley (*Standerton*).—Month began with heavy frosts, followed by mild weather until the 20th, since when frosts have been regular and days nice and warm. Rainfall: 0·87 inch on four days.—J. Ellis.

Strathmore (*Klerksdorp*).—Very pleasant weather during the month. Locusts very much in evidence during the last two weeks. Rainfall: 0·74 inch on three days.—Chas. Scott.

Piet Retief.—Brilliant weather throughout the month. Rainfall: 0·82 inch on six days.—J. Werner.

Ermelo.—Only one severe frost during the month, on the night of the 21st–22nd. With the exception of this night the weather has been very mild. A few windy days caused a good deal of discomfort. Rainfall: 0·89 inch on five days.—J. Dean.

Potchefstroom (*Experimental Farm*).—For the most part dry, calm, and sunny, with warm temperatures and light, variable winds. Rainfall: 0·56 inch on three days.—D. Moses.

Pietersburg.—Soft rains, bright days, and no frost till the 24th. Veld and late crops in good state. Rainfall: 1·75 inch on three days.—W. J. Frankleyne.

Parktown North (*Johannesburg*).—Nice rain fell on the 1st, accompanied by thunder, lightning and hail, Rosebank and Parktown North being covered with large and small hail, the stones being in size from a pea to a good-sized marble. No damage reported. The weather was somewhat unsettled and changeable. Frosts, cold snaps, and mists with a few nice days. Rain fell on the 19th at 4 p.m. and fell steadily overnight. Frost very heavy towards latter end of month. A few drops of rain fell on the 28th. The rainfall for the month—1·28 inch on six days—slightly above the average.—George S. Garnett.

Sand River No. 209 (*Waterberg*).—23rd May, heavy white frost, slight damage to cotton and mealies. Rainfall: 1·03 inch on two days.—J. B. Armstrong.

Waaikraal No. 206 (*Rustenburg*).—23rd May: first general frost. All young mealies killed. Rainfall: 0·98 inch on two days.—W. Behrens.

Tarbert (*Ermelo*).—22nd May: first frost killing tomatoes. Grazing still good for all stock. Rainfall: 0·75 inch on one day.—J. Uys.

Bankpan (*Bethal*).—First white frost killed all growth. Rainfall: 0·98 inch on three days.—F. Bean.

Swaziland.

Hlatikulu.—The wintry part of May was very mild, fine clear days with beautiful sunshine, the nights being rather chilly. Cattle are looking very fit, and I understand the crops being reaped are giving quite a fair average. Rainfall: 1·30 inch on eleven days.—J. Pullen.

Orange Free State.

Kroonstad.—Winds gentle with easterly tendency, with weather mild throughout month. Rainfall: 0·56 inch on four days.—S. R. Northfield.

Belgrave (*Bloemfontein*).—Large swarms of flying locusts about doing a great amount of damage to veld; in some areas swarms are being destroyed by means of spraying and dragging heavy logs across the sleeping swarms. Rainfall: 0·27 inch on two days.—W. W. Bird.

Sterkstroom (*Boshof*).—We have had very mild weather during the month; a few cold days with heavy frosts in the night. Sheep are in good condition. Rainfall: 0·18 inch on one day.—J. B. Moolman.

Wildealspoort (*Fauresmith*).—Large swarms of flying locusts have passed near here. Frosts at night but not very severe. Rainfall: 0·08 inch on one day.—J. M. Blakeney.

Stanleyvale (*Harrismith*).—Quite a nice month; first frost on the 2nd did a good bit of damage. Stock fair. Rainfall: 0·25 inch on two days.—G. C. Atkins.

Heilbron.—Stock in fair condition. Diseases, nil for the month. Crops fair to bad, harvesting just commencing. Rainfall: 0·58 inch on three days.—P. J. du P. Naude.

Quaggavlakte (*Hoopstad*).—Despite favourable month, compelled to cut down mealies; they are very suitable fodder; nights and days too cold for growth. Rainfall: 0·61 inch on three days.—B. Polson.

Roodepoort (*Hoopstad*).—Huge swarms of locusts passing continually during this month from west to east. Rainfall: 0·40 inch on one day.—P. E. Mooij.

Prospect (*Vrede*).—Up to the 19th weather was mild. Stock are in fair condition to begin winter. A considerable amount of hay has been stacked. A large percentage of mealies was killed by frost. Rainfall: 0·64 inch on five days.—T. Pitcairn.

Woudzicht (*Vrede*).—On the average, this month has been very mild, and owing to the rain we had, the mealies have not dried as much as usual, and reaping is very much delayed. Rainfall: 1·56 inch on five days.—J. N. Köhler.

Natal.

Mid-Illovo.—Maize crop drying off. South-westerly gale on the 21st. Not much frost, but stock losing condition. Rainfall: 0·93 inch on five days.—Lt.-Colonel J. W. V. Montgomery, C.M.G., D.S.O.

Cape St. Lucia.—Strong north-easterly and south-westerly winds during greater part of the month. Heavy dews during the latter part. Hazy on two days only. Cattle in good condition. Rainfall: 5·83 inches on twelve days.—J. Murphy.

Nottingham Road.—Very mild, and pleasant sunny days. Veld is very dry and streams low. Rainfall: 0·85 inch on six days.—Miss E. Smythe.

Howick.—Rain on five days amounting to 0·62 inch, otherwise days have been dry and windy during the month.—B. J. Potgieter.

Greytown.—Mild month. Very little frost except on low-lying lands. Mealie crop safe from frost generally. Mild weather has kept the grass green but it is very short and outlook for stock is very poor during the coming winter months. Rainfall: 0·54 inch on three days.—J. M. Handley.

Ladysmith.—A fairly dry month, but the rains which fell will help to keep grazing in good condition during the early part of the winter at least. Apart from a few windy days the weather during the month has been excellent. Heavy frosts were observed in the low-lying parts of the town on the 22nd and the 23rd. Rainfall: 0·78 inch on three days.—D. A. R. Leathern.

Dundee.—First heavy frost on the 22nd, after that weather much warmer. A very pleasant month generally. Heavy hailstorm reported from Buffalo River Flats, north of Dundee, on the night of the 11th. Rainfall: 0·54 inch on five days.—West Thorrold.

Durban (Point).—Fine weather during month, with occasional showers. Rainfall: 2·30 inches on seven days.—A. P. White.

Newcastle (Academy).—Generally speaking, the month of May has experienced weather very unusual for this time of year. Not so cold as other years. Winter mild so far. Not much frost and very little rain. Rainfall: 0·45 inch on three days.—The Mother Superior.

Paddock.—Country very dry. Rain badly needed. Rainfall: 0·24 inch on three days.—G. Victor Merriman.

Bluebank (Klip River).—First frost on the 21st; also frost on the 22nd. All late crops not ripe killed; but warm days and no more frost to the end of the month. All stock in very good condition, especially sheep. Very little blue-tongue and horse-sickness to date. Rainfall: 0·88 inch on three days.—T. N. Niland.

Castledene (Polela).—No rain during the month, weather warm to cold and frost.—D. Fotheringham.

Middleton (Umvoti).—Outlook for crops very bright due to mild weather and late frosts. Rainfall: 0·57 inch on three days.—O. L. Nel.

Rongpoort (Weenen).—Weather very mild, frosts light and nothing cut. Grass good for time of year, owing to weather being so mild. Stock in fair condition. Rainfall: 0·86 inch on four days.—J. H. Bartholomew.

Sawoti (Umzinto).—Country getting very dry; cane suffering very badly. Rainfall: 0·55 inch in four days.—Archibald & Co.

Summerford (Ixopo).—The country improved; some sea mists came up during the month. Rainfall: 1·01 inch on five days.—D. Campbell.

Cape.

Somerset East.—The continued absence of rain together with the approach of cold weather renders the prospects serious for the coming cold weather. Rainfall: 0·69 inch on three days.—C. Harris.

Kokstad.—Alternate warm and cold weather. Some killing frosts and hot winds. Rainfall: 0·67 inch on four days.—H. D. Coyte.

Kenhardt.—Continued drought. Rainfall: 0·48 inch on one day.—R. Seydell.

Graaff-Reinet (Convent).—Minimum temperature rather low on a few days. Winds generally from a northerly direction; dust storms on two days. No rain during the month, except one very light shower during the night of the 11th which was not sufficient to record.—The Mother Superior.

Queenstown.—On the whole a mild month with five mornings of hoar frost. Strong west to north winds with dust. Very dry; no veld. Most farmers trekked with large stock. Green crops only under irrigation.—H. Holley.

Murraysburg.—A very disappointing month. Farmers held hopes that rains might fall during the month. The dry portion of the district is still without rain and farmers have trekked. Where rain did fall the veld is being destroyed with insects. The prospects are none too rosy even for those who did have rain. Rainfall: Nil.—W. H. Rose-Innes.

Aliwal North.—May has been dry, only 0·07 inch of rain on two days. Fine and mild with occasional light frosts.—A. Alcock.

O'okiep.—District in urgent need of rain; ploughing so far impracticable. Rainfall: 0·35 inch on two days.—J. Burrows.

Carnarvon.—Comparatively mild weather throughout the month. Veld in good condition. Rainfall: Nil.—A. P. Malherbe.

Queenstown.—Country very dry. Veld very poor and insufficient for the winter months. Weather extremely mild so far this winter. Rainfall: 0·93 inch on four days.—J. F. C. Rein.

Kraaipan (Mafeking).—During the month we have had the worst visitation of locusts that has been known for many years. The veld has been completely eaten off, the stock now depending entirely on vaal-bosch for feed, and the position is critical in the extreme. Rainfall: 0·58 inch on one day.—P. J. Hart.

Darling (Malmesbury).—Exceptional lack of wind and shortage of rainfall. Rainfall very local—practically no rain in parts of the district quite near the village. Rainfall: 1·11 inch on eight days.—P. H. Drake.

Willowmore.—Rainfall 0·08 inch on one day, less than usual for the month. We generally expect 0·50 inch at least during May. A pleasant month.—Mrs. B. M. Hemens.

Maclear.—Bright sunny days. Month more windy than usual. Conditions otherwise about average. Rainfall: 0·07 inch on one day.—R. W. M. Rushton.

Jansenville.—Fairly strong north-west wind during the day. Rainfall: 0·38 inch on one day.—W. C. S. Albertyn.

Kakamas.—River is quite low for this time of year. The weather is still comparatively warm. Rainfall: 0·16 inch on one day.—M. J. Oosthuizen.

Louisvale (Kenhardt).—Seasonable weather with a rise in temperature at the end of the month. Veld very dry. Rainfall: 0·59 inch on one day.—Stuart N. Smith.

Lovedale.—Dry weather continued, broken only by a week (15th to the 21st) of damper conditions, when, however, only 0·57 inch fell. Rainfall for first five months of 1924 is 59 per cent. of our normal. Temperatures much as usual. A good deal of wind, alternating from warm north-west to cold west.—Charles A. Pilson.

Ceres.—Weather generally unseasonably fine with frost on 15 days. Rainfall: 2·02 inch on seven days.—A. Heatlie.

Rietfontein (*Aliwal North*).—Warm, dry month. Rainfall: 0·06 inch on two days.—A. G. Smith.

Cathcart.—21st, a westerly gale, branches of pines and eucalyptus broken during the squalls; fine sleet with the squalls, but insufficient moisture to settle in the rain-gauge. A dry, windy month; light frost on the 3rd and the 25th. Rainfall: 0·23 inch on three days.—C. E. Whibley.

Kamanassie Dam (*Oudtshoorn*).—Rain badly required. Rainfall: 0·13 inch on two days.—E. F. Edmeades.

Sydney-on-Vaal (*Barkly West*).—Warm and mild month. Few frosts, were only light and not affecting hardy vegetation, tender plants alone suffering. Deciduous trees only gradually losing leaves. Typical May weather for this district. Rainfall: 0·21 inch on three days.—J. G. Richards.

Grootfontein (*Middelburg*).—Generally warm for May, with a few heavy ground frosts. Not too many clouds during the month, with a remarkable absence of cumulus clouds, and only on a few occasions some strato-cumulus, which ought to make their appearance by now. Veld very dry. Rainfall: 0·24 inch on three days.—E. J. van Meerten.

Liwandi (*Addo—Uitenhage*).—Pleasant weather with little wind. We had a ground frost of 4 degrees on the 28th, 0·59 inch of rain was recorded on six days—18th to the 24th. Both before and after this period it tried very hard to rain, but did not get beyond a few drops.—Major J. Kreft.

Port Alfred.—Variable winds prevailed during the month, with strong gale on the 20th. Drought was becoming severe until somewhat relieved by rain on 18th to the 21st. The rain came too late for orchards and gardens. Farmers are busy ploughing for winter crops. Veld along coast belt is becoming green again. Rainfall: 2·41 inches on six days.—W. H. Pascoe.

Tsolo.—Cattle falling off in condition for want of feeding. No disease in district. Rain wanted badly. Rainfall: 0·59 inch on three days.—H. P. Tillard.

Tussenbeide (*Caledon*).—Rainfall very scanty for this month; veld not too good, some difficulty with ploughing because rain too light. Rainfall: 1·30 inch on six days.—S. de Wet.

Slent (*Paarl*).—19th, overcast and misty, but no rain; ground becoming very hard; many farmers had to stop ploughing owing to dryness; 26th, last year this time couldn't plough in places, ground too wet. Rainfall: 0·94 inch on ten days.—R. W. Short.

Ezelsfontein (*De Aar*).—Crops are fairly good, but it does not seem as if the fountains will hold long after the winter as the rain so far has been too little. Stock in good condition. Locusts have now disappeared. Veld fair in parts where the locusts did not destroy same. Rainfall: 0·63 inch on three days.—W. S. Marais.

Droogefontein (*Hanover*).—Stock all doing well. Maggot fly giving a lot of trouble attacking sheep in ears and eyes, never been known here before. Rainfall: 0·19 inch on three days.—Lindsay Bros.

Hazelmere (*Stutterheim*).—This has been an exceptionally dry month; sheep not too poor, but cattle falling off. Rainfall: 0·47 inch on five days.—S. Arnold.

Lauriston (*Barkly East*).—No sign of locusts yet; stock of all descriptions very fat; large quantities of green feeding still on lands, and stores full of lucerne hay. Farmers prospects very good. Rainfall: 0·32 inch on one day.—H. R. Giddy.

BECHUANALAND.

Dikgatlong Ranch (*Tuli Block*).—During the month we had rain on three occasions amounting to 0·95 inch which gave an inducement to ripening grass to remain green a bit longer. Flying locusts made their first appearance this season on the 19th and 20th from the west and passed on, but another immense visitation took place from the south-west remaining on this ranch, and devoured the veld and bush for three days, devouring 50 per cent. of the veld which was prime. The enemy was six inches deep when it came to earth. The swarm trekked east-north-east on the 30th.—Paul Jousse.

Mochudi.—Very quiet days. My windmill will not work. No frost yet. Locusts have visited these parts. Veld bare. Rainfall: 0·31 inch on one day.—Rev. J. Reyneke.

BASUTOLAND.

Mafeteng.—Fine, sunny, cloudless, calm days. Cold nights. Rainfall: 0·22 inch on one day.—F. Hodgson.

JULY WEATHER CHARACTERISTICS.

Over the Cape Peninsula the rainfall is at its maximum during the month of July, when about 6·5 inches usually fall. In the adjoining south-western districts and along the west coast the amount of precipitation varies but little from that of the preceding month, but along the south coast there may be quite an appreciable diminution, and probably 1·5 inch will not be exceeded. Over almost all other parts of the Union the minimum for the year should be reached; the month may be indeed be quite rainless, with sunny, warm days and cold cloudless nights.

With the sun on its return journey the day temperature should slightly increase, except in the south-west of the Cape, where the rainfall exercises an influence. The nights are, however, colder, and the result is a general decrease in the mean air temperature as compared with June. The normal mean temperature is about 59 degrees over the Transvaal low veld; 57 degrees along the south-coast; 56 degrees in the south-eastern districts; 55 degrees over the Cape Peninsula; 53 degrees along the west coast, in Kaffraria, over the east-central Karroo and the south-west of the Cape and in Natal; 51 degrees over the southern Karroo; 50 degrees over the west-central Karroo and the Cape northern borders; 49 degrees over the Transvaal high veld; 47 degrees over the Cape north-eastern districts; 46 degrees in the Orange Free State and Basutoland; and 45 degrees on the northern Karroo. Frosts are frequent.

Over the Cape Peninsula there in an increased frequency of winds from those points of the compass lying between north and west-north-west, north-west being still the prevalent direction, but a decrease in all other directions except south-west. The south-east of the Cape Province shows an increase of north-easterly, north-westerly, and south-westerly breezes, but a decrease in those from other directions. The principal wind over this part of the country has shifted to north-west from west-north-west during the preceding month. In the north of the Cape the frequency table shows an increase of winds from points lying between west-north-west and east-north-east, also of southerly and south-westerly winds, with a decrease of south-easterly breezes; the prevalent wind now blows from east-north-east. Although there is an increased frequency of easterly breezes over the Transvaal affecting all points between north and south-east, together with a decrease in those from all other directions, the prevalent direction remains the same as during June, viz., north-north-west over this part of the high veld.

C. STEWART,
Chief Meteorologist.

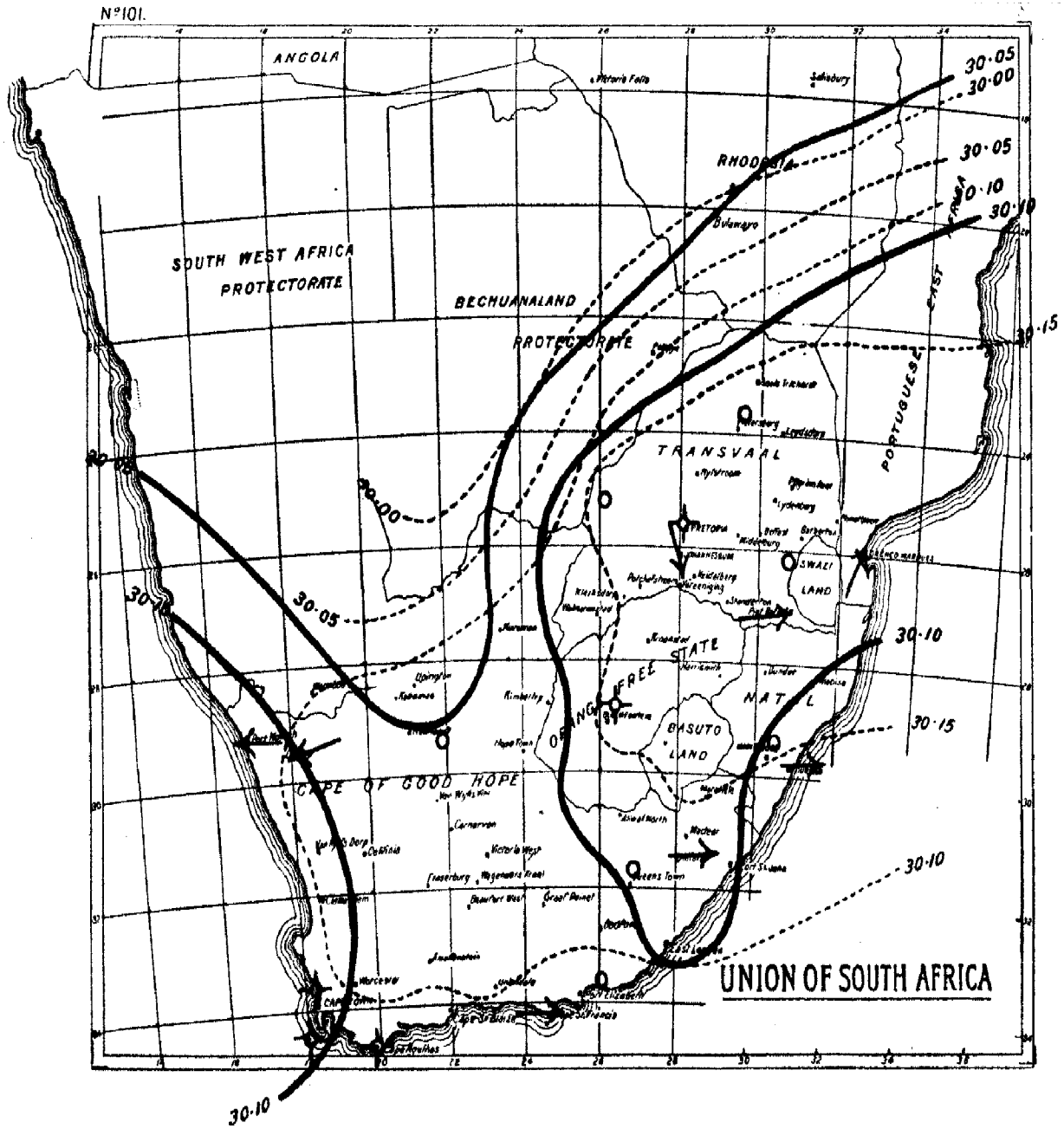
Pretoria.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), MAY, 1924.

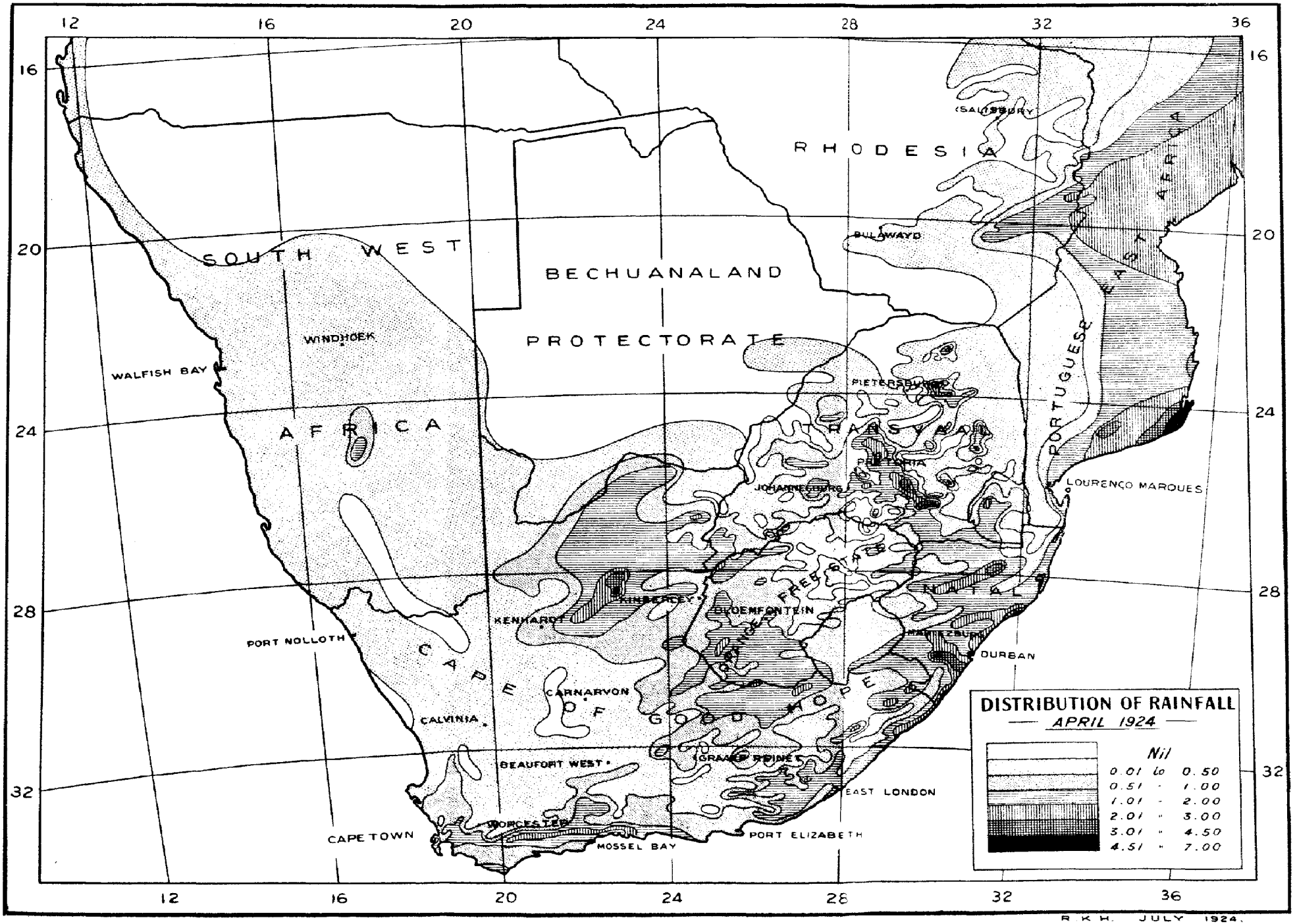
Place.	Observer.	Month—May, 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Transvaal—										
Barberton	Walter Grubb	76·8	53·0	64·9	63·6	+ 1·3	89·0	11th	44·0	22nd and 26th.
Belfast	The Forester	64·0	32·6	48·3	51·2	− 2·9	73·0	9th, 10th, and 11th	22·0	23rd and 24th.
Bloemhof	—	—	—	—	55·1	—	—	—	—	—
Ermelo	S.A. Police	65·7	38·8	52·2	52·6	− 0·4	74·8	10th	25·2	22nd.
Johannesburg (Observatory)	The Staff	63·5	45·1	54·3	54.4	− 0·1	71·3	11th	32·2	21st.
Klerksdorp (Strathmore)	Chas. Scott	70·6	40·2	55·4	56·4	− 1·0	80·0	9th	31·0	2nd, 22nd, and 25th.
Komatipoort	H. J. Evans and B. J. Fothergill	83·0	54·9	69·0	68·1	+ 0·9	94·0	1st	43·0	22nd and 23rd.
Louis Trichardt	C. L. Cope	72·4	49·5	61·0	60·1	+ 0·9	83·0	11th	37·0	22nd and 23rd.
Middelburg	Dr. H. A. Spencer	70.5	37·2	53·8	54·4	− 0·6	79·0	9th	28·0	22nd and 23rd.
Nylstroom	G. Bakker	73·0	42·5	57·8	58.6	− 0·8	81·5	10th and 11th	32·0	22nd and 23rd.
Pietersburg	W. J. Frankleyne	73·4	42·7	58·0	58·1	− 0·1	82·0	9th, 10th, and 11th	33·0	23rd.
Piet Retief	J. Werner	69·5	46·5	58·0	57·2	+ 0·8	80·5	11th	32·5	22nd.
Pigeonhole (New Agatha)	Jno. McCallum	65·8	52·8	59·3	—	—	76·0	11th	46·0	26th.
Pilgrims Rest	E. M. Skea	70·5	42·8	56·6	56·4	+ 0·2	80·5	11th	30·5	23rd.
Potchefstroom (Exp. Farm)	The Manager	72·6	40·0	56·3	54·3	+ 2·0	80·2	7th and 8th	29·4	22nd.
Pretoria (Meteorological Office)	The Staff	70·9	43·2	57·0	56·6	+ 0·4	78·9	11th	33·1	23rd.
Rustenburg	A. Streatfield	71·6	41·9	56·8	59·7	− 2·9	81·0	11th	33·0	23rd.
Standerton	—	—	—	—	50·6	—	—	—	—	—
Zeerust	H. Dietrich	71·7	39·3	55·5	56·4	− 0·9	82·2	11th	29·6	24th.
Swaziland—										
Mbabane	Swaziland Police	69·1	48·3	58·7	59·6	− 0·9	82·0	11th	38·0	22nd.
Orange Free State—										
Bethulie	J. Wardhaugh	67·2	34·9	51·0	53·1	− 2·1	75·0	7th and 11th.	26·0	25th and 28th.
Bloemfontein	G. A. Schepers	66·5	37·4	52·0	53·0	− 1·0	75·4	7th	27·8	23rd.
Harrismith	The Forester	61·7	42·5	52·1	49·1	+ 3·0	70·0	9th and 11th.	30·0	2nd.
Kroonstad	S. R. Northfield	69·5	37·5	53·5	52·2	+ 1·3	78·0	11th	28·6	24th.
Ladybrand	The Forester	66·3	38·5	52·4	51·0	+ 1·4	73·0	9th and 10th.	29·0	3rd.
Lindley	—	—	—	—	51·4	—	—	—	—	—
Natal—										
Dundee	West Thorrold	70·7	41·4	56·0	58·0	− 2·0	80·0	8th and 11th.	29·0	22nd.
Durban (Point)	The Port Captain	74·3	60·2	67·2	67·8	− 0·6	79·4	9th	52·0	20th.
Estcourt	The Town Clerk	70·3	42·3	56·3	56·8	− 0·5	80·0	11th	32·0	22nd, 23rd, 26th, & 27th.
Hlabisa	—	—	—	—	66·4	—	—	—	—	—
Ladysmith	D. A. R. Leathern	71·8	45·3	58·6	57·6	+ 1·0	83·0	11th	34·0	22nd and 23rd.
Maritzburg (Mental Hospital)	The Staff	72·2	49·4	60·8	61·9	− 1·1	84·8	10th	39·0	25th.
Stanger	Cecil C. Foss	76·4	58·7	67·6	67·0	+ 0·6	88·0	26th	47·0	26th.
Weenen	The Gaoler	75·3	43·3	59·3	58·6	+ 0·7	85·0	11th	32·0	25th.

AIR TEMPERATURES, MAY, 1924—(*continued*).

Place.	Observer.	Month—May, 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Cape Province—										
Aliwal North	Alex. Brown	66·9	34·9	50·9	51·8	− 0·9	76·5	10th	25·5	26th.
Bedford	Thos. C. Hall	69·0	43·1	56·0	58·7	− 2·7	83·0	7th	33·0	3rd and 28th.
Capetown (Royal Observatory)	The Staff	65·1	48·6	56·8	58·9	− 2·1	77·4	4th	40·0	21st.
Carnarvon	A. P. Malherbe	67·1	36·0	51·6	51·6	± 0·0	74·0	12th	25·0	23rd.
Clanwilliam	—	—	—	—	60·8	—	—	—	—	—
East London	The Port Captain	72·4	52·3	62·4	62·4	± 0·0	95·0	7th	44·0	26th.
Graaff-Reinet (Convent)	The Mother Superior	70·7	44·6	57·6	58·4	− 0·8	82·1	7th	35·8	17th.
Grahamstown	The Vet. Res. Officer	68·8	41·5	55·2	58·6	− 3·4	84·5	7th	30·6	28th.
Groot Drakenstein	W. Franceys	66·5	43·5	55·0	58·8	− 3·8	79·0	6th	37·0	22nd and 23rd.
Kenhardt	R. Seydell	72·7	42·7	57·7	58·4	− 0·7	87·0	17th	33·0	23rd.
Kimberley	F. W. J. Schmidt	70·8	43·1	57·0	55·8	+ 1·2	81·0	7th	32·0	21st.
Kingwilliamstown	W. Kindness	72·8	44·6	58·7	60·8	− 2·1	90·0	7th	36·0	28th.
Kokstad	H. D. Coyte	67·5	38·4	53·0	53·7	− 0·7	79·0	7th and 10th.	28·0	3rd.
Mafeking (Convent)	The Mother Superior	71·9	43·0	57·4	58·6	− 1·2	82·8	9th	31·0	22nd.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	65·9	54·0	60·0	61·2	− 1·2	83·0	14th	50·0	1st and 2nd.
Murraysburg	W. H. Rose-Innes	65·9	34·8	50·4	50·6	− 0·2	74·0	14th	22·0	25th.
O'okiep	J. Burrows	68·6	43·7	56·2	61·0	− 4·8	81·5	6th	37·3	1st.
Port Elizabeth	The Lightkeeper	68·4	52·4	60·4	62·2	− 1·8	90·0	14th	44·0	4th.
Port Nolloth	The Lightkeeper	62·0	44·7	53·4	58·0	− 4·6	88·8	13th	38·0	23rd.
Port St. Johns (Cape Hermes)	The Lightkeeper	73·3	58·8	66·0	64·6	+ 1·4	84·0	23rd	52·0	3rd.
Queenstown	H. Holley	68·3	40·2	54·2	55·2	− 1·0	79·0	10th	28·0	25th.
Somerset East	C. Harris	69·4	43·1	56·2	58·0	− 1·8	85·0	7th	32·5	28th.
Stutterheim	F. C. Bousfield	71·2	43·5	57·4	57·6	− 0·2	84·5	14th	33·0	28th.
Sydney's Hope	Rev. S. Rippon	67·1	48·5	57·8	60·6	− 2·8	84·0	7th	40·5	2nd.
Uitenhage	H. Inggs	73·7	45·1	59·4	61·8	− 2·4	91·0	14th	34·0	4th.
Umtata	P. Hackett	73·5	42·5	58·0	58·3	− 0·3	87·8	10th	31·6	3rd.
Vryburg	Chas. Butler	70·6	40·3	55·4	53·8	+ 1·6	80·0	10th	31·0	23rd.
Wynberg (Convent)	The Mother Superior	66·6	48·5	57·6	59·6	− 2·0	77·8	4th	44·5	2nd.
Basutoland—										
Mafeteng	F. Hodgson	61·9	38·5	50·2	54·4	− 4·2	71·0	10th	27 0	3rd.



May, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for May.



R.K.H. JULY 1924.

RAINFALL, MAY, 1924.

Place.	Observer.	Month. May, 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	1·35	0·93	+ 0·42	12·86	17·55	− 4·69	23·00	31·57	− 8·57
Belfast	The Forester	2·12	0·61	+ 1·51	20·01	16·36	+ 3·65	33·45	32·29	+ 1·16
Bethal	H. F. Joubert	0·98	0·60	+ 0·38	16·00	13·93	+ 2·07	25·64	29·54	− 3·90
Claremont	S.A. Police	1·00	0·39	+ 0·61	—	—	—	—	—	—
Ermelo	The Forester	0·88	0·74	+ 0·14	17·50	14·41	+ 3·09	27·03	31·53	− 4·50
Haenertsburg	S.A. Police	2·25	1·63	+ 0·62	20·35	24·09	− 3·74	31·65	38·08	− 6·43
Heidelberg	W. ter Horst	1·09	0·48	+ 0·61	19·16	14·29	+ 4·87	27·48	28·32	− 0·84
Johannesburg (Observatory)	The Staff	1·16	0·69	+ 0·47	15·28	16·26	− 0·98	24·48	30·64	− 6·16
Klerksdorp (Strathmore)	C. Scott	0·74	0·58	+ 0·16	10·87	13·34	− 2·47	14·84	23·14	− 8·30
Komatipoort	B. J. Fothergill and H. J. Evans	1·49	0·77	+ 0·72	10·36	17·51	− 7·15	16·54	27·42	−10·88
Louis Trichardt	C. L. Cope	1·58	0·81	+ 0·77	17·98	17·73	+ 0·25	27·94	29·64	− 1·70
Middelburg	Dr. H. A. Spencer	1·10	0·57	+ 0·53	22·16	14·75	+ 7·41	32·85	28·89	+ 3·96
Nylstroom	G. Bakker	2·22	0·39	+ 1·83	16·92	13·92	+ 3·00	23·97	24·68	− 0·71
Pietersburg	W. Frankleyne	1·75	0·26	+ 1·49	13·19	11·34	+ 1·85	22·17	21·24	+ 0·93
Piet Retief	J. Werner	0·82	0·69	+ 0·13	17·35	18·12	− 0·77	27·80	36·16	− 8·36
Pigeonhole (New Agatha)	J. McCallum	1·86	1·44	+ 0·42	32·91	28·66	+ 4·25	46·02	47·47	− 1·45
Pilgrims Rest	E. M. Skea	2·06	1·17	+ 0·89	15·63	25·43	− 9·80	27·47	39·77	−12·30
Potchefstroom (Exp. Farm)	The Manager	0·56	0·65	− 0·09	13·31	12·51	+ 0·80	18·91	23·53	− 4·62
Pretoria (Meteorological Office)	The Staff	1·14	0·50	+ 0·64	11·87	15·85	− 3·98	21·61	29·32	− 7·71
Rooiberg	N. H. Monro	0·80	0·63	+ 0·17	10·30	14·11	− 3·81	18·30	24·77	− 6·47
Rustenburg	A. Streatfield	0·97	0·56	+ 0·41	17·69	14·40	+ 3·29	24·76	26·35	− 1·59
Standerton	The Town Engineer	1·10	0·55	+ 0·55	—	—	—	—	—	—
Wakkerstroom	F. V. Petrick	0·96	0·76	+ 0·20	—	—	—	—	—	—
Woodbush	The Forester	2·46	1·88	+ 0·58	30·12	44·79	−14·67	46·04	70·87	−24·83
Zeerust	H. Dietrich	0·53	0·76	− 0·23	14·36	14·12	+ 0·24	26·19	23·85	+ 2·34
Swaziland—										
Mbabane	Swaziland Police	1·40	1·21	+ 0·19	30·83	29·09	+ 1·74	51·77	52·60	− 0·83
Orange Free State—										
Bethulie	J. J. Wardhaugh	0·00	0·80	− 0·80	15·31	10·91	+ 4·40	19·85	17·10	+ 2·75
Bloemfontein	G. A. Schepers	0·14	1·06	− 0·92	13·21	13·52	− 0·31	17·85	21·31	− 3·46
Boshof	The Postmaster	0·35	0·74	− 0·39	10·50	11·86	− 1·36	13·25	19·22	− 5·97
Harrismith	The Forester	0·50	0·72	− 0·22	14·53	15·30	− 0·77	25·24	29·28	− 4·04
Kroonstad	S. R. Northfield	0·56	0·95	− 0·39	10·14	14·03	− 3·89	15·98	23·97	− 7·99
Ladybrand	The Forester	0·43	0·96	− 0·53	13·92	14·97	− 1·05	21·44	26·96	− 5·52
Lindley	—	—	0·96	—	—	13·31	—	—	23·97	—
Natal—										
Dundee	W. Thorrold	0·54	0·79	− 0·25	18·70	17·49	+ 1·21	28·24	31·92	− 3·68
Durban (Point)	The Port Captain	2·30	1·86	+ 0·44	19·43	19·61	− 0·18	33·38	40·33	− 6·95
Empangeni	The Forester	1·17	2·97	− 1·80	16·05	23·00	− 6·95	26·54	44·84	−18·30
Estcourt	The Town Clerk	0·73	0·51	+ 0·22	11·94	16·33	− 4·39	20·92	28·67	− 7·75
Hlabisa	—	—	1·55	—	—	22·14	—	—	43·06	—

RAINFALL, MAY, 1924—*continued.*

Place.	Observer.	Month. May, 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
Natal—continued.		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Howick	The Gaoler	0·62	0·74	− 0·12	15·50	17·86	− 2·36	26·73	32·89	− 6·16
Ladysmith	D. A. R. Leathern	0·78	0·60	+ 0·18	15·63	16·02	− 0·39	24·28	28·27	− 3·99
Maritzburg (Mental Hospital)	The Staff	0·69	1·09	− 0·40	15·40	19·66	− 4·26	22·38	36·92	−14·54
Stanger	C. C. Foss	1·53	1·92	− 0·39	15·51	19·16	− 3·65	28·30	41·66	−13·36
Vrijheid	The Gaoler	1·06	0·64	+ 0·42	16·23	18·02	− 1·79	28·95	34·79	− 5·84
Weenen	The Gaoler	0·40	0·54	− 0·14	9·74	15·03	− 5·29	17·15	27·13	− 9·98
Cape Province—										
Aliwal North	A. Alcock	0·07	1·00	− 0·93	13·92	12·04	+ 1·88	17·96	19·80	− 1·84
Beaufort West	The Gaoler	0·00	0·71	− 0·71	4·38	5·72	− 1·34	7·15	9·22	− 2·07
Bedford	T. C. Hall	0·50	1·55	− 1·05	9·51	14·59	− 5·08	16·04	25·60	− 9·56
Britstown	The Gaoler	0·04	0·70	− 0·66	6·97	7·78	− 0·81	8·63	11·02	− 2·39
Calvinia	The Gaoler	0·08	1·12	− 1·04	2·01	3·68	− 1·67	4·81	7·17	− 2·36
Capetown (Royal Observatory)	The Staff	1·92	3·90	− 1·98	3·81	8·03	− 4·22	16·74	20·95	− 4·21
Ceres	A. Heatlie	2·02	6·15	− 4·13	4·88	11·73	− 6·85	22·82	34·52	−11·70
Carnarvon	A. P. Malherbe	0·00	0·62	− 0·62	6·50	5·32	+ 1·18	8·15	7·56	+ 0·59
Clanwilliam	The Gaoler	0·17	1·39	− 1·22	0·71	2·82	− 2·11	3·32	7·15	− 3·83
Concordia	F. Carstens	0·23	1·05	− 0·82	0·36	2·84	− 2·48	1·72	5·54	− 3·82
Driefontein (French Hoek)	The Forester	5·51	7·37	− 1·86	11·55	16·59	− 5·04	62·15	55·07	+ 7·08
East London	A. Downie	1·56	2·32	− 0·76	11·05	15·07	− 4·02	30·81	31·32	− 0·51
Fraserburg	The Gaoler	0·00	0·60	− 0·60	2·72	4·33	− 1·61	4·20	6·33	− 2·13
Grahamstown	The Vet. Res. Officer	1·19	2·07	− 0·88	7·48	12·86	− 5·38	15·91	26·66	−10·75
Garies	The Gaoler	0·00	0·71	− 0·71	0·30	1·62	− 1·32	1·86	4·13	− 2·27
Graaff-Reinet (Convent)	The Mother Superior	0·00	1·15	− 1·15	5·88	7·63	− 1·75	11·23	13·30	− 2·07
Groot Drakenstein	W. Franceys	5·39	5·03	+ 0·36	8·45	10·73	− 2·28	31·51	29·31	+ 2·20
Griquatown	The Gaoler	0·00	0·73	− 0·73	—	8·81	—	—	12·50	—
George	Rev. Canon B. Price	1·26	2·64	− 1·38	9·68	15·51	− 5 83	20·86	31·97	−11·11
Hanover	The Gaoler	0·16	0·93	− 0·77	6·72	8·65	− 1·93	8·22	12·72	− 4·50
Hopetown	The Gaoler	0·00	0·86	− 0·86	11·94	8·44	+ 3·50	13·93	12·20	+ 1·73
Kenhardt	R. Seydell	0·48	0·37	+ 0·11	2·06	3·98	− 1·92	3·02	5·51	− 2·49
Kimberley	F. Schmidt	0·21	0·65	− 0·44	9·01	10·04	− 1·03	11·52	15·77	− 4·25
Knysna	The Gaoler	1·68	2·54	− 0·86	8·20	11·52	− 3·32	19·73	26·43	− 6·70
Kokstad	H. D. Coyte	0·67	1·02	− 0·35	14·07	14·92	− 0·85	26·99	26·57	+ 0·42
Kingwilliamstown	W. Kindness	0·85	1·46	− 0·61	9·92	12·55	− 2·63	25·12	24·21	+ 0·91
Kuruman	—	—	0·51	—	—	11·72	—	—	16·65	—
Mafeking (Convent)	The Mother Superior	1·11	0·38	+ 0·73	9·98	13·30	− 3·32	17·57	22·56	− 4·99
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·76	1·60	− 0·84	4·65	7·45	− 2·80	11·02	15·94	− 4·92
Murraysburg	W. H. Rose-Innes	0·01	1·03	− 1·02	7·81	6·90	+ 0·91	10·75	10·47	+ 0·28
O'okiep	J. Burrows	0·35	1·03	− 0·68	0·47	2·63	− 2·16	2·34	5·93	− 3·59
Philipstown	The Gaoler	0·12	0·95	− 0·83	12·43	8·83	+ 3·60	13·61	12·99	+ 0·62
Piquetberg	The Gaoler	0·53	3·07	− 2·54	2·67	6·26	− 3·59	11·29	17·69	− 6·40
Port Elizabeth	The Lightkeeper	3·15	2·37	+ 0·78	7·32	8·58	− 1·26	14·45	20·70	− 6·25
Port St. Johns	The Lightkeeper	2·66	2·93	− 0·27	20·14	23·12	− 2·98	44·24	48·09	− 3·85
Port Nolloth	The Lightkeeper	0·10	0·42	− 0·32	0·31	0·94	− 0·63	1·19	2·02	− 0·83
Prieska	The Gaoler	0·15	0·61	− 0·46	3·91	6·97	− 3·06	4·84	9·39	− 4·55

RAINFALL, MAY, 1924—(*continued*).

Place.	Observer.	Month. May, 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
Cape Province—continued.		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Queenstown	H. Holley	0·89	0·88	+ 0·01	9·67	13·37	− 3·70	13·78	22·21	− 8·43
Steytlerville	The Gaoler	0·26	0·64	− 0·38	2·93	5·22	− 2·29	5·98	8·94	− 2·96
Sutherland	The Gaoler	0·00	1·26	− 1·26	2·45	4·35	− 1·90	5·33	8·32	− 2·99
Swellendam	The Gaoler	1·19	3·05	− 1·86	7·97	14·07	− 6·10	16·36	29·67	−13·31
Sydney's Hope	Rev. S. Rippon	1·44	1·90	− 0·46	8·86	10·46	− 1·60	16·85	21·38	− 4·53
Somerset East	C. Harris	0·69	1·46	− 0·77	9·42	13·27	− 3·85	17·89	24·48	− 6·59
Stutterheim	F. C. Bousfield	0·89	1·15	− 0·26	14·30	15·77	− 1·47	30·68	28·98	+ 1·70
Uitenhage	H. Inggs	0·75	1·34	− 0·59	5·12	7·78	− 2·66	13·32	16·22	− 2·90
Umtata	B. T. Hackitt	0·41	1·18	− 0·77	8·98	13·50	− 4·52	18·93	24·48	− 5·55
Uniondale	The Gaoler	0·43	1·51	− 1·08	2·46	5·83	− 3·37	6·91	12·21	− 5·30
Upington	The Gaoler	0·45	0·48	− 0·03	4·78	5·12	− 0·34	5·12	7·09	− 1·97
Victoria West	The Gaoler	0·00	0·82	− 0·82	4·82	6·85	− 2·03	6·64	10·03	− 3·39
Vryburg	Chas. Butler	1·49	0·57	+ 0·92	11·44	13·00	− 1·56	19·03	18·90	+ 0·13
Worcester	The Gaoler	0·04	1·70	− 1·66	0·51	3·93	− 3·42	4·30	10·59	− 6·29
Wynberg (Convent)	The Mother Superior	2·46	5·92	− 3·46	4·49	11·94	− 7·45	28·86	37·78	− 8·92
Basutoland—										
Mafeteng	F. Hodgson	0·22	1·54	− 1·32	18·33	18·64	− 0·31	33·65	30·97	+ 2·68
South-West Africa—										
Aus	E. Marthins	0·04	0·17	− 0·13	0·40	2·17	− 1·74	3·15	3·33	− 0·18
Bethanie	Rev. Peter	0·00	0·02	− 0·02	0·77	3·87	− 3·10	2·17	4·62	− 2·45
Duesternbrook	J. and R. Matthiessen	0·00	0·57	− 0·57	6·21	11·60	− 5·39	6·79	13·99	− 7·20
Franzfontein	H. Janson	0·00	0·22	− 0·22	5·85	7·84	− 1·99	6·54	7·94	− 1·40
Gabis	Rev. P. Rehor	0·16	0·77	− 0·61	0·90	3·33	− 2·43	2·60	4·61	− 2·01
Garinais	F. Bertling	0·02	0·24	− 0·22	3·59	4·48	− 0·89	6·55	5·92	− 0·63
Gibeon	Rev. Spellmeyer	0·00	0·06	− 0·06	2·43	5·04	− 2·61	3·05	9·13	− 6·08
Gobabis	Rev. Irle	0·00	0·28	− 0·28	9·19	12·00	− 2·81	11·68	15·86	− 4·81
Grootfontein	Pitkowski	0·00	0·16	− 0·16	10·31	16·91	− 6·60	13·72	23·53	− 9·81
Gr. Witvley	Maass	0·00	0·53	− 0·53	4·14	11·37	− 7·23	5·45	14·80	− 9·35
Haribes	Capt. Meyer	0·00	0·26	− 0·26	2·99	6·04	− 3·05	3·39	7·39	− 4·00
Heirachabis	Rev. P. Sroka	0·27	0·13	+ 0·14	1·18	2·91	− 1·73	2·93	3·82	− 0·89
Maltahoehe	E. Just	0·00	0·09	− 0·09	1·18	5·02	− 3·84	1·78	5·98	− 4·20
Neu-Heusis	Liebig's Extract Co.	0·00	0·35	− 0·35	4·39	11·49	− 7·10	5·09	14·41	− 9·32
Okahandja	B. Templin	0·00	0·38	− 0·38	6·19	11·54	− 5·35	6·79	13·53	− 6·74
Okandjose	Von Gossler	0·00	1·15	− 1·15	3·54	13·32	− 9·78	6·48	15·92	− 9·44
Okasangumingo	R. H. A. Schneider	0·00	0·56	− 0·56	9·36	12·76	− 3·40	13·53	17·85	− 4·32
Omaruru	The Postmaster	0·00	0·09	− 0·09	6·10	9·04	− 2·94	6·64	11·17	− 4·53
Rehoboth	The Postmaster	0·00	0·12	− 0·12	1·70	8·27	− 6·57	1·70	10·35	− 8·65
Rietfontein	B. Leist	0·00	0·25	− 0·25	7·51	14·68	− 7·17	10·39	21·05	−10·66
Swakopmund	The Gaoler	0·00	0·03	− 0·03	0·04	0·36	− 0·32	0·05	0·65	− 0·60
Tsumeb	Ing. Schetter	0·00	0·31	− 0·31	11·19	17·08	− 5·89	14·39	24·20	−10·81
Usakos	Rev. Diehl	0·00	0·21	− 0·21	2·42	4·38	− 2·96	2·42	5·37	− 3·95
Voigtsgrund	A. Voigts	0·00	0·19	− 0·19	10·13	6·03	− 4·10	11·22	7·32	− 3·90
Waterberg	D. Hahn	0·00	0·44	− 0·44	9·44	15·14	− 5·70	13·23	20·18	− 6·95
Windhoek	Observatory	0·00	0·15	− 0·15	6·91	10·35	− 3·44	9·69	13·29	− 3·58

Blank page retained for pagination

2156—17/3/25—800

LIBRARY
JUL 28 1925
Weather Bureau

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METERIOLOGICAL OFFICE.

Vol. V. JUNE, 1924. No. 54.

PRESSURE.—Mean atmospheric pressure during June was lower than usual over the Transvaal, Natal, and the greater part of the Free State, but slightly higher than the average in the south and west of the Orange Free State, the north and south-west of the Cape Province. Anticyclonic conditions prevailed throughout the month, high-pressure areas being present every day. Low-pressure areas passed along the coast, lying over the south to south-east on the mornings of the 6th to 7th, 9th to 11th, 17th to 18th, and of the 24th.

Temperature.—The mean temperature for this month was 53·0 degrees, or 0·7 degree less than normal. This deficit was unequally divided between the days and the nights, the former, having a mean temperature of 67·3 degrees, being 0·3 degree, and the latter, with a mean of 38·7 degrees, being 1·0 degree below the corresponding average values. A deficit in the mean monthly temperature was common to all the four Provinces—Natal with a temperature of 55·8 degrees being 1·4 degree and the Transvaal with 51·4 degrees being 1·2 degree cooler than usual, whilst the Free State with 46·4 degrees was only 0·4 degree and the Cape Province with 54·1 degrees only 0·1 degree below their respective averages. In the case of Natal, the large deficit of almost 1½ degree was mainly due to the mean maximum (70·2 degrees) being 2·4 degrees, whereas the mean minimum (41·4 degrees) was only 0·5 degree below the usual value. In the Transvaal, the deficit of 1·2 degree was principally due to the mean minimum (35·0 degrees) being 2·1 degrees, whilst the mean maximum (67·7 degrees) was merely 0·4 degree short of the average. The Orange Free State and the Cape Province resembled each other in that in both cases the mean maximum was higher and the mean minimum lower than normal. Thus in the Orange Free State the mean maximum (62·8 degrees) was 0·9 degree in excess, and the mean minimum (30·0 degrees) was 1·6 degree in defect of the average. The corresponding differences in the Cape Province were much smaller, the mean maximum (66·8 degrees) being only 0·1 degree above, and the mean minimum (41·5 degrees) being 0·3 degree below the respective normal values. Considering the various stations separately, it is found that an excess in the mean temperature for June was confined mainly to the east and south-east of the Cape Province, part of Kaffraria, together with a few stations in

the northern Karroo, northern border, the south coast, and the north coast of Natal, also in the south and east of the Free State, as well as parts of the south-west, west, east, and north of the Transvaal. Elsewhere the month's temperature was below normal. In the Cape Province, the excesses in mean temperature were mostly more than 1 degree in the Karroo, the south-east, and Kaffraria, but less than a degree in the south and portions of the east; these surplus amounts varied from 0·3 degree at Umtata, Bedford, and Port Elizabeth, to 2·2 degrees at Port St. Johns and Stutterheim. The deficits in this Province lay between 0·1 degree at Queenstown and 2·8 degrees at Kokstad. In the Orange Free State, the mean monthly temperatures were less than half a degree higher than usual, whilst the deficits in the north and centre were 0·6 degree and 1·7 degree at Kroonstad and Bloemfontein respectively. In Basutoland, Mafeteng during June was 3·3 degrees lower than usual. Except at Stanger, where the mean for the month was 0·6 degree in excess of the average, the stations in Natal showed sub-normal values for the month ranging from 1·2 degree at Weenen, Maritzburg, and Empangeni, to 2·4 degrees at Dundee. In the Transvaal, the surplus amounts in mean temperature varied from 0·1 degree at Potchefstroom to 1·2 degree at Barberton. The deficits were generally between 1½ degree and 3 degrees, except in the south, centre, and the west, where they amounted to 1 degree or less. The sub-normal quantities varied between 0·4 degree at Johannesburg and 4·0 degrees at Belfast. The day temperatures over the Transvaal were mostly less than normal, the defects, although ranging from 0·4 degree at Louis Trichardt to 3·0 degrees at Rustenburg, were mostly between 1 degree and 2 degrees. Excesses in the mean maxima occurred, however, at a few stations in the east, south, and west, as also at Pietersburg in the north. These positive departures from normal were largest in the east, from 1·3 degree at Komatipoort to 2·4 degrees at Barberton, but were less than 1 degree in the other portions named, being only 0·3 degree at Pietersburg. The night temperatures were generally considerably lower than usual, with deficits commonly of 1½ degree to 3 degrees, and ranging from 0·2 degree at Komatipoort to 4·5 degrees at Nylstroom. (The sub-normal quantity of 7·0 degrees shown by Belfast seems excessive.) At Pretoria and Barberton the mean minima were practically normal, being only 0·1 degree in excess, but a decided surplus in the mean night temperature is shown by Louis Trichardt amounting to 0·9. The stations in the Free State all show mean maxima in excess of the average, the supra-normal amounts being mostly less than 1 degree, and varying from 0·4 degree at Ladybrand to 1·8 degree at Bethulie. The former station (Ladybrand) is the only one showing a mean night temperature higher than usual, the deficits in the case of the others lying between 1·1 degree at Bethulie and 4·1 degrees at Bloemfontein. In Natal, the days were mostly cooler than usual by 2–4 degrees, although both Dundee and Stanger show small excesses of 0·3 degree. The reverse was generally the case with the night temperatures, which were generally higher than usual by less than 1 degree. At Weenen, Estcourt, and Dundee, however, the mean minimum was sub-normal, the shortage ranging between 0·5 degree at Weenen and 5·2 degrees at Dundee. The deficit at Dundee seems abnormally large, but is supported to a certain extent by the shortage of 4·6 degrees at Mbabane, in Swaziland. At Mafeteng, in Basutoland, and Mbabane, in Swaziland, both days and nights were cooler than usual, the mean maximum at Mafeteng being 5·3 degrees lower than usual, whilst the corresponding temperatures at Mbabane was only 2·3 degrees less than usual. On the other hand, the mean minimum at Mafeteng was only 1·4 degree less than the average, whereas the corresponding shortage at Mbabane amounted to 4·6 degrees, as already noted. In the Transvaal, there was a difference of 21·6 degrees between the temperature of the mean warmest station, Komatipoort (63·6 degrees), and the mean coolest,

Belfast (42·0 degrees); in the Cape Province, the difference between the corresponding extremes was 19·0 degrees, Port St. Johns having a tempraturee of 64·4 degrees and Aliwal North 45·4 degrees for the month; in Natal, the extremes differed by 14·9 degrees, Stanger showing a temperature of 64·1 degrees and Estcourt of 49·2 degrees; in the Free State, the mean monthly temperature was remarkably uniform, the difference between Ladybrand with 47·2 degrees and Bloemfontein with 45·4 degrees being only 1·8 degree. It will be noted that the position of the mean warmest station over the Union during this month, viz., Port St. Johns with 64·4 degrees, has moved to the south-east coast, whilst Belfast, in the Transvaal, with 42·0 degrees, continues to be the coolest station. The extreme difference over the Union during June between the warmest and coldest station was therefore 22·4 degrees. The mean day or maximum temperatures varied between 80·8 degrees at Komatipoort and 57·3 degrees at Mafeteng; and the mean minimum or night temperatures from 64·4 degrees at Port St. Johns to 23·9 degrees at Belfast. The warmest period during the month was between the 4th and 10th, principally on the 6th and 7th, although some of the highest readings occurred also on the 14th, 16th, 18th, and 21st. On the other hand, the coldest period was from the 18th to the end of the month, most generally on the 20th. A few minima were registered on the 11th to 13th. No extreme minima were noted on the 24th. At no station did the highest temperature recorded during the month reach 100 degrees, the extreme maxima in the various Provinces being 93·0 degrees on the 10th at Komatipoort, in the Transvaal; 90·5 degrees on the 7th at East London, in the Cape; 86·0 degrees at Stanger, in Natal; and 72·2 degrees on the 5th at Kroonstad, in the Free State. The lowest temperatures were below freezing point at about three-quarters of the stations in the accompanying table, and the extreme minima in the various Provinces were all well below 32 degrees. Thus, in the Transvaal, the lowest shade temperature was 13·0 degrees on the 23rd at Belfast; in the Free State, 18·1 degrees on the 20th at Bloemfontein; in the Cape, 19·0 degrees on the 20th at Aliwal North and Kokstad; and in Natal, 23·0 degrees on the 22nd at Estcourt. The extreme monthly range over the Union during June was therefore 80·0 degrees, the highest temperature being 93·0 degrees at Komatipoort and the lowest 13·0 degrees at Belfast. As the mean minimum temperature for June was the lowest recorded at some stations for many years, it is not surprising that *ground frosts* should have been of unusual frequency and severity during this month in parts of all the Provinces. These were of daily occurrence at some stations, particularly in the Transvaal. As examples of their severity, attention may be directed to that at Wakkerstroom on the last day of the month, where a number of water-pipes were burst, whilst no water could be obtained all day from the taps at a farm twelve miles from the town; similarly, at Gemboksfontein, in the District of Middelburg, frost was severe enough to burst water-taps even when well protected by sacking. At Barberton, night frosts checked the growth of cotton, and was expected to affect the yield adversely. At Hlatikulu, in Swaziland, and Tsolo, in Kaffraria, the grass was destroyed by frost, reducing the amount of grazing for cattle. Ice was formed practically every morning in some areas, even as far north as Pietersburg, and at Rongpoort, in the district of Weenen, in Natal.

Precipitation.—The rainfall during June was below the average over the Union, with the exception of the Cape Peninsula, portions of the south-west, and the western part of the south coast area; also the neighbourhood of Empangeni, in Zululand. The excess amounts were generally less than half an inch, but rose to 1·71 inch or 27 per cent. at Groot Drakenstein, 4·20 inches or 60 per cent. at Ceres, and 2·05 inches or 175 per cent. at Empangeni. Precipitation was of a typically winter character, quantities of 1 inch and

over being confined to parts of the west coast, the south-west, including the Cape Peninsula, and the south, south-east, and east coasts. A total absence of rain was experienced over the greater part of the Transvaal, a considerable portion of the Free State, some stations in Natal, Bechuanaland, the northern border, the northern Karroo, the major portion of the central Karroo, and parts of the north-east of the Cape Province, and Kaffraria. Light showers fell over part of the Barberton District, in the Transvaal, on the 9th, parts of Barberton, Lydenburg, and Zoutpansberg on the 12th, over portions of the Bethal, Ermelo, Heidelburg, Standerton, Wakkerstroom, and Witwatersrand Divisions on the 24th, continuing till the 25th in the Ermelo area. In Swaziland, light rains occurred on the 13th, 16th, and 24th. In the Free State, very light showers occurred in all districts on the 24th, although none was recorded at many stations. In Natal, some good rains, apparently confined to the coastal area, fell on the 15th, with local showers during the last week of the month. In the Cape Province, good rains occurred at intervals throughout the month over the Cape Peninsula and the south-west, with light scattered showers over the west coast, south coast, and southern Karroo. A few stations in the central Karroo received some light, drizzling rains, whilst similar local showers occurred over the south-east and Kaffraria. The light rains of the 24th over the Free State and parts of the Transvaal also affected a portion of the north-east Cape. Elsewhere there was practically no rainfall during this month. At this season of the year the rains over the interior are mostly small in amount, so that the deficits were generally less than an inch. Even these comparatively small amounts are of considerable importance in an area like Namaqualand, where agriculture is dependent on a normal rainfall of about an inch at this period; consequently, a serious condition may arise when, as at O'okiep, the normal of 1·04 inch for June is reduced as in the present month to 0·48 inch, or less than half the average. Slight showers of snow fell at Paardekraal (Division Beaufort West) and Waterfall (Division Graaff-Reinet) on the 18th; at Pearston on the 19th; at Pijlfontein (Division Steynsburg) and Mvenyane (Division Matatiele) on the 24th; also at Mon Repos (District Wepener), Sans Souci and Caledonia (District Harrismith), in the Free State, on the same date; at Barnardsdale (District Uniondale) and Pearston on the 27th. Snow continued to lie on the highest parts of the Frenchhoek Mountains after the 17th; and was noted on the Drakensberg, Katberg, and Zwartberg ranges.

The accumulated rainfall for the twelve months commencing 1st July, 1923, is mostly considerably below the average in all Provinces of the Union. In the Transvaal, the exceptional areas where surplus amounts are met with, consist of detached areas in the neighbourhood of Belfast in the east of the High Veld, of Pietersburg in the Zoutpansberg, and Zeerust in the western Middle Veld. In the Free State, excess quantities are confined to the extreme south, but extend into Basutoland. In the Cape Province, *plus* amounts occur over portions of the south-west and south-east, the east of Kaffraria, and a few isolated patches in the northern Karroo and northern border. The surplus amounts in the Transvaal vary between 0·89 inches or 4 per cent. at Pietersburg and 3·86 inches or 13 per cent. at Middelburg. The deficits there are, as a rule, considerably larger than the excesses, being commonly between 4 and 12 inches, but ranging from 0·85 inch or 3 per cent. at Heidelburg to 25·24 inches or 35 per cent. at Woodbush. In the south of the Orange Free State, Bethulie shows an excess of 2·25 inches or 13 per cent., whilst the twelve months' rainfall at Mafeteng, in Basutoland, was 2·20 inches or 7 per cent. more than usual. The *minus* quantities in the Free State are generally between 4 and 8 inches, ranging from 3·81 inches or 18 per cent. at Bloemfontein to 8·24 inches or 34 per cent. at Kroonstad. Over the Cape Province, the *plus* amounts vary between 0·20 inch or 1 per cent. at Kokstad and 3·91 inches of

11 per cent. at Groot Drakenstein. The *minus* quantities are mostly between 2 and 4 inches over the interior and the west coast, rising to 5 inches in places; between 6 and 8 inches in the south-west, south, and east, but increasing in a few instances to 11–13 inches. The negative departures varied from 0·10 inch or 1 per cent. at Vryburg to 12·92 inches or 41 per cent. at Swellendam. Sub-normal amounts are general over Natal, showing considerable variation from place to place, being least in the west, where Dundee shows a negative departure of 3·85 inches or 12 per cent., and greatest in the south and east, Empangeni, in Zululand, having 16·25 inches or 35 per cent. below the average. When compared with the record for the longer period, the gross totals for the first six months of the year show a marked improvement, relative to the corresponding average conditions. Thus an excess mostly of from 2–4 inches is met with over the greater part of the High Veld, part of the west of the central Middle Veld, at Nylstroom in the Low Veld, and at Pietersburg in the south of the high land of the Zoutpansberg. At Mbabane, in Swaziland, the *plus* amount falls to 1·43 inch or 5 per cent., whilst in the west of the Middle and Low Velds it decreases to considerably less than 1 inch. The exceptional portions of the High Veld lie in the extreme south-west and south-east, where the rainfall for the half-year is below the average, a condition which prevails over the remainder of the Province. The positive departures from normal varied from 0·19 inch or slightly more than 1 per cent. at Zeerust to 7·31 inches or 50 per cent. at Middleburg. On the other hand, the negative departures were mostly between 4 and 5 inches, ranging, however, from 0·21 inch or 1 per cent. at Louis Trichardt in the north to 7·38 inches or 42 per cent. at Komatipoort in the east, and 15·08 inches or 33 per cent. at Woodbush in the north-east. In the Orange Free State, an excess for this period is confined to the extreme south, where Bethulie had 3·90 inches or 34 per cent. more than the normal. The deficits over the rest of the country are mostly between half an inch and 2 inches, but exceeding 4 inches at Kroonstad in the north. The *minus* quantities varied from 0·66 inch or 5 per cent. at Bloemfontein to 4·14 inches or 29 per cent. at Kroonstad. In Natal, the only station showing a rainfall in excess of normal is Dundee, where the surplus amounts to 1·04 inch or 6 per cent. Over the rest of the Province there is generally a deficit between 2 and 5 inches, but ranging from 0·59 inch or 3 per cent. at Durban to 5·50 inches or 34 per cent. at Weenen.

In the Cape Province, those areas in the south-west, south-east, Kaffraria, and Basutoland that showed a surplus for the twelve months are now considerably short of the normal, indicating a seriously decreased rainfall in the second period of six months. On the other hand, the stations in the northern Karroo and the south of the northern border that had an excess now show considerably increased surplus amounts, whilst the neighbourhood of Aliwal North is now similarly affected by an excess rainfall, amounting to 1·38 inch or 11 per cent. above the normal. The positive variation at the other stations was from 0·86 inch or 11 per cent. at Carnarvon to 3·22 inches or 34 per cent. at Philipstown. Sub-normal quantities prevailed over the rest of the Province, being generally between 1½ inch and 2½ inches less than usual over the interior, but exceeding 3 inches at several stations. In parts of the east, of Kaffraria, and of the south coast the deficits are between 4 and 6 inches; in the south-west mostly between 3 and 4 inches, but exceeding 7 inches at Wynberg, in the Cape Peninsula, and reaching 10·44 inches or 27 per cent. below normal at Driefontein, in the Frenchhoek area. At Upington the shortage is 0·43 inch or 8 per cent. In Namaqualand, O'okiep, with a total for the six months of only 0·95 inch, was 2·72 inches or 74 per cent. below the average; the total for the twelve months there was only 2·82 inches, being 4·15 inches or 59 per cent. less than the normal, a very serious falling-off for a station having an annual average of only 6·97 inches.

No rain fell at any stations in South-West Africa during the month of June. The only station showing a year's total for the twelve months, since the 1st July of the preceding year, was Voigtsgrund, where the sum of 11·22 inches for this period was 3·82 inches or 52 per cent. in excess of the normal. At all the other stations the totals were considerably less than the average. South of the Tropic the deficits over the central portions were generally between 2 and 4 inches, decreasing to eastward to 0·95 inch at Heirachabis and to 1·04 inch at Aus in the west. North of the Tropic the shortages lay mostly between 6 and 10 inches over the central portion, but decreasing to 4·24 inches in the east and to 1·42 inch at Franzfontein in the north-west, and 0·61 inch at Swakopmund on the coast. The short falls at Windhoek and Okasangumingo were considerably less than at surrounding stations, being only 3·61 inches at the former and 4·32 inches at the latter station. The *minus* quantities ranged from 0·61 inch at Swakopmund to 10·67 inches at Rietfontein, and the percentage deficits between 89 per cent. at Swakopmund and 21 per cent. at Garinais in the south-east. Similar conditions prevailed during the first six months of 1924, Voigtsgrund being the only station with a supra-normal rainfall for this period, the excess amounting to 4·02 inches or 66 per cent. more than the average. South of the Tropic the totals for the first half of this year were less than usual, mostly by 2–4 inches, but by less than an inch in the more easterly part. North of the Tropic the deficits were generally between 3½ and 7 inches in the central parts, increasing, however, to 9·79 inches at Okandjose; in the west they decreased to between 2 and 3 inches, and still further to 0·33 inch at Swakopmund; and in the east to 2·87 inches at Gobabis. The actual shortages varied from 0·33 inch at Swakopmund to 9·79 inches at Okandjose; whilst the percentages of the actual total compared with normal lay between 18 per cent. at Franzfontein and 92 per cent. at Swakopmund.

State of Country.—The conditions in the Transvaal during June were practically a continuation of the unsatisfactory state of affairs prevailing in the previous month, aggravated by further depredations of locusts which attacked, and in some cases utterly destroyed, winter crops in certain parts, and ate off the veld grass in others, as in portions of the Rustenburg, Pretoria, and Waterberg Districts, reducing the winter pasturage still further. In Swaziland the young grass was destroyed by frost at Matapa and Hlatikulu; so that sheep farmers at the latter place had begun to feed their flocks on grain. Many farmers in the Rustenburg District were compelled to trek with their cattle in search of grass. In the Piet Retief District the country was getting dry, whilst there was a scarcity of grass and forage in the Bloemhof area. Cattle generally were in good condition in the east, centre, and north, but only fair to poor in the west, particularly the south-west. The winter crops at Badfontein, in the Lydenburg District, were promising well, whilst mealies and monkey nuts were good at Woburn (Waterberg District). Conditions were generally satisfactory in the Waterberg and Zoutpansberg Districts. In the Free State, stock were healthy in Heilbron District, although grazing was very scarce, whilst in Winburg District sheep were in excellent condition and cattle good for the time of year. In Natal, the country was very dry and rain badly needed, and grass scarce. At N'tambanana (Lower Umfolozi), the drought was very serious, farmers having to water their stock miles from their farms. At Sawoti (Umzinto), stock were doing well, but the sugar-cane was drying up in patches. In the Cape, there was a continuation of the drought of previous months over the greater part of the Province; even in the Riversdale district cattle were in poor condition and but little ploughing carried out, after the rains of this month, owing to there being insufficient to soften the ground. The drought was severe, particularly in the Queenstown, Bedford, Stutterheim,

Somerset East, Cradock, and Bathurst Divisions, also over the interior, and in Namaqualand. The drought was intensified by cold, dry winds from a westerly to northerly direction, as at Prieska, Somerset East, and Queenstown, or from south-westerly to south-easterly directions, as at Tsolo, rising at times to gale force, and, generally speaking, good rains were urgently required. At Anenous (Namaqualand), strong easterly winds prevailed during the last week, with terrible duststorms. Stock were in low condition in the district of Aberdeen, and dying in parts of the Cradock district. In the Mount Currie area, green feed was drying up, and had been finished at Tsolo by the frost. The maize crop in Mount Currie had been very disappointing, owing to hail, grubs, and drought. At Nelspoort (Division Beaufort West), the cattle were in fair condition and the grazing good. In the south-west and south of the west coast area good rains fell during the month at intervals, interspersed with fine days, but crops were showing the effects of the shortage of rain in April–May. At Sydney-on-Vaal leaves of deciduous trees were still hanging, whilst at Bedford, notwithstanding considerable fluctuation of temperature, high winds, and drought, peach trees were coming into blossom. In Basutoland, stock were still in good condition, in spite of the very cold weather during June.

Water Supply.—Although but little is stated by observers as to the condition of the water supply, it can be gathered from the few notes available that it is extremely precarious in many districts of all the Provinces. At Rietvlei (Division Ermelo), in the Transvaal, the water supply was stated to be everywhere weaker than usual, although there was still a good stream on that particular farm. The difficulty experienced in watering stock at N'tambanana, in Natal, has been already referred to.

OBSERVERS' NOTES FOR JUNE, 1924.

TRANSVAAL.

Groenboom No. 444 (*Rustenburg*).—The main features of this month were high barometer readings, a minimum of cloudiness, cold winds from the south and south-east, and frosty, still nights. The usual dry winter weather. Locusts still flying about, and probably laying eggs all over the veld. Stock in fair condition up to now. Veld damaged considerably by locusts. Hardly any crops to reap. Many farmers are forced to trek with their cattle in search of grass. Rainfall : Nil.—F. N. van Nouhuys.

Arbury (*Rustenburg*).—The highest temperature for the month was 78 degrees on two days, the 4th and 8th, the lowest being 24 degrees on the 11th, 27th, and 28th. On the whole the month has not been cold, but a few windy days were experienced. No rain was recorded. The district has been visited by huge swarms of locusts, which seem never to stop. They have only settled here for the night three times.—G. F. Mills.

Ermelo.—During the last half of the month the weather was very cold. A shower of rain fell during the night of the 24th, and the following day the weather conditions pointed to a fall of snow. Rainfall : 0·04 inch on one day. —J. Dean.

Krugersdorp.—The month under review has been a fine one, and no severe extremes of temperature took place. Scattered locusts are more or less in evidence throughout the district. Rainfall : Nil.—H. Sharp.

Piet Retief.—Towards the latter part of month very heavy frosts experienced. Country getting dry. Rainfall : 0·01 inch on one day.—J. Werner.

Pietersburg.—Extraordinary low temperatures. Heavy frost and ice daily. Rainfall : Nil.—W. J. Franklyne.

Middelburg.—Frosty genial weather has prevailed during the month, the number of frosty nights being rather more than usual, and the degree of frost slightly lower than the average for twenty years past. The cold, biting winds, so prevalent at this time of the year in some parts, have not been much in evidence here. It is borne in upon me, more and more, that the ever increasing areas of trees over the middle veld, and in contrast with the high veld, is most largely responsible for this diminution of the cold winds of winter months, probably by clothing the ground surface, but also by affording shelter. Rainfall: 0·01 inch on one day.—Dr. H. A. Spencer.

Christiana.—Nothing unusual to report. Bitterly cold. Animals very poor on account of the locusts. Scarcity of grass and forage. Rainfall: 0·20 inch on one day.—W. J. Meintjes.

Strathmore (Klerksdorp).—Pleasant weather. Rainfall: Nil.—Chas. Scott.

Lichtenburg.—Very cold during the nights, also cold winds during the day. Everything dried up. Locusts settled in and around the town, eating up everything; they cannot be moved, simply flying from one place to another laying their eggs. Prospects very dark. Cattle in very poor condition. Rainfall: Nil.—E. Newton.

Amatava (Potgietersrust).—Fine throughout, with occasional sharp mornings. No heavy frosts. Rainfall: Nil.—A. R. Troye.

Pretoria (Transvaal University College Experimental Farm).—No rain fell during this month; the soil, however, was quite moist and in a ploughable condition from the previous month's fall. During the month a number of fairly large swarms of locusts passed over us, doing severe damage to young winter cereals. With the sudden severe cold that set in during the month the veld dried off completely.—The Manager.

Barberton.—The weather has been cool and cloudless throughout the month. Night frosts have occurred frequently in the low-lying ground near the rivers and streams, which have acted as a check on the cotton, and which will probably affect the yield materially. This follows as a result of late planting, due to the drought at the beginning of the season. Rainfall: Nil.—Walter Grubb.

Wakkerstroom.—Of the thirty nights only seven were not accompanied by frost; on the last day of the month 19 degrees of frost were registered, causing quite a number of water-pipes to burst. On a farm twelve miles out of town the people could not get a drop of water from the taps the whole day. Rainfall: 0·02 inch on one day.—M. P. Ackermann.

Potchefstroom (Experimental Farm).—In general, the weather was fine during the month, with fairly warm, sunny days and calm, frosty nights. Rainfall: Nil.—The Manager.

Rietvlei (Ermelo).—Very cold; strong winds and severe frosts. Cattle still in good condition. Water everywhere weaker than usual, but on this farm we still have a good stream of water. Grass killed by frost. Mealie crop fairly good. Exceptionally cold winter. Rainfall: Nil.—P. J. Steenkamp.

Gemboksfontein (Middelburg).—Frosts have been very prevalent during the month, and severe enough to burst water-taps which were well protected with sacking. Rainfall: Nil.—L. C. Skead.

Nooitgedacht (Warmbaths).—The dominant feature of the month has been the almost continuous presence of locusts and the general dislocation of farm work in endeavouring to deal with them. The demonstration lorries, fitted by the Transvaal Consolidated Land and Exploration Company, Ltd., were up here for a week, and proved their ability to spray fliers at night over a large

area. The nights have been cold, with frost on thirteen occasions. That of the 11th was the first frost of importance at this station. Cattle in good condition, largely due to the consumption of such mealie stover as the locusts have left. Rainfall: Nil.—G. Gordon Brown.

Myrthley (*Standerton*).—Heavy frost throughout the month, with pleasant warm days and cloudless skies; wind varying from light air to moderate gale. Rainfall: 0·06 inch on one day.—J. L. Ellis.

Badfontein (*Lydenburg*).—Winter crops are promising remarkably well. Rainfall: Nil.—L. Parker.

Mimosa Park (*Potchefstroom*).—Never have there been such visitations of locusts in this district. They remained for fifteen consecutive days on this and the two adjoining farms; sleeping at nights among the rocks and bushes of the kopjes. Rainfall: Nil.—J. G. Dixon.

Hartebeestpoort Experimental Station (*Pretoria*).—Crops in this area are all destroyed by locusts. Rainfall: Nil.—The Manager.

Waaikraal No. 206 (*Rustenburg*).—Locusts passing over almost continually; no crops left. A large swarm sleeping east of Bethanie. Rainfall: Nil.—W. Behrens.

Haslemere (*Rustenburg*).—Locusts about in abundance. Cattle in fair condition. Rainfall: Nil.—F. Kingsley Hine.

Doornkom No. 896 (*Rustenburg*).—Locusts about during the month; nothing left on lands. Rainfall: Nil.—G. J. Taylor.

Uitloop No. 1543 (*Waterberg*).—Cattle are in good condition, grass being dry but plentiful. No locusts up to date. Rainfall: Nil.—J. Nicholson.

Highlands (*Waterberg*).—Practically all green crops have been eaten off once or twice by heavy infestations of locusts. A good amount of damage has also been done to grazing. Rainfall: Nil.—A. Mathewson.

Woburn (*Waterberg*).—Mealie and monkey nut crops are good. Swarms of locusts have passed over here, but have done no damage. Rainfall: Nil.—C. W. Brumage.

Driefontein (*Zoutpansberg*).—Cattle in very good condition. Veld here seems to be in a more lasting condition than it was last year. Rainfall: Nil.—H. J. K. Juntzer.

Excelsior No. 113 (*Zoutpansberg*).—Stock-feed very scarce. Rainfall: Nil.—R. Bouker.

Chester (*Zoutpansberg*).—Some green mealies now maturing without irrigation. Rainfall: Nil.—A. H. Smith.

Innerleithen (*Zoutpansberg*).—Locusts in swarms took 3½ days to pass. Rainfall: Nil.—F. Halse.

SWAZILAND.

Matapa.—No green grass on flats; what slight growth there was has been killed by the cold. Rainfall: 0·07 inch on one day.—A. R. Torrens.

Hlatikulu.—For the month of June we have had quite an unusual amount of frost for these parts. Owing to this fact it has become necessary for the sheep farmers to start feeding their flocks on grain, as all the young grass has been damaged, which, of course, makes matters serious. Rain has fallen in the bushveld and other parts of the district, but not at this station.—J. Pullen.

Mbabane.—Frosts have been exceptionally heavy this month. Rainfall: 0·13 inch on one day.—R. C. S. Markham.

Orange Free State.

Heilbron.—There is nothing of any importance to report. Stock healthy. Crops are being gathered in. Grazing is very scarce. Weather cold. Rainfall: 0·11 inch on one day.—P. A. du P. Naude.

Paardekraal (Winburg).—Early part of month quite warm, with a little frost, but second half much colder, with hard frost every night. Sheep in excellent condition, and cattle quite good for time of year. Require good shower on green crops. No locusts, but many alarming reports of them. Rainfall: 0·10 inch on one day.—G. S. Lowe.

Kroonstad.—Frost registered on twenty-six nights, lowest (20 degrees) on the 20th. Days mostly bright and warm. Rainfall: 0·03 inch on one day. —A. C. Mason.

Natal.

N'tambanaba (Lower Umfolozi).—Drought has become very serious; farmers have to water their stock miles from their farms. Veld is dry and grass is scarce. Strong south-westerly winds prevailed. Frost has been prevalent in low-lying parts. Rainfall: 0·10 inch on one day.—L. Davies.

Port Shepstone.—Very dry; rain badly needed. Rainfall: 0·37 inch on two days.—E. K. Andreasen.

Mid-Illovo.—Dry, dusty, cold. Rain threatening at times, but only the one fall on the 15th—0·30 inch.—Lt.-Col. J. W. V. Montgomery, C.M.G., D.S.O.

Nottingham Road.—Mild first part of the month, then heavy frosts. Very dry; quite sunny days. Rainfall: 0·05 inch on two days.—Miss E. Smythe.

Dundee.—A very cold month, with some very strong north-westerly winds, changing to moist atmosphere. Rainfall: Nil.—West Thorrold.

Maritzburg (Mental Hospital).—The month of June has been very dry, with very severe frosts on most nights. On the whole the days have been very bright and sunny. Rainfall: Nil.—The Staff.

Ladysmith.—With the exception of a few very windy days, the weather during the month has been clear and cold, and a number of heavy frosts have been experienced. The lowest temperature recorded was 27 degrees on the 22nd and 30th, but this is in a very sheltered position, and it is estimated that on these days there were 10 degrees of frost in the lower-lying parts of the town. The average minimum temperature is the lowest recorded for many years. Rainfall: 0·13 inch on two days.—D. A. R. Leathern.

Durban (Point).—Generally fine weather throughout the month. Cold in morning to warm during the day. Rainfall: 0·77 inch on four days.—The Port Captain.

Paddock (Port Shepstone).—A dry, cold month. Bright days on the whole, but nights very cold. Whole country very dry. Rainfall: 0·46 inch on one day.—G. Victor Merriman.

Rongpoort (Weenen).—Very severe frosts this month; ice almost every morning—more severe than for years past. Rainfall: Nil.—J. H. Bartholomew.

Sawoti (Umzinto).—Extremely dry; cane drying up in patches. Stock doing well. Rainfall: 0·26 inch on one day.—Archibald & Co.

Cape.

Keerweder (Frenchhoek).—More fine weather than usual in June. After the 17th snow remained on highest mountain tops. Rainfall: 8·41 inches on fourteen days.—P. Eglington.

Kraaipan (*Mafeking*).—A cold, dry month. Rainfall: Nil.—P. J. Hart.

Graaff-Reinet (*Convent*).—Weather on the whole very fine throughout the month. A few days very windy and dusty. Winds chiefly from north-west. Rainfall: 0·16 inch on three days.—The Mother Superior.

Kokstad.—Exceptionally cold; heavy frosts. Rainfall: 0·25 inch on one day.—H. D. Coyte.

Port Alfred.—Weather during month has been very changeable. More rain is needed, but thankful for showers. Rainfall: 1·21 inch on four days.—W. H. Pascoe.

Kamanassie Dam (*Oudtshoorn*).—Drought conditions continuing. Rainfall: 0·33 inch on four days.—E. F. Edmeades.

Sydney-on-Vaal (*Barkly West*).—Normal month, except for a few high maximum readings in first half of month. Namaqua partridges seen with young chicks towards end of month, result of mild winter weather up to the middle of June. Leaves of deciduous trees still hanging on at end of month. Rainfall: Nil.—J. G. Richards.

O'okiep.—Rainfall—0·48 inch on seven days—very disappointing. Quick change of wind from north-west to south-west destroyed every promising occurrence.—J. Burrows.

Somerset East.—Drought prevails, and is intensified by persistent strong northerly and westerly winds. Barometer unusually high, reaching 28·056 degrees on the 15th. Heavy frost on 20th, minimum reading being 29·8 degrees. Frosts or cold rains will be disastrous to stock under present conditions. Rainfall: 0·30 inch on four days.—C. Harris.

Bedford.—Continuance of drought; invasion by locusts; erratic temperature; heavy frosts; high winds; and with it all, peach trees coming into blossom. Rainfall: 0·15 inch on five days.—Thos. C. Hall.

Sandflats (*Mount Currie*).—Condition of live stock fair. Sheep doing better than cattle. Those who have shelled the maize crop have been disappointed with the result—hail, grubs, and drought being chief reasons for the shortage. On the whole the weather has been very mild, with the exception of a few days when cold winds were experienced. Very heavy hoar frosts towards end of month. Maximum temperature 72 degrees on the 3rd, and minimum temperature 23 degrees on the 20th. The rainfall for the month—0·29 inch on the night of the 24th—was very welcome. The country generally requires a good soaking rain, or, preferably, a good fall of snow. Green feed is drying up owing to lack of moisture. South-westerly winds are unusual; more due westerly winds are the general rule.—Hewson B. Corderoy.

Stutterheim.—Drought very severe; rain badly needed. Rainfall: 0·30 inch on five days.—F. C. Bousfield.

Kenhardt.—Continued drought. Rainfall: Nil.—R. Seydell.

Darling.—Rains have fallen very nicely—not too heavily—and fine weather between, but conditions are suffering somewhat from shortage of rain in April and May. Rainfall: 4·16 inches on fifteen days.—P. H. Drake.

Queenstown.—A month of strong and gusty westerly to northerly winds. Cold frosty nights. Drought; no veld, and all large stock and some flocks of sheep removed from district. Rainfall: 0·06 inch on one day.—H. Holley.

Ceres.—Frost on eight days. Weather not quite seasonable, as lacking in wind. Rainfall: 11·15 inches on fourteen days.—A. Heatlie.

Aliwal North.—June has been very dry, only 0·06 inch of rain on one day. Fine, bright days and generally frosty nights.—Alex. Alcock.

Cathcart.—A dry, windy month. Sharp frost on the 19th, 20th, 21st, and 29th. Rainfall: 0·19 inch on two days.—C. E. Whibley.

Nelspoort (Beaufort West).—Grazing is good, and cattle are in fair condition. Rainfall: Nil.—Bronco J. Opperman.

Tsolo.—The prevailing winds from west-south-west to south-east have at times increased to gales and very cold, owing to the Drakensberg being white with snow. Animals are in very bad condition; no veld for them. The frosts have finished the feeding for cattle, etc. Rainfall: 0·09 inch on two days.—H. P. Tillard.

Danger Point.—Very cold winds latter part of month. Veld looking fine. On the 23rd, about 11.30 a.m., a sort of whirlwind travelled across the sea from south-west to north-east; could be seen for over thirty minutes travelling very fast till hid in mist near land this side Quoin Point; about 20 feet high, sometimes higher, showing a mass of spray. North-westerly wind blowing here at the time. Rainfall: 7·85 inches on thirteen days.—H. H. Hews.

Prieska.—Sunshine almost a maximum. Air dry and piercing, except on the 24th, when there were strong indications of rain, but only a few drops (not measurable) fell. Wind, generally from north-west, started at or before noon on most days, but died away about sunset. The west wind, very strong breeze on night of 27th–28th, was exceptional.—E. G. Bryant.

Anenous (Namaqualand).—Very strong east winds during last week and terrible duststorms. Rainfall: 0·37 inch on five days.—S. Robson.

Cromdale (Aberdeen).—Stock in low condition. Rainfall: Nil.—J. N. Cruickshank.

Dwingfontein (Cradock).—Drought very serious, stock dying. Rainfall: Nil.—C. A. du Plessis.

BASUTOLAND.

Mafeteng.—Very severe ground frosts throughout the month, the mean being 17·8 degrees. On the ground, on night of 29th, 24 degrees of frost. Fine, cloudless days. Light showers on 24th—0·24 inch on that day being the rainfall for the month.—F. Hodgson.

Maseru.—Very cold days during month. Stock in good condition. Rainfall: 0·14 inch on one day.—J. G. Green.

WEATHER CHARACTERISTICS FOR THE MONTH OF AUGUST.

Along the west coast and over the Cape Peninsula the rainfall during the month of August is decreasing, but in the south-western districts the precipitation usually exceeds that of the previous month. The general tendency over the remainder of the Union is towards an increase, although the month may be quite rainless inland. The normal rainfall is about 6 inches over the Cape Peninsula; 3 inches in the Cape south-western districts; 2 inches along the south coast; 1·5 inch in the south-east of the Cape, along the west coast, and in Zululand; 1 inch in Natal, Basutoland, in the Cape north-eastern districts, and Kaffraria; and less than 1 inch in other parts of the Union.

The mean temperature of the air is now increasing rapidly inland, where sunny days and cloudless skies preponderate, and slowly along the coastal districts. A mean of about 64 degrees should be reached on the Transvaal low veld, while the normal in Natal is 61 degrees; in the south-east of the Cape and along the south coast, 58 degrees; over the east-central Karoo, 56 degrees; in the Cape Peninsula, on the southern Karroo, and over the northern borders,

55 degrees; in the Transvaal and over the Cape south-western districts and along the west coast, 54 degrees; on the west-central Karroo, 53 degrees; in the Cape north-eastern districts and Basutoland 51 degrees; and in the Orange Free State and on the northern Karroo, 50 degrees. Frosts are still of frequent occurrence.

Compared with July there is a marked increase in frequency over the Transvaal of north and north-westerly winds, but a decrease in all other directions; north-north-west is still the prevailing wind. In the south-east of the Cape Province, on the other hand, there is a decrease in frequency of north-westerly winds, but an increase of all others, particularly those from north-east, which constitutes the prevalent direction. In the north of the Cape Province the principal wind is still from east-north-east; over this area there is a decrease in frequency of southerly, south-westerly, and north-westerly winds, but an increase of breezes from directions between north and south-east. Over the Cape Peninsula north-westerly are still the dominant winds, notwithstanding a falling-off in their frequency and an increase in those from south. With a general increase in the wind-force and velocity, and continued dry weather over the interior, duststorms are apt to be frequent occurrence at this period.

C. STEWART,
Chief Meteorologist.

Pretoria.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), JUNE, 1924.

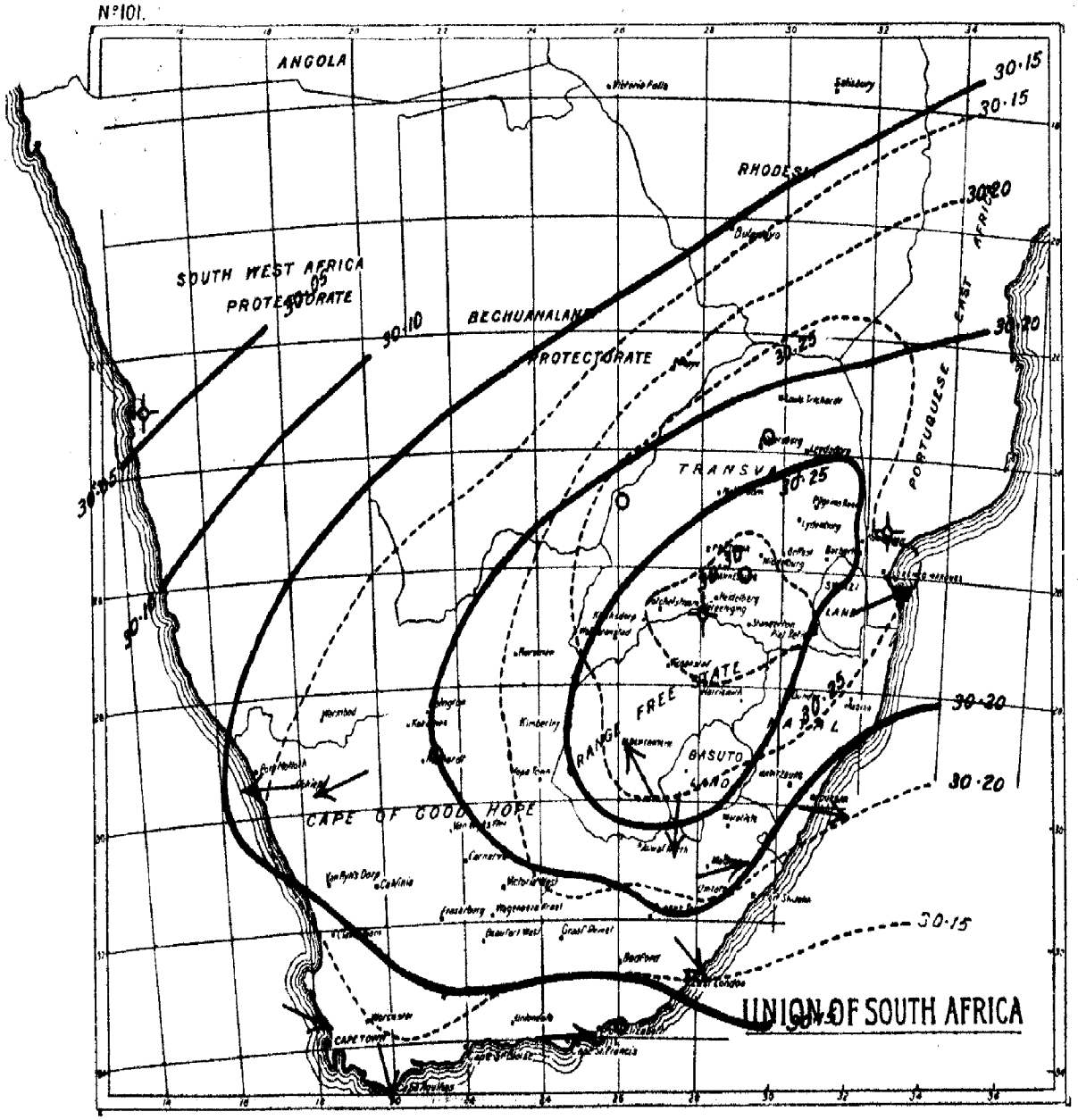
Place.	Observer.	Month—June, 1924. Mean Max.	Month—June, 1924. Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Extremes. Date.	Extremes. Lowest.	Extremes. Date.
		°F.	°F.	°F.	°F.	°F.	°F.		°F.	
Transvaal—										
Barberton	Walter Grubb	73·6	47·6	60·6	59·4	+ 1·2	82·0	7th	40·0	20th.
Belfast	The Forester	60·2	23·9	42·0	46·0	− 4·0	68·0	4th	13·0	23rd.
Bloemhof	—	—	—	—	49·7	—	—	—	—	—
Ermelo	S.A. Police	62·0	28·9	45·4	47·4	− 2·0	68·4	5th and 6th	19·8	30th.
Johannesburg (Observatory)	The Staff	59·9	40·0	50·0	50·4	− 0·4	68·0	8th	28·2	25th.
Klerksdorp (Strathmore)	Chas. Scott	65·9	31·2	48·6	50·3	− 1·7	75·0	6th	22·2	29th.
Komatipoort	B. J. Fothergill	80·8	46·5	63·6	63·1	+ 0·5	93·0	10th	33·0	18th.
Louis Trichardt	C. L. Cope	68·9	45·1	57·0	56·8	+ 0·2	79·0	10th	—	—
Middelburg	Dr. H. A. Spencer	67·0	27·6	47·3	48·6	− 1·3	75·0	8th	21·0	28th.
Nylstroom	G. Bakker	69·1	32·6	50·8	53·4	− 2·6	76·0	5th and 10th.	25·0	29th.
Pietersburg	W. J. Frankleyne	70·1	34·5	52·3	53·8	− 1·5	76·5	4th	27·0	26th.
Piet Retief	J. Werner	66·6	37·8	52·2	54·2	− 2·0	75·6	7th	29·0	30th.
Pigeonhole (New Agatha)	Jno. McCallum	62·7	49·5	56·1	—	—	72·0	10th	40·0	20th.
Pilgrims Rest	E. M. Skea	67·1	34·3	50·7	52·2	− 1·5	74·0	8th	25·0	23rd.
Potchefstroom (Exp. Farm)	The Manager	68·1	30·5	49·3	49·2	+ 0·1	76·0	6th	23·0	20th.
Pretoria (Meteorological Office)	The Staff	68·0	35·6	51·8	52·6	− 0·8	77·1	8th	29·7	27th.
Rustenburg	A. Streatfield	67·5	34·3	50·9	54·0	− 3·1	77·0	6th	27·0	11th and 29th.
Standerton	—	—	—	—	45·4	—	—	—	—	—
Zeerust	H. Dietrich	68·5	30·5	49·5	50·5	−1·0	76·6	4th	23·0	29th.
Swaziland—										
Mbabane	Swaziland Police	64·7	40·5	52·6	56·0	− 3·4	75·0	7th and 10th.	31·0	20th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	62·8	30·9	46·8	46·5	+ 0·3	71·8	6th	20·0	20th.
Bloemfontein	G. A. Schepers	61·4	29·4	45·4	47·1	− 1·7	71·3	7th	18·1	20th.
Harrismith	The Forester	57·1	38·1	47·6	45·7	+ 1·9	68·0	7th	28·0	19th.
Kroonstad	A. C. Mason	64·5	27·6	46·0	46·6	− 0·6	72·2	5th	20·0	28th.
Ladybrand	The Forester	62·4	32·0	47·2	46·8	+ 0·4	71·0	5th and 6th	25·0	12th.
Lindley	—	—	—	—	46·8	—	—	—	—	—
Natal—										
Dundee	West Thorrold	69·0	32·2	50·6	53·0	− 2·4	78·0	6th and 7th	24·0	20th.
Durban (Point)	The Port Captain	71·8	55·4	63·6	64·9	− 1·3	80·2	7th	48·2	21st.
Empangeni	The Forester	72·6	51·2	61·9	63·1	− 1·2	83·0	7th	42·0	18th.
Estcourt	The Town Clerk	66·6	31·7	49·2	51·4	− 2·2	76·0	8th	23·0	22nd.
Hlabisa	—	—	—	—	63·6	—	—	—	—	—
Ladysmith	D. A. R. Leathern	66·5	33·8	50·2	52·4	− 2·2	75·0	9th	27·0	22nd and 30th.
Maritzburg (Mental Hospital)	The Staff	70·7	42·1	56·4	57·6	− 1·2	81·0	7th	31·0	20th.
Stanger	Cecil C. Foss	74·7	53·5	64·1	63·5	+ 0·6	86·0	—	47·0	21st.
Weenen	The Gaoler	70·0	31·5	50·8	52·0	− 1·2	77·0	6th, 8th, and 9th	24·0	22nd.

AIR TEMPERATURES, JUNE, 1924—(*continued*).

Place.	Observer.	Month—June, 1924. Mean Max.	Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Date.	Lowest.	Date.
		° F.	F.	F.	F.	F.	° F.		° F.	
Cape Province—										
Aliwal North	Alex. Alcock	62·5	28·3	45·4	46·6	− 1·2	72·5	7th	19·0	20th.
Bedford	Thos. C. Hall	66·8	44·2	55·5	55·2	+ 0·3	80·2	7th	30·0	20th.
Capetown (Royal Observatory)	The Staff	62·5	47·3	54·9	55·4	− 0·5	73·2	16th	36·0	19th.
Carnarvon	A. P. Malherbe	60·0	32·0	46·0	44·1	+ 1·9	72·0	6th	23·0	25th, 20th, and 29th.
Clanwilliam	—	—	—	—	54·9	—	—	—	—	—
East London	The Port Captain	72·7	50·9	61·8	60·4	+ 1·4	90·5	7th	41·0	20th.
Graaff-Reinet (Convent)	The Mother Superior	68·5	42·9	55·7	54·6	+ 1·1	84·0	18th	32·0	29th.
Grahamstown	The Vet. Res. Officer	67·2	39·3	53·2	54·6	− 1·4	81·2	6th	27·5	20th.
Groot Drakenstein	Rhodes' Fruit Farms	63·3	42·6	53·0	54·4	− 1·4	76·0	5th	34·0	20th.
Kenhardt	R. Seydell	66·8	35·1	51·0	52·2	− 1·2	79·0	5th	25·0	30th.
Kimberley	F. W. J. Schmidt	65·8	35·6	50·7	50·2	+ 0·5	77·0	6th and 7th	26·0	26th.
Kingwilliamstown	W. A. Kindness	70·4	42·0	56·2	56·6	− 0·4	86·0	6th and 7th	33·0	20th and 21st.
Kokstad	H. D. Coyte	64·9	30·3	47·6	50·4	− 2·8	76·0	7th	19·0	20th.
Mafeking (Convent)	The Mother Superior	68·2	34·0	51·1	53·4	− 2·3	77·4	4th	24·5	26th and 29th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	66·6	51·8	59·2	58·4	+ 0·8	86·0	6th	44·0	28th.
Murraysburg	W. H. Rose-Innes	—	—	—	46·8	—	—	—	—	—
O'okiep	J. Burrows	63·4	43·4	53·4	54·0	− 0·6	81·2	5th	35·3	19th.
Port Elizabeth	The Lightkeeper	68·2	50·6	59·4	59·1	+ 0·3	86·0	6th	40·0	20th.
Port Nolloth	The Lightkeeper	65·5	45·0	55·2	55·4	− 0·2	88·0	16th	35·0	27th.
Port St. Johns (Cape Hermes)	The Lightkeeper	73·3	55·6	64·4	62·2	+ 2·2	87·0	14th	48·0	13th and 20th.
Queenstown	H. Holley	64·7	37·5	51·1	51·2	− 0·1	75·0	6th and 7th	23·0	20th.
Somerset East	C. Harris	67·4	43·4	55·4	54·0	+ 1·4	81·5	6th	29·8	20th.
Stutterheim	F. C. Bousfield	69·7	43·6	56·6	54·4	+ 2·2	80·2	7th	28·2	20th.
Sydney's Hope	Rev. S. Rippon	64·6	47·7	56·2	57·0	− 0·8	79·0	6th and 9th	39·0	28th.
Uitenhage	H. Inggs	72·2	42·0	57·1	57·4	− 0·3	85·0	6th	30·5	20th and 30th.
Umtata	P. Hackett	72·2	35·5	53·8	53·5	+ 0·3	84·8	6th	25·8	20th.
Vryburg	Chas. Butler	66·6	31·1	48·8	49·7	− 0·9	76·0	5th	23·0	26th and 27th.
Wynberg (Convent)	The Mother Superior	62·8	47·5	55·2	56·2	− 1·0	76·5	21st	40·0	20th.
Basutoland—										
Mafeteng	F. Hodgson	57·3	32·1	44·7	48·0	− 3·3	66·0	5th and 6th	24·0	19th and 29th.

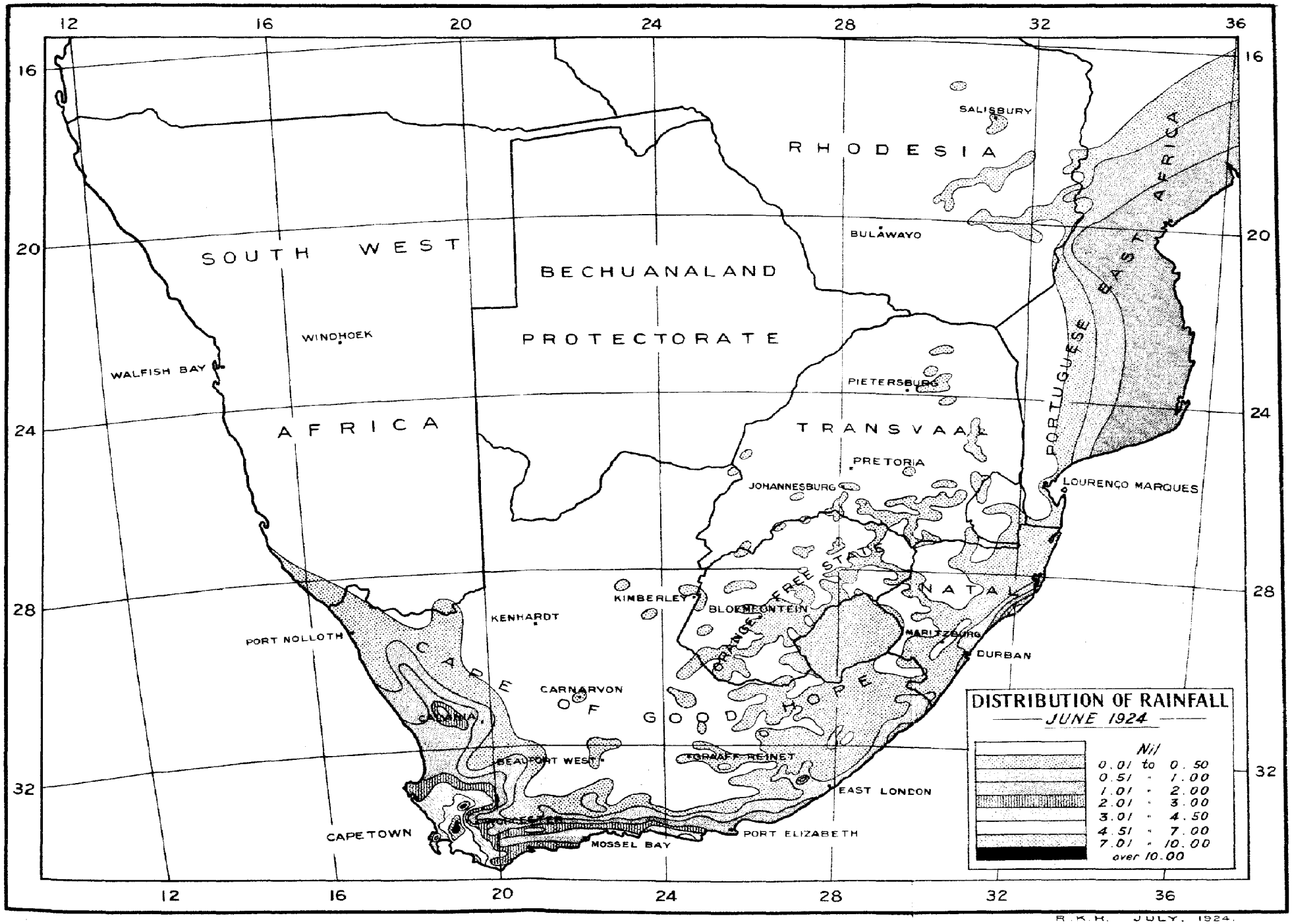
RAINFALL, JUNE, 1924.

Place.	Observer.	Month. June, 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	0·00	0·22	− 0·22	12·86	17·77	− 4·91	23·00	31·79	− 8·79
Belfast	The Forester	0·00	0·16	− 0·16	20·01	16·52	+ 3·49	33·45	32·45	− 1·00
Bethal	H. J. Joubert	0·00	0·07	− 0·07	16·00	14·00	+ 2·00	25·64	29·61	− 3·97
Bloemhof	F. Osborne	0·00	0·16	− 0·16	—	—	—	—	—	—
Claremont	S.A. Police	0·00	0·02	− 0·02	—	—	—	—	—	—
Ermelo	The Forester	0·04	0·14	− 0·10	17·54	14·55	+ 2·99	27·07	31·67	− 4·60
Haenertsburg	S.A. Police	0·00	0·29	− 0·29	20·35	24·38	− 4·03	31·65	38·37	− 6·72
Heidelberg	W. ter Horst	0·05	0·06	− 0·01	19·21	14·35	+ 4·86	27·53	28·38	− 0·85
Johannesburg (Observatory)	The Staff	0·03	0·09	− 0·06	15·31	16·35	− 1·04	24·51	30·73	− 6·22
Klerksdorp (Strathmore)	C. Scott	0·00	0·14	− 0·14	10·87	13·48	− 2·61	14·84	23·28	− 8·44
Komatipoort	B. J. Fothergill	0·00	0·23	− 0·23	10·36	17·74	− 7·38	16·54	27·65	−11·11
Louis Trichardt	C. L. Cope	0·00	0·46	− 0·46	17·98	18·19	− 0·21	27·94	30·10	− 2·16
Middelburg	Dr. H. A. Spencer	0·01	0·11	− 0·10	22·17	14·86	+ 7·31	32·86	29·00	+ 3·86
Nylstroom	G. Bakker	0·00	0·19	− 0·19	16·92	14·11	+ 2·81	23·97	24·87	− 0·90
Pietersburg	W. Frankleyne	0·00	0·04	− 0·04	13·19	11·38	+ 1·81	22·17	21·28	+ 0·89
Piet Retief	J. Werner	0·01	0·13	− 0·12	17·36	18·25	− 0·89	27·81	36·29	− 8·48
Pigeonhole (New Agatha)	J. McCallum	0·28	0·19	+ 0·09	33·19	28·85	+ 4·34	46·30	47·66	− 1·36
Pilgrims Rest	E. M. Skea	0·00	0·32	− 0·32	15·63	25·75	−10·12	27·47	40·09	−12·62
Potchefstroom (Exp. Farm)	The Manager	0·00	0·15	− 0·15	13·31	12·66	+ 0·65	18·91	23·68	− 4·77
Pretoria (Meteorological Office)	The Staff	0·00	0·07	− 0·07	11·87	15·92	− 4·05	21·61	29·39	− 7·78
Roodberg	N. H. Monro	0·00	0·06	− 0·06	10·30	14·17	− 3·87	18·30	24·83	− 6·53
Rustenburg	A. Streatfield	0·00	0·09	− 0·09	17·69	14·49	+ 3·20	24·76	26·44	− 1·68
Standerton	—	—	—	—	—	—	—	—	—	—
Wakkerstroom	M. P. Ackermann	0·02	0·13	− 0·11	—	—	—	—	—	—
Woodbush	The Forester	0·03	0·44	− 0·41	30·15	45·23	−15·08	46·07	71·31	−25·24
Zeerust	H. Dietrich	0·00	0·05	− 0·05	14·36	14·17	+ 0·19	26·19	23·90	+ 2·29
Swaziland—										
Mbabane	Swaziland Police	0·13	0·44	− 0·31	30·96	29·53	+ 1·43	51·90	53·04	− 1·14
Orange Free State—										
Bethulie	J. J. Wardhaugh	0·00	0·50	− 0·50	15·31	11·41	+ 3·90	19·85	17·60	+ 2·25
Bloemfontein	G. A. Schepers	0·02	0·37	− 0·35	13·23	13·89	− 0·66	17·87	21·68	− 3·81
Boshof	The Postmaster	0·00	0·23	− 0·23	10·50	12·09	− 1·59	13·25	19·45	− 6·20
Harrismith	The Forester	0·02	0·22	− 0·20	14·55	15·52	− 0·97	25·26	29·50	− 4·24
Kroonstad	S. R. Northfield	0·03	0·28	− 0·25	10·17	14·31	− 4·14	16·01	24·25	− 8·24
Ladybrand	The Forester	0·20	0·31	− 0·11	14·12	15·28	− 1·16	21·64	27·27	− 5·63
Lindley	—	—	0·23	—	—	13·54	—	—	24·20	—
Natal—										
Dundee	W. Thorrold	0·00	0·17	− 0·17	18·70	17·66	+ 1·04	28·24	32·09	− 3·85
Durban (Point)	The Port Captain	0·77	1·18	− 0·41	20·20	20·79	− 0·59	34·15	41·51	− 7·36
Empangeni	The Forester	3·22	1·17	+ 2·05	19·27	24·17	− 4·90	29·76	46·01	−16·25
Estcourt	The Town Clerk	0·01	0·24	− 0·23	11·95	16·57	− 4·62	20·93	28·91	− 7·98
Hlabisa	—	—	0·68	—	—	22·82	—	—	43·74	—



June, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for June.

SOUTH AFRICA



R. K. H. JULY, 1924.

RAINFALL, JUNE, 1924—*continued.*

Place.	Observer.	Month. June, 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Natal—continued.										
Howick	The Gaoler	0·00	0·45	− 0·45	15·50	18·31	− 2·81	26·73	33·34	− 6·61
Ladysmith	D. A. R. Leathern	0·13	0·20	− 0·07	15·76	16·22	− 0·46	24·41	28·47	− 4·06
Maritzburg	The Staff	0·00	0·35	− 0·35	15·40	20·01	− 4·61	22·38	37·27	− 14·89
Stanger	C. C. Foss	0·64	1·00	− 0·36	16·15	20·16	− 4·01	28·94	42·66	− 13·72
Vrijheid	The Gaoler	0·03	0·22	− 0·19	16·26	18·24	− 1·98	28·98	35·01	− 6·03
Weenen	The Gaoler	0·00	0·21	− 0·21	9·74	15·24	− 5·50	17·15	27·34	− 10·19
Cape Province—										
Aliwal North	A. Alcock	0·06	0·56	− 0·50	13·98	12·60	+ 1·38	18·02	20·36	− 2·34
Beaufort West	The Gaoler	0·00	0·36	− 0·36	4·38	6·08	− 1·70	7·15	9·58	− 2·43
Bedford	T. C. Hall	0·15	0·98	− 0·83	9·66	15·57	− 5·91	16·19	26·58	− 10·39
Britstown	The Gaoler	0·00	0·43	− 0·43	6·97	8·21	− 1·24	8·63	11·45	− 2·82
Calvinia	The Gaoler	0·86	1·06	− 0·20	2·87	4·74	− 1·87	5·67	8·23	− 2·56
Capetown (Royal Observatory)	The Staff	4·77	4·45	+ 0·32	8·58	12·48	− 3·90	21·51	25·40	− 3·89
Ceres	A. Heatlie	11·15	6·95	+ 4·20	16·03	18·68	− 2·65	33·97	41·47	− 7·50
Carnarvon	A. P. Malherbe	0·01	0·33	− 0·32	6·51	5·65	+ 0·86	8·16	7·89	+ 0·27
Clanwilliam	The Gaoler	1·36	1·51	− 0·15	2·07	4·33	− 2·26	4·68	8·66	− 3·98
Concordia	F. Carstens	0·58	0·86	− 0·28	0·94	3·70	− 2·76	2·30	6·40	− 4·10
Driefontein (French Hoek)	The Forester	16·08	21·48	− 5·40	27·63	38·07	− 10·44	78·23	76·55	+ 1·68
East London	A. Downie	0·65	1·42	− 0·77	11·70	16·49	− 4·79	31·46	32·74	− 1·28
Fraserburg	The Gaoler	0·00	0·38	− 0·38	2·72	4·71	− 1·99	4·20	6·71	− 2·51
Grahamstown	The Vet. Res. Officer	0·48	1·37	− 0·89	7·96	14·23	− 6·27	16·39	28·03	− 11·64
Garies	The Gaoler	0·48	0·85	− 0·37	0·78	2·47	− 1·69	2·34	4·98	− 2·64
Graaff-Reinet (Convent)	The Mother Superior	0·16	0·55	− 0·39	6·04	8·18	− 2·14	11·39	13·85	− 2·46
Groot Drakenstein	Rhodes' Fruit Farms	7·99	6·28	+ 1·71	16·44	17·01	− 0·57	39·50	35·59	+ 3·91
Griquatown	The Gaoler	0·00	0·40	− 0·40	—	9·21	—	—	12·90	—
George	Rev. Canon B. Price	1·42	2·15	− 0·73	11·10	17·66	− 6·56	22·28	34·12	− 11·84
Hanover	The Gaoler	0·11	0·48	− 0·37	6·83	9·13	− 2·30	8·33	13·20	− 4·87
Hopetown	The Gaoler	0·00	0·36	− 0·36	11·94	8·80	+ 3·14	13·93	12·56	+ 1·37
Kenhardt	R. Seydell	0·00	0·25	− 0·25	2·06	4·23	− 2·17	3·02	5·76	− 2·74
Kimberley	F. Schmidt	0·00	0·28	− 0·28	9·01	10·32	− 1·31	11·52	16·05	− 4·53
Knysna	The Gaoler	2·50	2·14	+ 0·36	10·70	13·66	− 2·96	22·23	28·57	− 6·34
Kokstad	H. D. Coyte	0·25	0·47	− 0·22	14·32	15·39	− 1·07	27·24	27·04	+ 0·20
Kingwilliamstown	W. Kindness	0·51	0·88	− 0·37	10·43	13·43	− 3·00	25·63	25·09	+ 0·54
Kuruman	—	—	0·22	—	—	11·94	—	—	16·87	—
Mafeking (Convent)	The Mother Superior	0·01	0·04	− 0·03	9·99	13·34	− 3·35	17·58	22·60	− 5·02
Mossel Bay (Cape St. Blaize)	The Lightkeeper	1·56	1·26	+ 0·30	6·21	8·71	− 2·50	12·58	17·20	− 4·62
Murraysburg	W. H. Rose-Innes	—	0·12	—	—	7·32	—	—	10·89	—
O'okiep	J. Burrows	0·48	1·04	− 0·56	0·95	3·67	− 2·72	2·82	6·97	− 4·15
Philipstown	The Gaoler	0·08	0·46	− 0·38	12·51	9·29	+ 3·22	13·69	13·45	+ 0·24
Piquetberg	The Gaoler	3·34	3·15	+ 0·19	6·01	9·41	− 3·40	14·63	20·84	− 6·21
Port Elizabeth	The Lightkeeper	1·47	1·67	− 0·20	8·79	10·25	− 1·46	15·92	22·37	− 6·45
Port St. Johns	The Lightkeeper	1·73	1·92	− 0·19	21·87	25·04	− 3·17	45·97	50·01	− 4·04
Port Nolloth	The Lightkeeper	0·27	0·34	− 0·07	0·58	1·28	− 0·70	1·46	2·36	− 0·90
Prieska	The Gaoler	0·00	0·26	− 0·26	3·91	7·23	− 3·32	4·84	9·65	− 4·81

RAINFALL, JUNE, 1924—(*continued*).

Place.	Observer.	Month. June, 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1923.	Normal.	Difference from Normal.
Cape Province—continued.		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Queenstown	H. Holley	0·06	0·60	− 0·54	9·73	13·97	− 4·24	13·84	22·81	− 8·97
Steytlerville	The Gaoler	0·00	0·37	− 0·37	2·93	5·59	− 2·66	5·98	9·31	− 3·33
Sutherland	The Gaoler	0·70	1·06	− 0·36	3·15	5·41	− 2·26	6·03	9·38	− 3·35
Swellendam	The Gaoler	2·57	2·18	+ 0·39	10·54	16·25	− 5·71	18·93	31·85	−12·92
Sydney's Hope	Rev. S. Rippon	0·54	1·19	− 0·65	9·40	11·65	− 2·25	17·39	22·57	− 5·18
Somerset East	C. Harris	0·30	0·99	− 0·69	9·72	14·26	− 4·54	18·19	25·47	− 7·28
Stutterheim	F. C. Bousfield	0·30	0·85	− 0·55	14·60	16·62	− 2·02	30·98	29·83	+ 1·15
Uitenhage	H. Inggs	0·66	1·02	− 0·36	5·78	8·80	− 3·02	13·98	17·24	− 3·26
Umtata	B. J. Hackitt	0·29	0·96	− 0·67	9·27	14·46	− 5·19	19·22	25·44	− 6·22
Uniondale	The Gaoler	0·99	1·10	− 0·11	3·45	6·93	− 3·48	7·90	13·31	− 5·41
Uitenhage	The Gaoler	0·00	0·09	− 0·09	4·78	5·21	− 0·43	5·12	7·18	− 2·06
Victoria West	The Gaoler	0·00	0·38	− 0·38	4·82	7·23	− 2·41	6·64	10·41	− 3·77
Vryburg	Chas. Butler	0·00	0·23	− 0·23	11·44	13·23	− 1·79	19·03	19·13	− 0·10
Worcester	The Gaoler	1·69	1·94	− 0·25	2·20	5·87	− 3·67	5·99	12·53	− 6·54
Wynberg (Convent)	The Mother Superior	8·85	8·38	+ 0·47	13·26	20·32	− 7·06	37·71	46·16	− 8·45
Basutoland—										
Mafeteng	F. Hodgson	0·24	0·72	− 0·48	18·57	19·36	− 0·79	33·89	31·69	+ 2·20
South-West Africa—										
Aus	E. Marthins	0·00	0·86	− 0·86	0·40	3·03	− 2·63	3·15	4·19	− 1·04
Bethanie	Rev. Peter	0·00	0·04	− 0·04	0·77	3·91	− 3·14	2·17	4·66	− 2·49
Duesternbrook	J. and R. Matthiessen	0·00	0·00	± 0·00	6·21	11·60	− 5·39	6·79	13·99	− 7·20
Franzfontein	H. Janson	0·00	0·02	− 0·02	5·85	7·86	− 2·01	6·54	7·96	− 1·42
Gabis	Rev. P. Rehor	0·00	0·12	− 0·12	0·90	3·45	− 2·55	2·60	4·73	− 2·13
Garinais	F. Bertling	0·00	0·05	− 0·05	3·59	4·53	− 0·94	6·55	5·97	− 1·42
Gibeon	Rev. Spellmeyer	0·00	0·04	− 0·04	2·43	5·08	− 2·65	3·05	9·17	− 6·12
Gobabis	Rev. Irle	0·00	0·06	− 0·06	9·19	12·06	− 2·87	11·68	15·92	− 4·24
Grootfontein	Pitkowski	0·00	0·08	− 0·08	10·31	16·99	− 6·68	13·72	23·61	− 9·89
Gr. Witvley	Maass	0·00	0·07	− 0·07	4·14	11·44	− 7·30	5·45	14·87	− 9·42
Harlbes	Capt. Meyer	0·00	0·00	± 0·00	2·99	6·04	− 3·05	3·39	7·39	− 4·00
Heirachabis	Rev. P. Sroka	0·00	0·06	− 0·06	1·18	2·97	− 0·79	0·93	3·88	− 0·95
Maltahoehe	E. Just	0·00	0·01	− 0·01	1·18	5·03	− 3·85	1·78	5·99	− 4·21
Neu-Heusus	Liebig's Extract Co.	0·00	0·03	− 0·03	4·39	11·52	− 7·13	5·09	14·44	− 9·35
Okahandja	B. Templin	0·00	0·03	− 0·03	6·19	11·57	− 5·38	6·79	13·56	− 6·77
Okandjose	Von Gossler	0·00	0·01	− 0·01	3·54	13·33	− 9·79	6·48	15·93	− 9·45
Okasangumingo	R. H. A. Schneider	0·00	0·00	± 0·00	9·36	12·76	− 3·40	13·53	17·85	− 4·32
Omaruru	The Postmaster	0·00	0·04	− 0·04	6·10	9·08	− 2·98	6·64	11·21	− 4·57
Rehoboth	The Postmaster	0·00	0·04	− 0·04	1·70	8·31	− 6·61	1·70	10·39	− 8·69
Rietfontein	B. Leist	0·00	0·01	− 0·01	7·51	14·69	− 7·18	10·39	21·06	−10·67
Swakopmund	The Gaoler	0·00	0·01	− 0·01	0·04	0·37	− 0·33	0·05	0·66	− 0·61
Tsumeb	Ing. Schetter	0·00	0·03	− 0·03	11·19	17·11	− 5·92	14·39	24·23	− 9·84
Usakos	Rev. Diehl	0·00	0·01	− 0·01	2·42	4·39	− 1·97	2·42	5·38	− 2·96
Voigtsgrund	A. Voigts	0·00	0·08	− 0·08	10·13	6·11	+ 4·02	11·22	7·40	+ 3·82
Waterberg	D. Hahn	0·00	0·05	− 0·05	9·44	15·19	− 5·75	13·23	20·23	− 7·00
Windhoek	Observatory	0·00	0·03	− 0·03	6·91	10·38	− 3·47	9·69	13·30	− 3·61

617—22/1/25—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. JULY, 1924. No. 55.

ATMOSPHERIC pressure practically normal, except on the south and south-east coasts, where it was slightly higher than normal; mean temperature almost 1½ degree lower than usual; bright, sunny days, but unusually cold nights, constituting a record in some areas; mean maximum temperature about half a degree, but mean minimum 2 degrees, lower than the average; practically continuous severe frosts till about the end of the month, when the nights became milder; a deficient rainfall common to all Provinces; absolute drought over the greater part of the Transvaal, Free State, Natal, together with the central and northern Karroos, the northern border and Bechuanaland in the Cape Province; occasional strong winds and duststorms, particularly towards the end of the month; snow capping some of the mountains in the north-east Cape—these were the principal features of the weather of July, 1924.

Pressure.—The distribution of mean pressure during July was practically normal (*vide* map), except on the south and south-east coasts, where it was slightly higher than usual, the result of persistent anticyclonic conditions throughout the month. The area of highest pressure or core fluctuated considerably in position, but on only five occasions did low pressure areas make their appearance along the south-west and south coasts, viz., on the 2nd, 8th, 9th, 20th, and 24th.

Temperature.—The mean temperature of the Union during July was 52·2 degrees, or 1·4 degree below the average. This deficit was principally due to the mean minimum temperature (37·0 degrees) being 2·2 degrees under normal, whilst the mean maximum (67·3 degrees) was only one-third of this amount (or 0·7 degree) under the average. A shortage in the mean temperature of the month was common to all four Provinces; thus, Natal with 55·2 degrees was 3·1 degrees, the Free State with 44·9 degrees was 2·1 degrees, the Transvaal with 50·0 degrees was 1·9 degree, whilst the Cape with 53·6 degrees was only 0·4 degree short of the corresponding average values. This negative departure in the case of the Cape Province was entirely due to the mean night temperature (40·1 degrees) being 0·8 degree lower than, whereas the mean day temperature

AUG 1 - 1925
Weather Bureau

(67·1 degrees) was equal to, the usual. In Natal, the minus quantity was about equally divided between the days and nights, the former with 70·4 degrees being 3·3 degrees, and the latter with 40·0 degrees being 2·9 degrees, cooler than usual. In the Transvaal and Free State, the deficits in the mean monthly temperatures were principally due to the mean minimum being considerably lower than usual. In the Transvaal, the mean minimum or night temperature (32·6 degrees) was 3·5 degrees, while the mean maximum or day temperature (67·4 degrees) was only 0·3 degree below the normal value. In the Free State, the nights with 28·4 degrees were 3·3 degrees, and the days with 61·4 degrees only 0·8 degree, below the corresponding averages. At the individual stations, an excess in the mean for July was confined to a comparatively few places on the south and south-east coasts, portions of the central and southern Karroos, of the south-east section of the Cape Province, Namaqualand, and the northern part of the Peninsula. In the Transvaal, Barberton had a small excess of 0·4 degree. Over those parts of the Cape Province enumerated above, the surplus amounts were mostly less than one degree, occasionally between 1 and 2 degrees, and varied from 0·3 degree at East London to 3·2 degrees at Graaff-Reinet. In the Transvaal, the deficits were least (under 1 degree) in the central southern parts, where they increased in all directions to amounts of between 1 and 4 degrees. Over this Province, they varied between 0·2 degree at Johannesburg and 3·7 degrees at Belfast. In Natal, the deficits were generally over 3 degrees, but ranged from 0·3 degree at Stanger to 5·4 degrees at Dundee. In the Free State, the negative departures exceeded 1 degree along the eastern border, rising to about 3 degrees in the north and centre. Over the Cape Province, the deficiencies exceeded 2 degrees in the east, also at Mafeking; lay between 1 and 2 degrees over the south-west, part of Bechuanaland, and the northern Karroo; but decreased to less than a degree in portions of the northern border and the south coast area. The extreme values were minus 2·6 degrees at Mafeking and 0·5 degree at Kenhardt and Kimberley. The day and night temperatures showed considerable diversity in their relationship to the normals. Thus, in the Transvaal both mean maxima and mean minima were sub-normal over the north-east, south-west, parts of the centre and west of the middle veld, of the eastern low veld, and the south-east of the high veld. Similar conditions held over Bechuanaland, the north, centre, and south of the Free State, practically the whole of Natal, in Swaziland, Basutoland in the north-east, parts of the south-east, south coast, the south of the northern Karroo, and the Cape Peninsula. In direct contrast to these, the mean maxima and minima were both in excess of the average at Port Nolloth, the Royal Observatory (Capetown), Mossel Bay, Graaff-Reinet, and Stutterheim, in various parts of the Cape Province. Again, the days were warmer and the nights colder than usual at those stations in the Transvaal lying along an east-north-east and west-south-west line from Belfast to Potchefstroom, at Nylstroom and Zeerust in the west, Barberton in the eastern low veld, and Piet Retief in the south-east of the middle veld; at Ladybrand in the east of the Free State; the inland stations in Kaffraria, the south-east littoral, at Kimberley and Groot Drakenstein. The inverse of these conditions—that is to say, cooler days and warmer nights—obtained at a much smaller number of stations, viz., at Harrismith in the north-east of the Free State, Stanger on the Natal coast, Port St. Johns, Bedford, Somerset East, Kenhardt, and O'okiep in the Cape Province, but at none of the stations in the Transvaal. The deficits in the day temperatures varied in the Transvaal between 2·9 degrees at Bloemhof and 0·5 degree at Pretoria and Pietersburg; in the Orange Free State, from 4·9 degrees at Harrismith to 0·1 degree at Bloemfontein; in Natal, between 6·0 degrees at Ladysmith and 1·0 degree at Stanger; and in the Cape Province, from 2·6 degrees at Mafeking to 0·1 degree at Vryburg and Port

Elizabeth. The surplus amounts over normal of the day temperatures ranged in the Transvaal, from 2·0 degrees at Barberton to 0·1 degree at Middelburg; in the Cape Province, from 2·9 degrees at Stutterheim to 0·2 degree at Kokstad; while an excess of 1·6 degree was shown by Ladybrand in the Free State. In the case of the night temperatures, the excess amounts in the Cape Province lay between 5·6 degrees at Graaff-Reinet and 0·1 degree at the Royal Observatory; in Natal, the surplus was only 0·4 degree at Stanger, but rose to 2·7 degrees at Harrismith in the Free State. The shortages in mean minimum temperature varied in the Transvaal between 8·1 degrees at Belfast and 0·7 degree at Pretoria, but were commonly about 3 degrees; in the Free State, between 5·9 degrees at Bloemfontein and 4·3 degrees at Ladybrand; in Natal, between 8·4 degrees at Dundee and 0·1 degree at Ladysmith; in the Cape Province, between 5·2 degrees at Grahamstown and 0·1 degree at Wynberg and Sydney's Hope. The mean warmest and coolest stations, with their accompanying temperatures, were the following: Transvaal—Komatipoort 61·0 degrees, Belfast 41·1 degrees, difference 19·9 degrees; Orange Free State—Ladybrand 45·4 degrees, Bethulie 44·3 degrees, difference 1·1 degree; Natal—Stanger 63·5 degrees, Estcourt 47·8 degrees, difference 15·7 degrees; Cape Province—Port St. Johns 63·4 degrees, Aliwal North 43·9 degrees, difference 19·5 degrees. There was therefore a difference of 22·4 degrees between the monthly temperature at Stanger (63·5 degrees) and that at Belfast (41·1 degrees), the warmest and coolest stations in the Union during this month. The highest mean maximum was 79·1 degrees at Komatipoort, and the lowest mean minimum 21·2 degrees at Belfast. The highest temperatures were registered on fifteen days of the month, viz., 1st, 3rd, 9th, 16th to 22nd, 24th, 27th, and 29th to 31st, most widely on the 17th, 18th, 20th, 21st, and 31st. The extreme maxima failed to rise to 90 degrees at any station, but varied in the Transvaal from 89·5 degrees on the 21st at Komatipoort to 71·0 degrees on the 17th at Belfast and Johannesburg; over the Free State, from 73·5 degrees at Kroonstad on the 31st to 68·5 degrees at Bethulie on the 21st; over Natal, from 84·5 degrees at Stanger on the 24th to 75·0 degrees at Estcourt on the 18th; and over the Cape Province from 87·5 degrees at East London on the 9th to 70·0 degrees at Aliwal North on the 21st and 31st. The extreme minima were distributed over nineteen days of the month, viz., 1st to 3rd, 6th to 9th, 11th to 16th, 22nd to 24th, and the 27th, but principally on the 1st, 7th, 12th, and 23rd. The lowest temperatures were mostly below freezing-point, but ranged from 40·0 degrees at Barberton on the 1st to 12·0 degrees at Belfast on the 7th; over the Orange Free State, from 27·0 degrees on the 24th at Harrismith to 16·0 degrees on the 7th at Kroonstad; over Natal, from 46·6 degrees on the 1st at Durban to 21·0 degrees on the 14th at Dundee; and over the Cape Province, from 50·0 degrees on the 12th and 27th at Port St. Johns to 17·0 degrees on the 12th at Aliwal North. The extreme range during the month was therefore 77·5 degrees, being the difference between the highest maximum reading (89·5 degrees, at Komatipoort and the lowest minimum (12·0 degrees) at Belfast. One of the most noteworthy features of July was the prolonged cold weather resulting in persistent and unusually intense frosts. This month was described variously as unprecedentedly cold, or the coldest for the last ten, twenty, or thirty-two years, or since observations had been taken, so that new records for low temperature for this month were set up at a number of stations. On only three or four days towards the end of the month did the ground minimum temperature fail to fall below freezing-point in sheltered areas; while daily frosts were experienced at other stations, and even occurred at places usually free from them. Some unusual experiences were met with in connection with frost. In addition to the unusually large number of consecutive days with frost, there may be noted the following

exceptional features. At Zwartkopjes (Heidelberg Division of Transvaal), the ice on the south side of houses did not thaw all day. At Middelburg (Transvaal Province), the degree of frost was not sufficient to kill off the locusts. At Hlatikulu (Swaziland), severe frosts, with ice in low-lying parts, constituted an unusual occurrence. At Kroonstad, water pipes in the shade remained frozen for a period of ten days. At Rugby (District of Bethlehem, Orange Free State), the Wilge River was reported as frozen across in places—an occurrence practically unknown previously. At Prospect (Vrede District), the ice in shaded places remained on the water till evening. At Rongpoort (District of Weenen), severe frosts and ice continued till the end of the month. At Mount Fletcher, water in small pools or left in tubs was frozen, the ice being ½ inch to ¾ inch thick. At Port Nolloth, on the 27th, a violent hot east wind commenced at 3.30 a.m., reached its maximum force about 4.30 a.m., after which it began to take off, changing to north at 9.30 a.m. Considerable damage was done to iron buildings, roofs, fences, chimneys, etc.

Precipitation.—An excess of rainfall during July was confined to a limited area in the south of the northern Karroo (Cape Province), and to the neighbourhood of Louis Trichardt, in the north of the Transvaal. The actual excesses were small, less than half an inch, but the percentage excesses were large varying from 41 per cent. at Louis Trichardt to 228 per cent. at Fraserburg. Elsewhere the month's rainfall was below normal, the actual deficits being mostly less than three-quarters of an inch, but exceeding 1 inch in parts of the south coast, of the south-west of the Cape Province, including the Peninsula, where the maximum shortage of 5·19 inches, or 68 per cent. of the normal, occurred at Wynberg. The deficits amounted to a total absence of rain over the Transvaal, with the exception of a narrow strip in the east, expanding in the south-east, including Swaziland, the northern half of the interior of Natal, the north, north-west, centre, and south-east of the Free State, Bechuanaland, the northern section of the northern border, and the major portion of Gordonia. There were also comparatively small, irregular patches of "no rainfall" in Kaffraria, in the east of the Cape Province, and in the Karroos. By far the greater portion of the remainder of the Union was affected by only a small rainfall of 0·01–0·50 inch. The continuity of this small rainfall area is broken in the west by a narrow area of slightly greater amount (0·51–1·00 inch), which, starting in Namaqualand and running parallel with the coast, reaches the shore to the north of St. Helena Bay about the latitude of Van Rhynsdorp. This area expands eastward to include the south-west portion of the northern Karroo, after which it narrows to about half; it then continues southwards to include the south-west and the Cape Peninsula, and, turning eastwards, is continued as a narrow belt along the south coast to a point about half-way between Port Elizabeth and East London. Similar amounts appear once more as a narrow belt along the Natal and Zululand coasts, north of Durban, and in patches in the eastern Transvaal. Decreasing areas of increasing amounts are to be found within these larger areas, reading more than 7 inches in the south-west, 3–4½ inches along the south coast, 2–3 inches on the east coast, and 1–2 inches in the north-east of the Transvaal. Frequent comparatively light rains occurred over the Cape Peninsula and the south-west, and less frequently and more irregular in distribution along the west and south coasts. The rains were most wide spread, however, during the last week, particularly between the 25th and 28th. *Snow* was reported to have covered the mountains in the vicinity of Mount Fletcher during this and the previous month; but, with this exception, no mention is made of this meteor at any other station.

In South-West Africa, only amounts of less than two-tenths of an inch were recorded, and these were confined to a small area in the south and

south-east. Of the stations in this area, Garinais, Heirachabis, and Kalkfontein showed surplus amounts, while the remainder were sub-normal. No rain fell over the rest of the territory. The total amounts of rainfall recorded in the Transvaal during the first seven months of the year were in excess of normal over the eastern and more southerly portions of the high veld, the west of the middle veld in the neighbourhood of Rustenburg, the middle of the central low veld, and parts of the highlands of the Zoutpansberg; also in Swaziland. The only other areas similarly affected were isolated patches in the neighbourhood of Dundee (Natal), Aliwal North in the north-east, Hopetown in the northern border of the Cape Province, and Carnarvon in the northern Karroo, and Bethulie in the south of the Free State. The surplus amounts in the Transvaal were mostly between 1½ and 4 inches, but varied from 0·33 inch (or 3 per cent.) at Potchefstroom to 7·26 inches (or 40 per cent.) at Middelburg. Outside of the Transvaal, the excesses were in the neighbourhood of an inch, except at Bethulie in the Free State, where there was a plus amount of 3·58 inches (or 30 per cent. above the average), and at Hopetown, where the total for the seven months was 3·03 inch (or 33 per cent. above the average). The deficits in the Transvaal were least (a few hundredths of an inch) in the extreme north and west, and greatest (5–15 inches) in parts of the east and north. The extremes of these negative departures were 0·01 inch (or less than 1 per cent.) at Louis Trichardt and 15·40 inches (or 33 per cent.) at Woodbush. In the Free State, the minus quantities were mostly between 1 inch and 2 inches in the east, west, and centre, varying, however, from 1·02 inch (or 7 per cent.) at Bloemfontein to 4·43 inches (or 30 per cent.) at Kroonstad in the north. In Natal, the sub-normal amounts lay mostly between 2 inches and 5 inches, but ranging from 0·66 inch (or 4 per cent.) at Ladysmith and 5·68 inches (or 37 per cent.) at Weenen. Over the Cape Province, the deficits ranged from 0·51 inch (or 10 per cent.) at Upington in Gordonia to 13·78 inches (or 28 per cent.) at Driefontein in the south-west. In the Cape Peninsula, the total for the first seven months of the year at Wynberg was 12·25in ches (or 44 per cent.) below the normal as against minus 6·03 inches (or 37 per cent.) at the Royal Observatory. Shortages of 4–7 inches were common to a large number of stations in the east, including Kaffraria, the south coast, southern Karroo, and the south-west. Over the rest of the country the deficits lay mostly between 2 inches and 4 inches, but were less than the former amount in parts of the west coastal area, parts of the northern Karroo, and the north-east of the Transkei. In South-West Africa, the totals for this period were less than usual by 7–8 inches in parts of the north and centre, mainly by 4–6 inches over the remainder of the northern half, and principally by 2–4 inches in the southern half and at Franzfontein, in the north-west of the territory. A few stations in the south had minus quantities of less than 2 inches, whilst deficits of less than 1 inch were limited to Swakopmund on the coast and Garinais in the south-east. These negative departures from normal varied from 0·38 inch (or 100 per cent.) at Swakopmund to 7·81 inches (or 67 per cent.) at Outjo, to the west of Windhoek.

State of Country.—Locusts and drought combined rendered the outlook for the remainder of the winter far from bright over a considerable part of the Transvaal. At Berlin (District Lydenburg) pasturage was becoming scarce, whilst in parts of the Witwatersrand, Potchefstroom, Barberton, Waterberg, and Pietersburg Divisions locusts had destroyed crops, grass, and garden produce, in parts causing the disappearance of every vestige of grass, so that part of the Potchefstroom District was declared to be in a worse condition than ever before. Cattle were fat in portions of the Pietersburg District, and were doing fairly well in the Standerton area, where they were being allowed to

graze in the mealie lands. It was asserted that cattle on many farms of the Rustenburg Division were feeding on live locusts! Stock were generally in fair condition, but were suffering severely and in poor condition in the Christiana and Lichtenburg Divisions. A much more satisfactory state of affairs is, however, reported from part of the Waterberg, where mealies were yielding well, and from Modderspruit (District Lydenburg), where the mealie crops were 100 per cent. better than last year, and the native crops the best for the last six years. In this neighbourhood, a very satisfactory cotton crop—600 lb. to the acre—was obtained on one farm. In Swaziland, mealies were still being reaped in the Bush veld, but farmers feared considerable losses in lambs unless general rains fell. In the Free State, stock were generally in good to fair condition, but were very poor in the Kroonstad District. Where artificial feeding was resorted to, animals were fat. Winter lambing results were good, and the percentage of losses small, sheep being mostly in excellent condition. The maize crops were very poor, being mostly less than half last year's return, in parts of the Kroonstad, Frankfort, Heilbron, and Winburg Districts. In Natal, the drought was being felt severely, and the country generally dry, although in the neighbourhood of Newcastle stock were still in very fair condition. A fairly good mealie crop, however, was reaped in Mid-Illovo. The effects of the continued drought were perhaps being felt more severely in the Cape than in any of the other Provinces. Cattle, donkeys, and sheep were dying of thirst in the Middelburg and Cradock and Pearston Divisions, and heavy losses in small stock were being experienced in the Willowmore Division. The Angora kidding season was a failure in the last-mentioned district. In Kingwilliamstown, sheep and lambs were doing badly, although big stock were still in fair condition; but in Mount Currie the sheep were stated to be very healthy after lambing.

Stock generally were in fair to poor condition. The veld was generally very dry, but in the Riversdale District the light showers that fell brought some relief, and were expected to help the crop. The veld in the neighbourhood of Danger Point was looking well, owing to frequent heavy dews. Round about Darling (Division Malmesbury) crops were considered to be better than in a wet year. Vegetables were scarce in the Bathurst Division. In the Knysna Forest, the undershrubs having a northerly aspect were wilting. In Kokstad and Mount Fletcher, fruit trees were in blossom in places, and willows were in bud at the former; in Bedford, early oaks were in leaf and the fruit trees ready to burst into flower.

Water Supply.—From Hillcrest, in Natal, it was reported that all wells in the district were dry; there was a universal shortage of water in Bedford; and water was becoming scarce in the Kingwilliamstown Division. From Klaver (Division Van Rhynsdorp) it was reported that the flow of the river was much below normal, whilst there the position of farmers depending on rainfall for ploughing was precarious.

OBSERVERS' NOTES FOR JULY, 1924.

TRANSVAAL.

Gemboksfontein (Middelburg).—Very severe frosts during the month; towards the end of the month, the days became warmer and the mornings milder. Rainfall: 0·02 inch on one day.—L. C. Skead.

Piet Retief.—Country very dry; during the month a few duststorms, otherwise brilliant weather; an early spring is anticipated. Rainfall: 0·02 inch on one day.—J. Werner.

Ermelo.—From the 1st to the 18th the weather was very cold. Old residents assert that it has been the severest winter for the last thirty-two years. On the 26th and 27th, conditions pointed to a fall of snow. Rainfall: 01 inch on one day.—J. Dean.

Pietersburg.—Late frosts, and bitterly cold southerly winds rising after 9 a.m.; duststorms frequent. Rainfall: Nil.—W. J. Frankleyne.

Potchefstroom (Experimental Farm).—Days for the most part calm and sunny; nights calm and frosty up to the 25th of the month.—D. Moses.

Belfast.—On the whole, the weather was very genial throughout the month during the day, with very cold and frosty nights. Rainfall: 0·02 inch on one day.—The Government Forester.

Zwartkopjes Pumping Station (Heidelberg).—Only three days when frost was not recorded; for the first twenty-six days, frost without a break. On many days the ice on south side of houses did not thaw all day. Mean minimum for month: 24·2 degrees. Rainfall: Nil.—E. Taylor.

Pretoria (Transvaal University College Experimental Farm).—During the month some very severe cold nights were experienced, the coldest being on the 7th and 18th, when the minimum registered was 21·9 degrees and 21·0 degrees respectively. Locusts were very troublesome during the month, and continued to eat off winter cereals as fast as these appeared above ground. Rainfall: Nil.—The Manager.

Carolina.—Generally the coldest month in many years, with ice and frost practically all through the month. Weather generally crisp and fine, with a few very windy and dusty days, but not a sign of rainfall. Rainfall: Nil.—G. F. Mijnhardt.

Christiana.—A dry, cold, and dreary month; animals are suffering, and looking very poor. Rainfall: Nil.—W. J. Meintjes.

Berlin Forest Reserve (Barberton).—Cattle feed becoming scarce; the slight rain—0·32 inch on two days—should improve matters.—E. Edwards.

Groeneboom No. 444 (*Rustenburg*).—The month was cold, low day and night temperatures being recorded. White frosts occurred nearly every night. During the last part of the month, strong cold winds from the south-south-east and east were experienced. Temperatures rose near the end of the month. Cattle fair, on many farms feeding on live locusts; locusts are laying eggs wholesale. Nearly all farms infested with laying locust swarms, some swarms occupying 15–20 morgen and more. Rainfall: Nil.—F. N. van Nouhuys.

Krugersdorp.—Judged from a climatic point of view, the month of July has been a fine one. The mean average temperature has been slightly under normal, but no extremes have been registered. Locusts are still scattered over the district, and the outlook from an agricultural point of view is not very bright. Rainfall: Nil.—E. Sharp.

Louis Trichardt.—Generally cool, with cold nights; frosts every night from 1st to 23rd. Rainfall: 0·69 inch on two days.—C. L. Cope.

Nooitgedacht No. 1739 (*Warmbaths*).—Residents of eight to ten years speak of this as the coldest winter in their experience. Frost occurred on twenty-four nights, with a minimum of 22·6 degrees on the 18th. On the 26th to 27th a steady wind of about forty hours' duration from north-east brought in warmer weather. Generally speaking, the freezing-point is reached about dawn, and the frost period of any night is very brief. Cattle remain in very fair condition. A sprinkling of locusts everywhere, but no swarms; very little egg-laying in the immediate neighbourhood. Rainfall: Nil.—G. Gordon Brown.

Strathmore (*Klerksdorp*).—Severe frost all month. Rainfall: Nil.—Chas. Scott.

Lichtenburg.—Very cold month, especially in the evenings; cold winds during day; very dry month; everything eaten up by locusts; cattle in very poor condition. Rainfall: Nil.—E. Newton.

Mosdene (*Waterberg*).—Much the coldest July since records have been kept (1920). Rainfall: Nil.—Ernest E. Galpin.

Barberton.—The weather has been very dry and cool throughout the month. Rainfall: 0·06 inch on one day.—Walter Grubb.

Parktown North (*Witwatersrand*).—Heavy frosts prevailed throughout month. Windy and dusty at times. Locusts continued to visit this district, doing damage to gardens and crops. Large swarms arrived early in the month. Rainfall: Nil.—G. S. Garnett.

Middelburg.—The past month has been the coldest recorded in twenty years, the coldest night being on the 7th, when 19 degrees of frost were registered on the ground and 15 degrees of frost in Stevenson screen. The mean temperature for the month has only once been as low as this year, when it was 45·7 degrees in 1921. The days have been clear and cold, usually with a cold wind blowing, which substantially increased surface evaporation and the low temperatures at night. It is interesting to note that live locusts have been seen during the whole of the month, showing that our hardest winters are not severe enough to kill them all off. Another matter of interest, connected with the hardest winter recorded in twenty years, is the fact that, though frost occurred on twenty-nine nights of the thirty-one, not a single tree is seen to have been killed at the top—where the young and tender leaves occur—this year, though this has been noted most years in eucalyptus trees; but this year no new growth is to be noted at the top of these trees during July, owing to the absence of a few warm days to encourage this, as usually happens. Rainfall: 0·04 inch on one day.—Dr. H. A. Spencer.

Modderspruit (*Lydenburg*).—All crops reaped in this middle veld area; mealie crop 100 per cent. better than last year; native crops best in last six years. This middle veld consists of twenty farms under the Drakensberg, below Graskop Station. Only one farm in the area grew cotton, and the yield is in the vicinity of 600 lb. per acre. Several farmers have prepared a considerable area for cotton planting this coming season. Rainfall: 0·08 inch on one day.—C. J. Wiggill.

Mimosa Park (*Potchefstroom*).—This particular district was never in such a state. The locusts have lived here, and crops are utterly destroyed by locusts and drought. Rainfall: Nil.—J. G. Dixon.

Doornkom (*Lydenburg*).—Wheat all destroyed by locusts. Rainfall: Nil. —G. J. Taylor.

Weltevreden (*Standerton*).—Heavy frosts; stock are doing fairly well in the mealie lands. Rainfall: Nil.—D. Lane.

Brakfontein (*Waterberg*).—All crops and grass devoured by locusts in this part of the district. Rainfall: Nil.—W. Howard.

Woburn (*Waterberg*).—We have had heavy frosts this month; mealies yielding well. Rainfall: Nil.—C. W. Brumage.

Luipaardsvlei (*Krugersdorp*).—The locusts were here practically all this month, but only a few are left now. They practically swept the lands. The days were mild, but the nights very cold, and water was always frozen. Rainfall: Nil.—J. du Toit.

Woodlands (*Zoutpansberg*).—The winter here may now be said to be over. It has been a severe one, as frost is usually only known in isolated spots such as the river bed and in vleis. Rainfall: Nil.—H. W. Fane.

Doornkloof (*Pietersburg*).—Locusts have caused much damage to barley; cattle fat. Rainfall: Nil.—S. M. Ralston.

Innerleithen (*Pietersburg*).—Exceptionally heavy frosts almost nightly; days bright; locusts constantly about, and every vestige of green has long since vanished; cattle condition fair. Rainfall: Nil.—F. Halse.

SWAZILAND.

Mbabane.—The country is very dry, and has suffered from frost generally. Rainfall: 0·42 inch on four days.—R. C. S. Markham.

Piggs Peak.—Exceptionally cold for this vicinity; frosts practically every morning during month. Rainfall: 0·25 inch on two days.—Swaziland Police.

Hlatikulu.—For the month of July we have had very severe frosts, and in the low-lying parts ice: this is very unusual in these parts. Rain has fallen in the district, which was very welcome to the farmers. The sheep farmers complain that, unless we have a general rain, they will have severe losses as far as their lambs are concerned. Mealies are still being reaped in the Bushveld. Rainfall: Nil.—J. Pullen.

ORANGE FREE STATE.

Holfontein (*Kroonstad*).—Drought still continues; stock in general in very poor condition. Some farmers have already sustained severe losses in stock. Mealie crop for the year is very poor indeed. Locusts are still present. Rainfall: Nil.—L. C. McInerney.

Bethany.—Bitterly cold and dry. Rainfall: Nil.—Rev. Carl Prozesky.

Kroonstad.—Consistent and severe frosts have been an outstanding feature during the past month; water pipes in shade remained frozen for a period of ten days. Rainfall: Nil.—A. C. Mason.

Rugby (*Bethlehem*).—Exceptionally hard frosts at night, and warm sunshine by day. The Wilge River was reported as frozen across in places: an occurrence before unknown to people of long residence in the neighbourhood; stock generally in good condition; winter-lambing results good, and percentage of losses very small. Rainfall: Nil.—A. C. Glynn-Baker.

Legpan (*Fauresmith*).—The first half of the month was very cold, with strong winds by day and severe frosts at night. The latter half was milder. Stock generally are doing well. Rainfall: 0·11 inch on one day.—H. C. Ferreira.

Belladale (*Frankfort*).—In July we had severe frosts, but little wind. Cattle are in fair condition, and sheep in good condition; maize crop very poor—not more than 45 per cent. on last season's yield. Rainfall: Nil.—D. McCalman.

Heilbron.—Crops: Reaping is about over, and threshing likewise. The crop is far below the average. Stock: In fair condition; no diseases reported during month. The weather has been dry and fairly cold, with variable winds. Rainfall: Nil.—P. A. du P. Naude.

Prospect (*Vrede*).—There have been unusually severe frosts this month; sometimes in shaded places ice remained on the water until evening. The last few days of the month have been milder, with almost a feeling of spring in the air. All kinds of stock look well for this season of the year. Rainfall: 0·02 inch on one day.—T. Pitcairn.

Paardekraal (*Winburg*).—Veld quite bare; cattle doing well in mealie lands, and in quite good condition; sheep fat and lambing well on rye, mealies, and teff hay; mealie crop on this farm only 20 per cent. of last year's crop; hard frosts every night, but days fine. Rainfall: Nil.—G. S. Lowe.

NATAL.

Paddock.—An exceedingly dry month; every one feeling the drought very much. Rainfall: 0·03 inch on two days.—G. Victor Merriman.

Nottingham Road.—Very continuous frost, but vegetation has not suffered as much as in other years. No signs of spring yet, owing to lack of moisture. Rainfall: 0·09 inch on two days.—Miss E. Smythe.

Verulam.—Very dry; cold at night. Rainfall: 0·05 inch on one day.—C. H. Cornelius.

Dundee.—An exceptionally cold month for July, but generally bright warm days. Rainfall: 0·03 inch on one day.—West Thorrold.

Hillary.—Average minimum temperature (51·0 degrees) is the lowest yet recorded at this station for July; hours of sunshine are the highest. Rainfall: 0·10 inch on three days.—H. A. Thorpe.

Mid-Illovo.—Mealie crop fairly good; country badly in need of rain. Rainfall: 0·02 inch on two days.—Lieut.-Col. J. W. V. Montgomery, C.M.G., D.S.O.

Newcastle.—Said to be the coldest winter experienced in district for over twenty years. Stock appears to be in very fair condition.—H. S. Ellis.

Maritzburg (*Mental Hospital*).—The month has been very dry, and we have had severe frosts, followed by nice warm days. Rainfall: 0·03 inch on one day.—The Staff.

Hlabisa.—Sunny generally, but cold after sunset; gales as from the 22nd, almost hurricanes at times. Rainfall: 0·22 inch on three days.—Ernest E. Redgrove.

Ladysmith.—Except for a few windy and extremely dusty days, the weather during the month has been clear and for the most part very cold. The average minimum temperature for the month (33·3 degrees) is the lowest recorded for many years, being 0·5 degree lower than that recorded for June. The country hereabouts is very dry, and rain is badly needed. Rainfall: Nil.—D. A. R. Leathern.

Hillcrest.—Until 22nd, weather fine, blue sky, light or no wind, clear nights, excessively dry. On the 22nd, wind increased midday and until late evening; fine weather resumed. On the 25th, sky overcast and threatening; light mist and dews until the end of month broke down excessively dry atmosphere, but left no water deposit in gauge. Furniture and woodwork were cracking and damaging, owing to excessively dry atmosphere. All wells in district dry, and fodder dried up. A five-day cattle dipping order for East Coast fever modified to seven-day, presumably on account of poor condition of milk cows. At beginning of month, adult butterflies of last season in flight; at end of month, first brood of most common local variety appearing together with early specimens of other varieties.—T. Dawson Clothier.

Kloofend (*Alexandra*).—Cold and drought were the features of this month. Rainfall: 0·17 inch on two days.—J. D. Cruickshank.

Rongpoort (*Weenen*).—Severe frosts and ice up to the end of the month; one of the most severe months experienced for many years as regards ice;

bright and mild days, but ice every morning. Very dry. Rainfall: 0·03 inch on one day.—J. H. Bartholomew.

Summerford (*Ixopo*).—Month conspicuous for heavy frosts, altogether unprecedented. Rainfall: 0·32 inch on two days.—D. Campbell.

CAPE PROVINCE.

Bedford.—The frequent absence of visible frost, even when grass thermometer indicated as low as 8 degrees below freezing; and the readiness of fruit trees to burst into blossom, while some early oaks are in leaf. On fourteen nights the grass thermometer registered from 1 degree to 8 degrees below freezing. The unbroken drought is rendering water shortage universal. Rainfall: 0·15 inch on three days.—Thos. C. Hall.

Port Alfred.—Weather calm and bright, with few windy days. Rain is still badly needed, and stock feeling dryness of veld. Vegetables scarce. Rainfall: 0·63 inch on five days.—W. H. Pascoe.

Deepwalls Research Station (*Knysna*).—Exceedingly dry month; wilting of undershrubs in portions of forests with northern aspect. Rainfall: 0·10 inch on five days.—J. Philips.

Aliwal North.—A month of heavy frosts at night, and fine bright days. The country is very dry, and a good rain is badly needed. Rainfall: 0·15 inch on one day.—Alex. Alcock.

Louisvale (*Kenhardt*).—Seasonable weather throughout the month; veld very dry, but no stock sickness. Rainfall: Nil.—Stuart M. Smith.

Kraaipan (*Mafeking*).—Wind from S.E. has been very prevalent, with blinding duststorms. Rainfall: Nil.—P. J. Hart.

Cathcart.—A dry, windy month; rain needed badly; veld dry; all stock in poor condition. Rainfall: 0·04 inch on one day.—C. E. Whibley.

Queenstown.—A typical winter month; hoar frost on fourteen mornings, and black frost twice; occasional high winds from the west, the warmest being on the 24th. Rainfall: Nil.—J. F. C. Rein.

Prieska.—Many quite windless days, though often wind sprang up between 9.30 a.m. and 11 a.m., usually N.W.; calm at nights, with two exceptions. Slight rain on night of 26th–27th, weather promising fine day or two later, but cleared up on 30th. Very noticeable haze almost every night and morning, when smoke lay either still or slowly drifting, sometimes on ground, occasionally 50 ft. to 100 ft. up. Flying locusts scattered in large numbers over area in middle of month; mating, though too numbed to move off before 10 a.m. or 11 a.m.; believed many died of cold. Heavy frosts—not hoar frost—in middle of month; flowering shoots of aloes frost-bitten, which is very unusual. Rainfall: 0·10 inch on one day.—E. G. Bryant.

Grootfontein (*Middelburg*).—Maximum temperatures rather high; minimum temperatures usual for July; barometer remarkably high all the month; clouds of any description very scarce, especially cirrus type; visibility during month extraordinary; very unpleasant, with wind and duststorms about 19th, 20th, and 21st; country very dry. Observer on motor trip through Middelburg and Cradock noticed many dead oxen, donkeys, and sheep in the veld, died of thirst. Conditions for grazing very bad; winter so far comparatively mild. If rain does not come soon, August is looked forward to with fear. Rainfall: 0·07 inch on one day.—E. J. van Meerten.

Rietfontein (*Aliwal North*).—One of the coldest Julys on record as regards frost. Rainfall: 0·25 inch on one day.—A. G. Smith.

Queenstown.—Hoar frost sixteen mornings; two days with strong wind to gale, and duststorms; country very dry; outlook serious unless good rains fall during August. Several indications of rain during the month; no result. Rainfall: 0·03 inch on two days.—H. Holley.

Sandflats (Mt. Currie).—Live stock holding condition remarkably well, considering absolute dryness of feed, all green feed having died off. Winter lambing practically finished, and sheep very healthy; bad outlook for spring lambing at present. Weather again very mild on the whole, with no wind to speak of during first half of month. Heavy frosts, with warm days; no rain to give any encouragement of an early spring, though clouds have gathered all without substance. Rainfall: 0·03 inch on one day.—Hewson B. Corderoy.

Postmasburg (Hay).—Chiefly dust; veld very bare; scattered locusts only in vicinity. Zodiacal light three evenings in succession, first time noticed since evening of 28th November, 1923. Rainfall: Nil.—D. Brown.

Stutterheim.—Rain badly needed; many destructive grass fires; severe duststorms. Rainfall: 0·21 inch on five days.—F. C. Bousfield.

Somerset East.—The first three weeks were weeks of exceptionally fine mild weather, with light westerly breezes and blue skies. The last week was cloudy, mild, and humid, with the barometer very erratic; drought continues. Rainfall: 0·10 inch on three days.—C. Harris.

Kokstad.—Nights very much colder than usual; said to be heaviest frosts for twenty years. The days have been warmer than usual; willows in bud, and some fruit trees in blossom; rain badly needed. Rainfall: 0·06 inch on two days.—H. D. Coyte.

Darling (Malmesbury).—Extraordinary lack of north winds and rain for July; rainfall (1·35 inch on nine days) only half of the previous minimum recorded here in the past ten years. The light rains have, however, come opportunely, and up to the present crops, etc., are quite safe—in fact, better than in a very wet year.—P. H. Drake.

Ceres.—Weather generally calmer than usual; frost on sixteen days. Rainfall: 4·27 inches on ten days.—A. Heatlie.

Sydney-on-Vaal (Barkly West).—Considerable range of temperatures, and extended period of heavy frosts; locusts very prevalent throughout month, and they were very slightly affected by frosts, comparatively few dying therefrom. Rainfall: Nil.—J. G. Richards.

Mount Fletcher.—All the mountains in the vicinity have been covered with snow during the past two months. The small pools of water and water left in tubs, etc., were frozen, the ice being ½ inch to ¾ inch thick. The weather is very changeable, and shows indications of rain, which is badly needed here. The fruit trees are in blossom in some places, which is a very good sign.—J. McDougall.

Graaff-Reinet (The Convent).—Early part of month very fine; heavy duststorms from 20th to 24th; wind generally from N.W.; very dry. Rainfall: 0·08 inch on one day.—The Mother Superior.

Liwandi, Addo (Uitenhage).—Everything is getting very dry; frost on ten mornings during the month. Irrigation from Lake Mentz took place during week 13th to 19th. Rainfall: 0·08 inch on four days.—Major J. Kreft.

Carnarvon.—Cold nights, with heavy frosts; fine days. Rainfall: 0·38 inch on one day.—A. P. Malherbe.

Klaver (Van Rhynsdorp).—Easterly winds prevalent during month. Rainfall (0·49 inch on six days) and river flow much below normal; position for farmers depending on rainfall for ploughing very serious.—W. M. Cameron.

Port Nolloth.—A violent hot wind storm, accompanied by clouds of sand and dust from the east commenced 3·30 a.m. on Sunday the 27th, gained its greatest strength about 4.30 a.m., and then very gradually diminished in force. At 9.30 a.m. on the 27th, the wind changed to the north. Considerable damage done to iron buildings, roofs, fences, and chimneys, etc. Rainfall: 0·02 inch on one day.—T. H. Browning.

Danger Point.—Very dry month; very heavy dews towards morning; heavy mists on sea during night; veld looking well in vicinity of lighthouse, owing to heavy dews. Rainfall, July, 1923: 12·42 inches. Rainfall: 0·76 inch on ten days.—H. H. Hews.

Schoemans Hoek (*Oudtshoorn*).—The veld is terribly dry; drought still continues in the surrounding farms of the district. Rainfall: 0·42 inch on three days.—J. H. Schoeman.

Ovendale (*Willowmore*).—Small stock in fair to poor condition. In some parts of the district, farmers have lost heavily in small stock, owing to drought. Rainfall: 0·03 inch on one day.—J. S. Kilian.

Bruintjes Hoogte (*Pearston*).—Farmers suffering seriously from the drought; Angora kidding season quite a failure in these parts; cattle and small stock dying daily. Rainfall: 0·15 inch on two days.—E. S. Miller.

Woodlands (*Kingwilliamstown*).—Country now very dry, water and grass getting scarce; sheep and lambs doing very badly, but big stock still in fair condition. Rainfall: 0·15 inch on three days.—S. P. Landrey.

Riversdale.—Drought still continued; rain during month brought relief, and will help crops. The rain came mostly in passing showers. This month we had exceptional misty mornings, which lasted up to 10 a.m. Rainfall: 0·58 inch on five days.—Rev. Martin Johnson.

BECHUANALAND.

Mahalapye.—More cold than last year; locusts still about; white ants also working all month, in spite of the cold. Rainfall: Nil.—Miss M. Giles.

BASUTOLAND.

Mafeteng.—Fine, almost cloudless month; very cold nights. Rainfall: Nil.—F. Hodgson.

SEPTEMBER WEATHER CHARACTERISTICS.

With the advent of September there is generally a diminution in the rainfall along the western coast of the Union and an increase over the eastern districts. In the northern part of the Cape Province, the minimum monthly rainfall is reached, whilst the Transvaal and Orange Free State may anticipate the commencement of the rainy season. The heaviest rains are usually experienced over the Cape Peninsula, the normal there being approximately 3·5 inches. The south-eastern and coastal districts and the eastern Transvaal receive about 2 inches; whilst the rainfall over the western Transvaal, Orange Free State, and the remainder of the Cape Province will probably not exceed an inch. Occasional, although infrequent, thunderstorms may occur.

There will be a general rise in temperatures, the normals ranging from about 66 degrees in Natal and the eastern Transvaal, through 60 degrees on the Transvaal high veld, and 58 degrees in the Orange Free State, to 55 degrees in Basutoland and on the northern Karroo. Frosts may, nevertheless, reasonably

be expected, although their frequency and intensity will be rapidly diminishing.

The prevailing winds during this month are light, southerly over the Cape Peninsula, with frequent calms ; south-westerly over the south-eastern districts ; south-south-easterly over the northern borders of the Cape Province, although south-westerly breezes are almost equally frequent ; north-north-westerly and northerly over the high veld of the Transvaal. Compared with last month, there is a decrease of north-westerly and northerly winds over the Cape Peninsula, with an increase of all directions between west and south-south-east, but more particularly of south winds. In the south-east littoral, there is a falling-off of breezes from those directions between west and north-north-east, but an increase in all others, especially of those from south-west. The most marked contrast is found between the winds at Johannesburg and those at Kimberley ; at the former place there is an increase of winds from all points between south-east round by east to north-north-west, particularly of those from north, but a decrease of all others, more especially of those from south, south-south-west, and north-west ; at Kimberley the reverse obtains, viz., a diminution in frequency of winds between north-north-west and east-south-east, chiefly of those from north-east, and an increase of all others, principally between west-south-west and south-south-west. The wind-force increases generally, except over the south-west of the Cape Province.

C. STEWART,
Chief Meteorologist.

Pretoria.

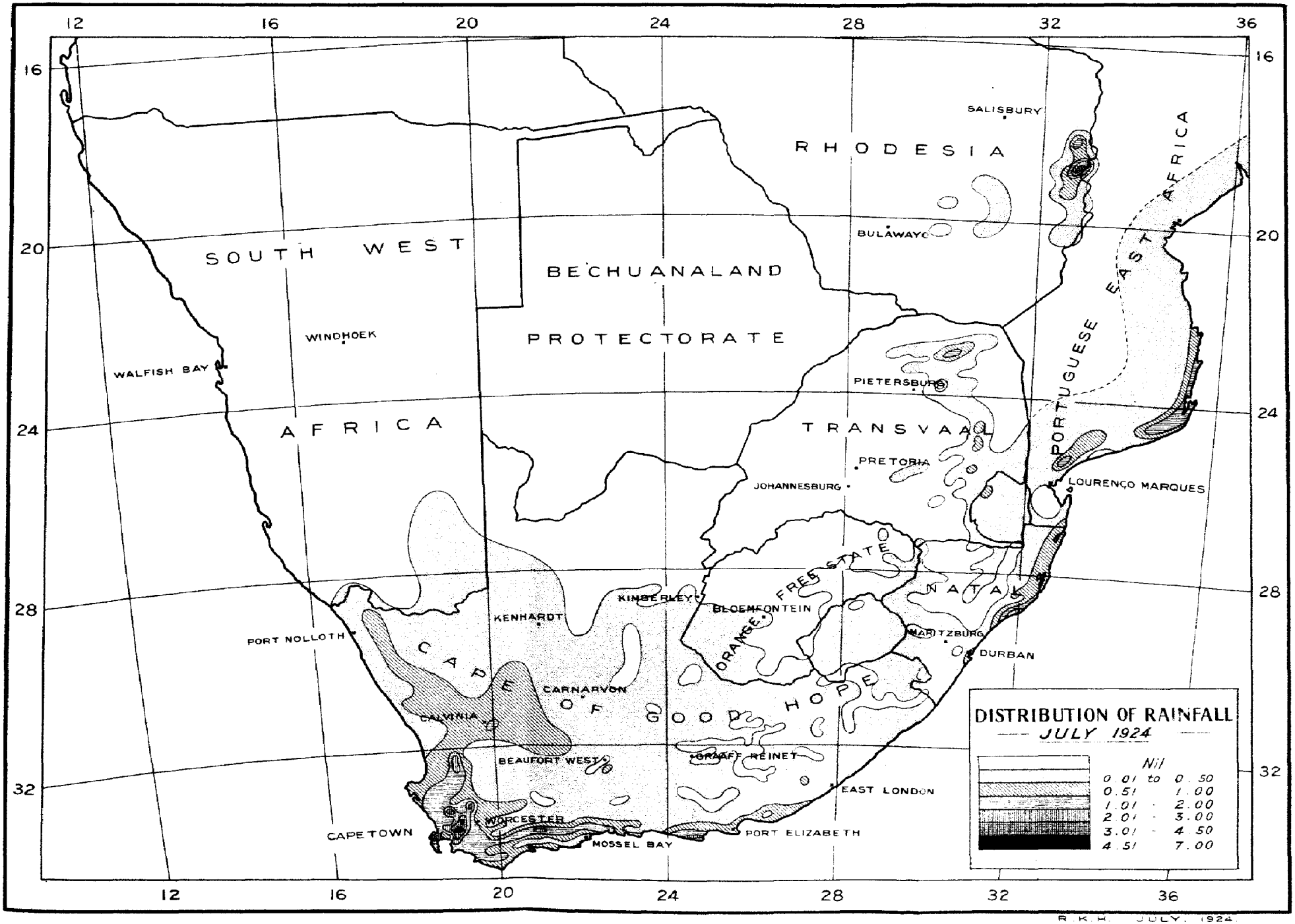
AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), JULY, 1924.

Place.	Observer.	Month—July, 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Transvaal—										
Barberton	Walter Grubb	73·4	46·1	59·8	59·4	+ 0·4	86·0	21st	40·0	1st.
Belfast	The Forester	61·0	21·2	41·1	44·8	− 3·7	71·0	17th	12·0	7th.
Bloemhof	F. Osborne	64·8	27·8	46·3	49·0	− 2·7	73·5	18th	20·5	8th.
Ermelo	S.A. Police	62·3	27·1	44·7	47·0	− 2·3	74·2	18th	17·4	16th.
Johannesburg (Observatory)	The Staff	60·5	39·8	50·2	50·4	− 0·2	71·0	17th	29·6	23rd.
Klerksdorp (Strathmore)	Chas. Scott	66·0	27·7	46·8	50·2	− 3·4	79·0	31st	21·0	7th and 11th.
Komatipoort	B. J. Fothergill	79·1	42·9	61·0	63·0	− 2·0	89·5	21st	34·0	1st.
Louis Trichardt	C. L. Cope	67·2	41·1	54·2	55·7	− 1·5	76·6	21st and 22nd	34·0	1st and 11th.
Middelburg	Dr. H. A. Spencer	67·5	23·9	45·7	48·2	− 2·5	79·0	17th	17·0	7th.
Nylstroom	G. Bakker	69·2	30·9	50·0	52·6	− 2·6	75·5	31st	25·0	18th.
Pietersburg	W. J. Frankleyne	68·5	33·2	50·8	52·6	− 1·8	75·0	17th, 18th, 19th and 31st	27·0	1st.
Piet Retief	J. Werner	67·1	36·4	51·8	53·1	− 1·3	77·5	18th	27·0	7th.
Pigeonhole (New Agatha)	Jno. McCallum	60·7	46·8	53·8	—	—	72·0	21st	42·0	24th.
Pilgrims Rest	E. M. Skea	67·2	32·8	50·0	51·8	− 1·8	79·5	21st	22·0	17th.
Potchefstroom (Exp. Farm)	The Manager	68·2	27·8	48·0	48·9	− 0·9	79·0	31st	20·2	6th.
Pretoria (Meteorological Office)	The Staff	68·1	34·1	51·1	51·7	− 0·6	77·1	17th	28·5	18th.
Rustenburg	A. Streatfield	67·9	32·0	50·0	53·6	− 3·6	75·0	21st and 29th	27·0	7th and 15th.
Standerton	—	—	—	—	44·6	—	—	—	—	—
Zeerust	H. Dietrich	68·7	28·8	48·8	50·4	− 1·6	76·0	19th	23·0	3rd.
Swaziland—										
Mbabane	Swaziland Police	65·5	39·5	52·5	55·4	− 2·9	76·0	21st	31·0	1st.
Orange Free State—										
Bethulie	J. J. Wardhaugh	61·7	26·9	44·3	47·0	− 2·7	68·5	21st	18·5	23rd.
Bloemfontein	G. A. Schepers	61·8	27·3	44·6	47·6	− 3·0	70·8	31st	17·9	12th.
Harrismith	The Forester	57·0	33·5	45·2	46·4	− 1·2	68·0	17th and 31st	27·0	24th.
Kroonstad	A. C. Mason	64·6	24·2	44·4	47·2	− 2·8	73·5	31st	16·0	7th.
Ladybrand	The Forester	62·0	28·8	45·4	46·8	− 1·4	70·0	17th and 18th	22·0	1st.
Natal—										
Dundee	West Thorrold	67·7	30·4	49·0	54·4	− 5·4	79·0	18th	21·0	14th.
Durban (Point)	The Port Captain	71·2	52·5	61·8	64·6	− 2·8	82·0	21st	46·6	1st.
Empangeni	The Forester	73·3	46·4	59·8	62·8	− 3·0	81·0	20th	38·0	15th.
Hlabisa	E. E. Redgrove	72·2	49·5	60·8	63·9	− 3·1	80·0	18th and 22nd	45·0	1st and 23rd.
Estcourt	The Town Clerk	66·5	29·0	47·8	51·6	− 3·8	75·0	18th	23·0	24th.
Ladysmith	D. A. R. Leathern	66·5	33·3	49·9	53·0	− 3·1	77·0	20th	26·0	9th.
Maritzburg (Mental Hospital)	The Staff	71·6	38·9	55·2	58·6	− 3·4	82·2	20th	32·2	23rd.
Stanger	Cecil C. Foss	74·8	52·2	63·5	63·8	− 0·3	84·5	24th	43·0	2nd.
Weenen	The Gaoler	70·0	28·0	49·0	52·3	− 3·3	76·0	22nd	20·0	7th.

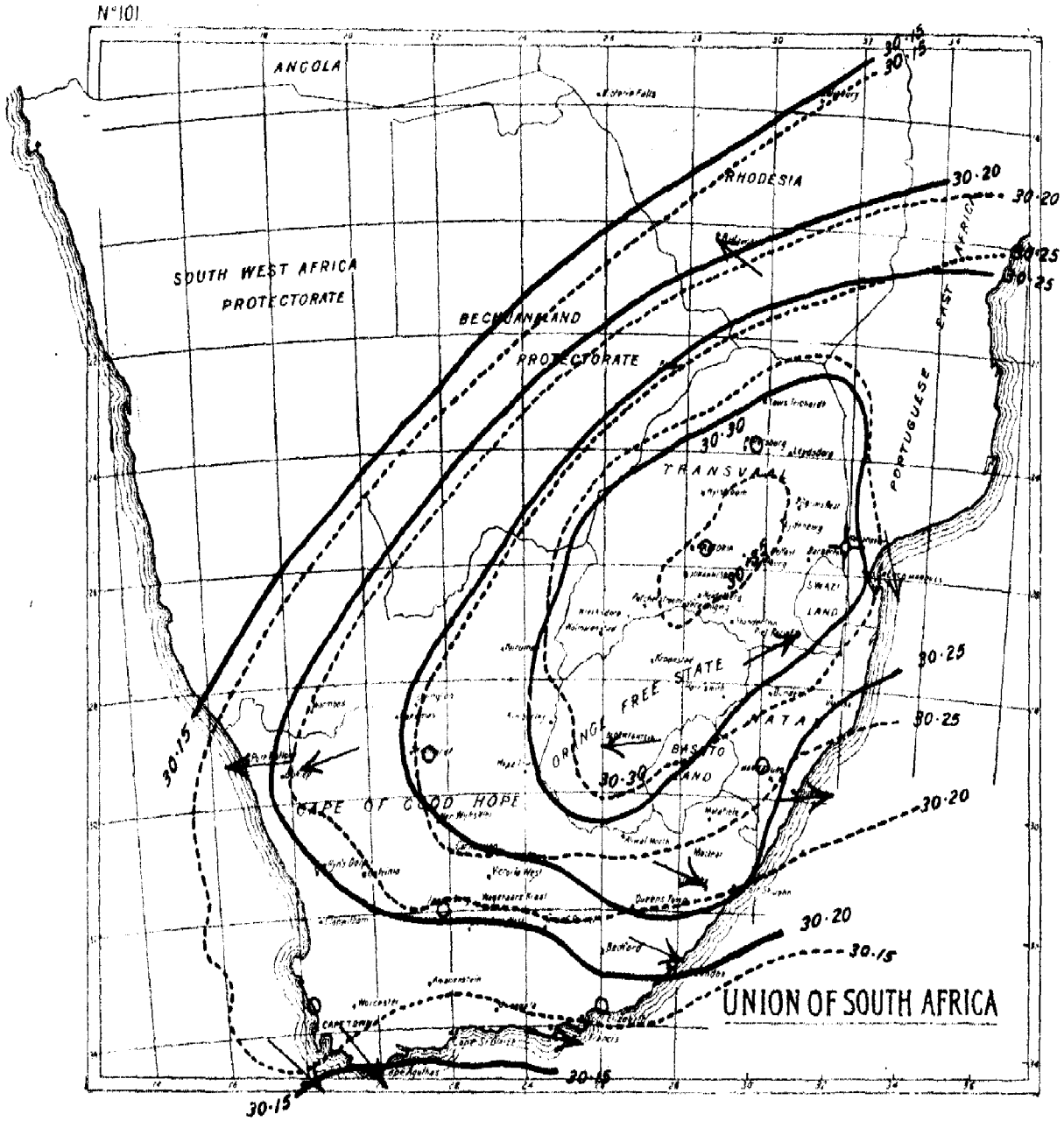
AIR TEMPERATURES, JULY, 1924—(*continued*).

Place.	Observer.	Month—July, 1924. Mean Max.	Month—July, 1924. Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Extremes. Date.	Extremes. Lowest.	Extremes. Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Cape Province—										
Aliwal North	Alex. Alcock	62·6	25·2	43·9	46·4	− 2·5	70·0	21st and 31st.	17·0	12th.
Bedford	Thos. C. Hall	67·1	43·4	55·2	54·5	+ 0·7	76·5	21st	33·0	12th.
Capetown (Royal Observatory)	The Staff	63·8	47·3	55·6	54·8	+ 0·8	79·2	27th	37·1	22nd.
Carnarvon	A. P. Malherbe	60·7	29·5	45·1	47·0	− 1·9	68·0	21st	18·0	11th and 23rd.
Clanwilliam	—	—	—	—	54·2	—	—	—	—	—
East London	The Port Captain	71·8	48·8	60·3	60·0	+ 0·3	87·5	9th	42·0	13th.
Graaff-Reinet (Convent)	The Mother Superior	68·6	44·0	56·3	53·1	+ 3·2	77·2	19th and 21st	32·9	23rd.
Grahamstown	The Vet. Res. Officer	68·3	36·7	52·5	54·8	− 2·3	79·6	21st	27·2	12th.
Groot Drakenstein	A. Franceys	64·3	41·4	52·8	54·0	− 1·2	78·5	27th	35·5	7th.
Kenhardt	R. Seydell	66·8	34·8	50·8	51·3	− 0·5	75·1	21st	22·0	12th.
Kimberley	F. W. J. Schmidt	66·2	34·0	50·1	50·6	− 0·5	80·0	31st	26·0	7th.
Kingwilliamstown	W. A. Kindness	71·8	39·8	55·8	57·3	− 1·5	85·0	20th	31·0	12th.
Kokstad	H. D. Coyte	65·6	27·9	46·8	48·9	− 2·1	77·0	20th	22·0	12th.
Mafeking (Convent)	The Mother Superior	68·6	33·5	51·0	53·6	− 2·6	75·2	30th	25·8	15th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	67·2	51·7	59·4	57·9	+ 1·5	83·0	20th	42·0	11th.
Murraysburg	W. H. Rose-Innes	—	—	—	45·9	—	—	—	—	—
O'okiep	J. Burrows	63·2	44·3	53·8	53·2	+ 0·6	74·7	20th	36·5	11th.
Port Elizabeth	The Lightkeeper	67·3	49·2	58·2	58·8	− 0·6	82·0	16th and 20th	40·0	1st.
Port Nolloth	The Lightkeeper	66·9	45·5	56·2	55·0	+ 1·2	87·3	1st	37·5	7th.
Port St. John's (Cape Hermes)	The Lightkeeper	71·9	55·0	63·4	61·5	+ 1·9	77·0	3rd	50·0	12th and 27th.
Queenstown	H. Holley	64·9	33·2	49·0	51·4	− 2·4	73·0	31st	23·0	8th.
Somerset East	C. Harris	67·4	42·1	54·8	54·2	+ 0·6	78·6	21st	32·5	7th.
Stutterheim	F. C. Bousfield	69·9	43·4	56·6	54·8	+ 1·8	78·7	21st	35·6	7th.
Sydney's Hope	Rev. S. Rippon	66·2	46·7	56·4	56·0	+ 0·4	77·5	20th	39·0	11th.
Ultenhage	H. Inggs	73·1	39·7	56·4	57·4	− 1·0	86·0	21st	29·5	8th.
Umtata	P. Hackett	72·2	31·9	52·0	54·0	− 2·0	85·5	20th	22·5	12th.
Vryburg	Chas. Butler	66·7	27·4	47·0	48·9	− 1·9	79·0	17th	19·0	12th.
Wynberg (Convent)	The Mother Superior	62·6	47·1	54·8	56·0	− 1·2	76·8	27th	41·0	23rd.
Basutoland—										
Mafeteng	F. Hodgson	57·8	30·7	44·2	48·4	− 4·2	65·0	31st	21·0	23rd.

SOUTH AFRICA



R.K.H. JULY. 1924.



July, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for July.

RAINFALL, JULY, 1924.

Place.	Observer.	Month. July, 1924.	Normal.	Difference from Normal.	From 1st Jan., 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—							
Barberton	W. Grubb	0·06	0·30	− 0·24	12·92	18·07	− 5·15
Belfast	The Forester	0·02	0·26	− 0·24	20·03	16·78	+ 3·25
Bethal	H. F. Joubert	0·00	0·17	− 0·17	16·00	14·17	+ 1·83
Bloemhof	F. Osborne	0·00	0·32	− 0·32	—	12·14	—
Claremont	S.A. Police	0·00	0·04	− 0·04	—	10·79	—
Ermelo	The Forester	0·00	0·28	− 0·28	17·54	14·83	+ 2·71
Haenertsburg	S.A. Police	0·00	0·57	− 0·57	20·35	24·95	− 4·60
Heidelberg	W. A. ter Horst	0·00	0·31	− 0·31	19·21	14·66	+ 4·55
Johannesburg (Observatory)	The Staff	0·00	0·33	− 0·33	15·31	16·68	− 1·37
Klerksdorp (Strathmore)	Chas. Scott	0·00	0·33	− 0·33	10·87	13·81	− 2·94
Komatipoort	B. J. Fothergill	0·19	0·31	− 0·12	10·55	18·05	− 7·50
Louis Trichardt	C. L. Cope	0·69	0·49	+ 0·20	18·67	18·68	− 0·01
Middelburg	Dr. H. A. Spencer	0·04	0·09	− 0·05	22·21	14·95	+ 7·26
Nylstroom	G. Bakker	0·00	0·20	− 0·20	16·92	14·31	+ 2·61
Pietersburg	W. J. Frankleyne	0·00	0·23	− 0·23	13·19	11·61	+ 1·58
Piet Retief	J. Werner	0·02	0·35	− 0·33	17·38	18·60	− 1·22
Pigeonhole (New Agatha)	Jno. McCallum	0·47	0·87	− 0·40	33·66	29·72	+ 3·94
Pilgrims Rest	E. M. Skea	0·08	0·38	− 0·30	15·71	26·13	−10·42
Potchefstroom (Experimental Farm)	The Manager	0·00	0·32	− 0·32	13·31	12·98	+ 0·33
Pretoria (Meteorological Office)	The Staff	0·00	0·23	− 0·23	11·87	16·15	− 4·28
Roolberg	N. H. Monro	0·00	0·28	− 0·28	10·30	14·45	− 4·15
Rustenburg	A. Streatfield	0·00	0·40	− 0·40	17·69	14·89	+ 2·80
Standerton	—	—	0·34	—	—	15·21	—
Wakkerstroom	F. O. Petrick	0·00	0·39	− 0·39	—	17·21	—
Woodbush No. 1	The Forester	0·67	0·99	− 0·32	30·82	46·22	−15·40
Zeerust	H. Dietrich	0·00	0·23	− 0·23	14·36	14·40	− 0·04
Swaziland—							
Mbabane	Swaziland Police	0·42	0·67	− 0·25	31·38	30·20	+ 1·18
Orange Free State—							
Bethulie	J. J. Wardhaugh	0·04	0·36	− 0·32	15·35	11·77	+ 3·58
Bloemfontein	G. A. Schepers	0·00	0·36	− 0·36	13·23	14·25	− 1·02
Boshof	The Postmaster	0·00	0·31	− 0·31	10·50	12·40	− 1·90
Harrismith	The Forester	0·08	0·35	− 0·27	14·63	15·87	− 1·24
Kroonstad	S. R. Northfield	0·00	0·29	− 0·29	10·17	14·60	− 4·43
Ladybrand	The Forester	0·00	0·50	− 0·50	14·12	15·78	− 1·66
Lindley	J. Collister-Oates	—	0·30	—	—	13·84	—
Natal—							
Dundee	W. Thorrold	0·03	0·23	− 0·20	18·73	17·89	+ 0·84
Durban (Point)	The Port Captain	0·57	1·21	− 0·64	20·77	22·00	− 1·23
Empangeni	The Forester	1·68	2·08	− 0·40	20·95	26·25	− 5·30
Estcourt	The Town Clerk	0·24	0·26	− 0·02	12·19	16·83	− 4·64
Hlabisa	E. E. Redgrove	0·22	0·91	− 0·69	—	23·73	—
Howick	The Gaoler	0·03	0·32	− 0·29	15·53	18·63	− 3·10
Ladysmith	D. A. R. Leathern	0·00	0·20	− 0·20	15·76	16·42	− 0·66
Maritzburg (Mental Hospital)	The Staff	0·03	0·35	− 0·32	15·43	20·36	− 4·93
Stanger	C. C. Foss	0·07	1·08	− 1·01	16·22	21·24	− 5·02
Vrijheid	The Gaoler	0·00	0·37	− 0·37	16·26	18·61	− 2·35
Weenen	The Gaoler	0·00	0·18	− 0·18	9·74	15·42	− 5·68
Cape Province—							
Aliwal North	A Alcock	0·15	0·41	− 0·26	14·13	13·01	+ 1·12
Beaufort West	The Gaoler	0·00	0·27	− 0·27	4·38	6·35	− 1·97
Bedford	T. C. Hall	0·15	0·65	− 0·50	9·81	16·22	− 6·41
Britstown	The Gaoler	0·22	0·24	− 0·02	7·19	8·45	− 1·26
Calvinia	The Gaoler	0·87	0·91	− 0·04	3·74	5·65	− 1·91
Capetown (Royal Observatory)	The Staff	1·56	3·69	− 2·13	10·14	16·17	− 6·03
Ceres	A. Heatlie	4·27	6·07	− 1·80	20·30	24·75	− 4·45
Carnarvon	A. P. Malherbe	0·38	0·21	+ 0·17	6·89	5·86	+ 1·03
Clanwilliam	The Gaoler	0·56	1·39	− 0·83	2·63	5·72	− 3·09
Concordia	F. Carstens	0·44	0·67	− 0·23	1·13	4·37	− 3·24
Driefontein (French Hoek)	The Forester	7·14	10·48	− 3·34	34·77	48·55	−13·78
East London	A. Downie	0·35	1·23	− 0·88	12·05	17·72	− 5·67
Fraserburg	The Gaoler	0·95	0·29	+ 0·66	3·67	5·00	− 1·33
Grahamstown	The Vet. Res. Officer	0·36	1·14	− 0·78	8·32	15·37	− 7·05
Garies	The Gaoler	0·45	0·71	− 0·26	1·23	3·18	− 1·95

RAINFALL, JULY, 1924—(*continued*).

Place.	Observer.	Month. July, 1924.	Normal.	Difference from Normal.	From 1st Jan., 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Cape (continued)—							
Graaff - Reinet (Convent)	The Mother Superior	0·08	0·43	− 0·35	6·12	8·61	− 2·49
Groot Drakenstein	A. Franceys	3·20	5·25	− 2·05	19·64	22·26	− 2·62
Griquatown	The Gaoler	0·10	0·21	− 0·11	—	9·42	—
George	Rev. Canon B. Price	1·26	1·60	− 0·34	12·36	19·26	− 6·90
Hanover	The Gaoler	0·17	0·37	− 0·20	7·00	9·50	− 2·50
Hopetown	The Gaoler	0·15	0·26	− 0·11	12·09	9·06	+ 3·03
Kenhardt	R. Seydell	0·16	0·20	− 0·04	2·22	4·43	− 2·21
Kimberley	F. Schmidt	0·00	0·30	− 0·30	9·01	10·62	− 1·61
Knysna	The Gaoler	0·82	2·15	− 1·33	11·52	15·81	− 4·29
Kokstad	H. D. Coyte	0·06	0·23	− 0·17	14·38	15·62	− 1·24
Kingwilliamstown	W. Kindness	0·24	1·00	− 0·76	10·67	14·43	− 3·76
Kuruman	—	—	0·24	—	—	12·18	—
Mafeking (Convent)	The Mother Superior	0·00	0·40	− 0·40	9·99	13·74	− 3·75
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·38	1·22	− 0·84	6·59	9·93	− 3·34
Murraysburg	W. H. Rose-Innes	—	0·29	—	—	7·61	—
O'okiep	J. Burrows	0·29	0·85	− 0·56	1·24	4·52	− 3·28
Philipstown	The Gaoler	0·00	0·29	− 0·29	12·51	9·58	+ 2·93
Piquetberg	The Gaoler	1·12	2·84	− 1·72	7·13	12·25	− 5·12
Port Elizabeth	The Lightkeeper	0·86	1·87	− 1·01	9·65	12·12	− 2·47
Port St. Johns	The Lightkeeper	0·15	1·11	− 0·96	22·02	26·15	− 4·13
Port Nolloth	The Lightkeeper	0·02	0·33	− 0·31	0·60	1·61	− 1·01
Prieska	The Gaoler	0·12	0·21	− 0·09	4·03	7·44	− 3·41
Queenstown	H. Holley	0·03	0·54	− 0·51	9·76	14·51	− 4·75
Steytlerville	The Gaoler	0·01	0·21	− 0·20	2·94	5·80	− 2·86
Sutherland	The Gaoler	0·36	0·96	− 0·60	3·51	6·37	− 2·86
Swellendam	The Gaoler	1·40	2·17	− 0·77	11·94	18·42	− 6·48
Sydney's Hope	Rev. S. Rippon	0·32	0·94	− 0·62	9·72	12·59	− 2·87
Somerset East	C. Harris	0·10	0·73	− 0·63	9·82	14·99	− 5·17
Stutterheim	F. C. Bousfield	0·21	0·59	− 0·38	14·81	17·21	− 2·40
Uitenhage	H. Inggs	0·26	0·76	− 0·50	6·04	9·56	− 3·52
Umtata	B. J. Hackitt	0·11	0·52	− 0·41	9·38	14·98	− 5·60
Uniondale	The Gaoler	0·25	0·97	− 0·72	3·70	7·90	− 4·20
Upington	The Gaoler	0·04	0·12	− 0·08	4·82	5·33	− 0·51
Victoria West	The Gaoler	0·46	0·28	+ 0·18	5·28	7·51	− 2·23
Vryburg	Chas. Butler	0·00	0·25	− 0·25	11·44	13·48	− 2·04
Worcester	The Gaoler	0·61	1·83	− 1·22	2·81	7·70	− 4·89
Wynberg (Convent)	The Mother Superior	2·46	7·65	− 5·19	15·72	27·97	− 12·25
Basutoland—							
Mafeteng	F. Hodgson	0·00	0·58	− 0·58	18·57	19·94	− 1·37
South-West Africa—							
Aroab	S.W.A. Police	0·00	0·02	− 0·02	6·47	6·24	+ 0·23
Aus	E. Martins	0·00	0·24	− 0·24	0·40	3·11	− 2·60
Bethanie	Rev. Peter	0·00	0·01	− 0·01	0·77	2·64	− 1·87
Duesterbrock	R. Matthiessen	0·00	0·01	− 0·01	6·21	11·04	− 4·83
Gabis	Rev. P. Rehor	0·02	0·11	− 0·09	0·92	3·10	− 2·18
Garinais	F. Bentling	0·08	0·05	+ 0·03	3·67	4·49	− 0·82
Gibeon	The Postmaster	0·00	0·04	− 0·04	2·43	4·99	− 2·56
Gobabis	Rev. Irle	0·00	0·02	− 0·02	9·19	11·99	− 2·80
Grootfontein	Pitkowski	0·00	0·00	± 0·00	10·31	17·19	− 7·88
Gr. Witvley	F. Rueckert	0·00	0·01	+ 0·01	4·14	11·13	− 6·99
Haribes	G. Freund	0·00	0·00	± 0·00	2·99	6·42	− 3·43
Heirachabis	Rev. F. Stroka	0·12	0·01	+ 0·11	1·30	3·04	− 1·74
Kalkfontein S.	S.W.A. Police	0·18	0·02	+ 0·16	1·91	3·65	− 1·74
Franzfontein	H. Janson	0·00	0·00	± 0·00	5·85	7·87	− 2·02
Luderitz Bay	E. Stoeber	0·00	0·04	− 0·04	—	0·45	—
Maltahoehe	E. Just	0·00	0·02	− 0·02	3·18	5·35	− 2·12
Neu Heusis	Liebig's Extract Co.	0·00	0·02	− 0·02	4·39	10·98	− 6·59
Okahandja	B. Templin	0·00	0·04	− 0·04	6·19	11·09	− 4·90
Okasangumingo	R. H. A. Schneider	0·00	0·00	± 0·00	9·36	12·43	− 3·07
Omaruru	The Postmaster	0·00	0·02	− 0·02	6·10	12·88	− 6·78
Otjiwarongo	The Magistrate	0·00	0·00	± 0·00	8·49	12·22	− 3·73
Outjo	The Magistrate	0·00	0·00	± 0·00	3·86	11·67	− 7·81
Rehoboth	The Postmaster	0·00	0·03	− 0·03	1·70	9·44	− 7·74
Rietfontein	B. Leist	0·00	0·00	± 0·00	7·31	14·31	− 7·00
Swakopmund	The Gaoler	0·00	0·01	− 0·01	0·00	0·38	− 0·38
Tsumeb	Ing. Schetter	0·00	0·02	− 0·02	11·19	16·78	− 5·59
Usakos	Rev. Diehl	0·00	0·00	± 0·00	2·42	4·24	− 1·82
Voigtsgrund	A. Voigts	0·00	0·01	− 0·01	10·13	6·11	+ 4·02
Warmbad	E. Luchtenstein	0·01	0·18	− 0·17	0·41	2·96	− 2·55
Waterberg	D. Hahn	0·00	0·00	± 0·00	9·44	14·74	− 5·30
Wilhelmstal	W. Boehmker	0·00	0·00	± 0·00	3·51	9·82	− 6·31
Windhoek	Observatory	0·00	0·04	− 0·04	6·91	11·56	− 4·65

2171—17/3/25—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METERIOLOGICAL OFFICE.

Vol. V. AUGUST, 1924. No. 56.

ATMOSPHERIC pressure generally slightly higher than usual; mean temperature almost 1½ degree lower than usual; days considerably, and nights to a less extent, colder than usual; frequent frosts, affecting practically the whole country, of almost daily occurrence in some areas, and damaging fruit trees in parts of the Free State; warm spells on 23rd, 24th, 27th to 28th; cold spell most general from 7th to 10th; rains mostly light and below normal over the interior, surrounded by an almost continuous band of excess rainfall parallel with the coast from Port Nolloth to Durban, and broadest in the south, where it extended inland to the central Karroo; surplus rainfall also occurred in Swaziland, the east, north-east, and south-west of the Transvaal; absolute drought at stations in almost every Division of the Free State, Transvaal, and parts of the central Karroo, and over the northern border of the Cape Province, and in Bechuanaland; a series of light falls of snow between 6th and 7th, 10th and 13th, 17th to 18th, and 30th and 31st, affecting the more inland portions of the east of the Cape, the north-east, east and south of the Free State, the south-west and north of Natal; cold, blustering, drying winds with frequent duststorms; these constituted the main features of the weather of August, 1924.

Pressure.—As shown on the accompanying map, the mean atmospheric pressure for August was slightly (less than 0·05 inch) higher than the average. Anti-cyclonic conditions were present throughout the month, the cores of the high-pressure areas varying considerably in position, but being situated mainly in the east of the Union. A series of low pressure affected the coast at intervals during the month. Thus on the morning of the 1st the western edge of a low-pressure area lay along the east coast, but had passed off on the 2nd; on the 5th the northern extremity of a similar system affected the south coast, had passed on the east coast on the 6th, and had completely disappeared on the 7th; on the 10th a disturbance was shown well to the south-east of the Cape Province, affecting the winds on the coast, and producing rains and some snow along the south and south-east coastal areas. On the 14th a low pressure skirted the south coast, whilst the western edge of this or another disturbance lay along the south-east and east coasts on the 16th. High pressure prevailed on the 17th,

but on the 18th an isobar of 29·90 inches lay in the position as on the 16th. High pressure continued thereafter till the 26th, although on the 24th the barometer had fallen below 30 inches over the south-west, and an isobar of 29·95 inches appeared on the south coast on the 25th, indicating a disturbance to southward of the Cape. A decided low-pressure area appeared on the morning of the 27th, when the lowest pressure of the month, viz., 29·75 inches, lay along the south coast, increasing to 30·25 inches over the southern portion of the Transvaal. This disturbance had evidently moved in a north-easterly direction in the course of the day, so that on the morning of the 28th the lowest pressure at Durban had risen still further to 29·90 inches, and had risen to 30·40 inches in the south-east on the 29th. On the 30th pressure had fallen once more to 29·95 inches on the south coast, and on the 31st had fallen to 29·85 inches at Lourenco Marques.

Temperature.—The mean temperature over the Union during August was 55·4 degrees, or 1·4 degree less than usual. This deficit was unequally divided between the days and the nights, the former, with a mean temperature of 68·8 degrees, being 2·2 degrees, and the latter, with a mean of 41·9 degrees, being only 0·7 degree less than the corresponding averages. A sub-normal temperature for the month was common to all the four Provinces. Thus, Natal with a mean for this month of 59·1 degrees was 2·8 degrees cooler than usual, the mean maximum temperature (71·6 degrees) being 4·7 degrees and the mean minimum (46·6 degrees) being only 0·8 degree less than normal. The Transvaal had a mean temperature of 55·5 degrees, or 1·3 degree less than the average for this month; the mean day temperature (71·0 degrees) was 1·9 degree and the mean night temperature (40·0 degrees) was 0·8 degree less than the corresponding averages. In the Orange Free State, the deficit of 1·2 degree in the mean for August last (50·0 degrees) was entirely due to the days with a mean temperature of 64·7 degrees being 2·4 degrees cooler than usual, whilst the nights showed the normal value of 35·4 degrees. In the Cape Province, the mean temperature (55·0 degrees) was 1·1 degree below normal. Two-thirds of this negative difference were due to the mean maximum (67·2 degrees) being 1·5 degree, whereas the mean minimum (41·9 degrees) was only 0·7 degree below normal. Considering the stations separately, it is found that the mean temperature during August was mostly sub-normal in the various Provinces. The exceptional areas consisted of part of the east and south-west of the Transvaal, the south of Bechuanaland, portion of the central Karroo, and the east of Kaffraria, in the Cape Province. In the Transvaal, the sub-normal amounts were mostly between 1 degree and 2 degrees, but varying from 1·1 degree at Pilgrims Rest in the east to 3·6 degrees at Rustenburg in the west. At Komatipoort and Barberton, however, temperature was normal, whilst Potchefstroom showed an excess of 1·1 degree. Mbabane, in Swaziland, was 2·6 degrees cooler than usual. In the Orange Free State, the temperature was sub-normal by less than 1 degree in the north and north-east, and by more than 1 degree elsewhere. The negative variation was from 0·6 degree at Kroonstad to 1·7 degree at Bloemfontein and Bethulie. The largest deficits were met with in Natal, where they lay mostly between 3 and 4 degrees, but varied from 0·4 degree at Stanger to 4·2 degrees at Estcourt and Hlabisa. In Basutoland, Mafeteng showed a *minus* quantity of 2·0 degrees. In the Cape Province, the sub-normal amounts were mostly slightly over 1 degree, but ranged from 0·2 degree at Kimberley to 3·6 degrees at Grahamstown. The largest deficits, between 2 and 4 degrees, were mostly confined to the south-east and the east of the south coastal area, but were also met with at a few other stations, such as Carnarvon, in the northern Karroo, and Mafeking, in Bechuanaland. The surplus amounts varied from 0·6 degree at Vryburg to 1·6 degree at Graaff-Reinet. Both days and nights were generally cooler

than usual, although a number of stations in all the Provinces showed a mean night temperature in excess of normal. In the Transvaal, the only station showing an excess in the mean maximum was Barberton, with *plus* 0·2 degree. The deficits at the rest of the stations varied between 0·4 degree at Belfast and 3·8 degrees at Bloemhof. Mean minima higher than usual were limited to stations in parts of the south, centre, south-west, south-east, and east, the excesses being mostly less than 1 degree, but rising to 1·1 degree at Strathmore (near Klerksdorp) and 3·0 degrees at Potchefstroom. At Ermelo the mean night temperature was normal, and only 0·3 degree above normal at Piet Retief. Over the remainder of the Province the deficits in the night temperature ranged from 0·2 degree at Barberton to 4·0 degrees at Rustenburg. Both days and nights were sub-normal at Mbabane, in Swaziland. In the Orange Free State, both days and nights were cooler than the average in the north, centre, and south, whilst in the east and north-east the nights were warmer than usual. The shortages in the day temperatures lay between 1·2 degree at Kroonstad and 4·3 degrees at Harrismith; whilst the departures from normal in the case of the night temperatures varied from *minus* 1·6 degree at Bloemfontein to 3·0 degrees at Harrismith. At Mafeteng, in Basutoland, the days were colder than the average by 4·6 degrees, but the nights warmer by 0·6 degree. In Natal, the mean maxima were lower than usual by large amounts, principally by 5–6 degrees, the sub-normal quantities varying, however, from 2·2 degrees at Stanger to 6·6 degrees at Ladysmith. The nights were also mostly cooler than usual by amounts ranging from 0·1 degree at Ladysmith to 3·5 degrees at Dundee. On the coast belt, however, the minima were higher than the average by 0·3 degree to 1·2 degree, as also at Weenen, where the nights were 0·8 degree warmer than usual. In the Cape Province, the day temperatures were mostly lower than usual, except in parts of the south-west and of the Cape Peninsula, at Vryburg in Bechuanaland, and Kokstad in Kaffraria. The excesses lay between 0·2 degree at the Royal Observatory, Capetown, and 1·9 degree at Vryburg. The deficits were largest in the east and part of Kaffraria and of the south coast, being mostly between 2 and 3 degrees there, but rising to 5·3 degrees at Uitenhage and 5·9 degrees at Bedford. Over the rest of the country, including the greater part of the interior, the days were sub-normal, mostly by 1–2 degrees, but falling to 0·4 degree at Graaff-Reinet and rising to 3·5 degrees at Mafeking. The night temperatures were also mostly lower than usual, except in portions of the east, including part Kaffraria, of the south coast, and on the Namaqualand plateau. The surplus amounts lay between 0·1 degree at Queenstown and 4·0 degrees at Port St. Johns, and the deficits between 0·1 degree at Somerset East and 4·5 degrees at Grahamstown. The mean warmest station was Komatipoort with a temperature of 67·4 degrees, and the mean coolest, Belfast, with 47·8 degrees, a difference of 19·6 degrees. Both of these stations are situated in the Transvaal. In the Cape Province, the highest mean temperature for the month was 62·4 degrees at Port St. Johns, and the lowest 49·0 degrees at Carnarvon, a difference of 13·4 degrees. The corresponding values in Natal were 64·8 degrees at Stanger and 52·7 degrees at Estcourt, a difference of 12·1 degrees. In the Orange Free State there was a difference of only 3·3 degrees between Kroonstad, the warmest station, with 51·6 degrees, and Harrismith, the coolest, with 48·3 degrees. The mean maxima for August varied in the Transvaal from 81·5 degrees at Komatipoort to 63·3 degrees at Johannesburg Observatory; in the Free State, from 68·1 degrees at Kroonstad to 60·0 degrees at Harrismith; in Natal, from 74·7 degrees at Stanger to 68·1 degrees at Estcourt; and in the Cape Province, from 72·5 degrees at Mafeking to 61·7 degrees at Port Nolloth. The mean minima ranged in the Transvaal from 53·3 degrees at Komatipoort to 29·9 degrees at Belfast; in the Orange Free State, from 36·6 degrees at

Harrismith to 34·5 degrees at Bethulie ; in Natal, from 56·7 degrees at Durban (Point) to 37·3 degrees at Estcourt ; and in the Cape Province, from 55·3 degrees at Port St. Johns to 34·2 degrees at Carnarvon. The highest mean day temperature was therefore 81·5 degrees at Komatipoort, and the lowest mean night temperature 29·9 degrees at Belfast. The extreme readings for the month were 99·2 degrees at East London on the 27th and 18·0 degrees at Belfast on the morning of the 20th, a range of 81·2 degrees. The extreme maxima at the various stations in the Transvaal varied between 97·0 degrees at Komatipoort on the 18th and 28th and 74·6 degrees at Johannesburg on the 24th ; in the Free State, between 81·3 degrees on the 24th at Bethulie and 74·0 degrees on the same date at Harrismith ; in Natal, between 96·3 degrees at Stanger on the 27th and 77·4 degrees at Durban on the same day ; in the Cape Province, from 99·2 degrees at East London on the 27th and 77·0 degrees at Bedford on the 15th. The lowest temperatures during August were mostly below freezing-point, but varied in the Transvaal from 43·0 degrees at Barberton on the 14th to 18·0 degrees at Belfast on the 20th ; in the Free State, from 27·0 degrees at Ladybrand on the 7th to 20·3 degrees at Bethulie on the 8th ; in Natal, from 48·6 degrees at Durban on the 8th to 26·0 degrees at Estcourt on the 9th ; and in the Cape Province, from 48·0 degrees at Port St. Johns on the 9th to 22·9 degrees at Kokstad on the 8th. The extreme maxima were registered on twelve days of the month, viz., 2nd, 7th, 10th, 13th to 15th, 18th, 23rd, 24th, and 26th to 28th, most widely on the 23rd and 24th, when they were recorded over the northern half of the Union, and on the 27th to 28th, when they occurred over Natal, the centre and east of the Cape Province. The lowest temperature readings were registered on sixteen days of the month, viz., 3rd to 5th, 7th to 12th, 14th, 20th to 22nd, and 29th to 31st, most widely between the 7th and 9th, whilst at a fair number of stations these minima were recorded on the 20th and 21st. It will be gathered from the foregoing that temperature was extremely erratic throughout the month, warm alternating with cold spells, with frequent strong, drying winds, principally from directions between north-west and south-west, giving rise to duststorms of considerable density. In many places these winds were mainly confined to the day-time, from about 10 a.m. till sunset. At Andriesfontein, in the Division of Hanover, these cold snaps spoiled all prospects of a fruit harvest. Radiation frosts were of frequent occurrence throughout the month, being of almost daily occurrence at some stations, and particularly sharp on the 7th, 8th, 29th, and 31st. At Mount Fletcher the weather of August was the coldest experienced during the whole winter, whilst at Sandflats, in the Mount Currie Division, the frosts killed all the portions of the young grass. This phenomenon was also of unusual severity for this month in portions of the Pietersburg, Waterberg, and Rustenburg Divisions, as well as at some stations in Natal.

Precipitation.—Rainfall during August was sub-normal over the greater part of the Union. The exceptional areas consisted in the Transvaal of portions of the Zoutpansberg and Pietersburg areas in the north, of the Lydenburg Division in the east, and of the Potchefstroom and Wolmaransstad and Bloemhof Divisions in the south-west ; Swaziland, parts of the coastal area and of Estcourt District, in Natal ; in the Cape Province, surplus amounts occurred on the coast of Namaqualand, the greater part of the west coast section extending into the south-west of the northern Karroo, the south-west, including the Cape Peninsula, parts of the central Karroo, and of the south-east, Kaffraria, and the south coast. Over the rest of the country the precipitation during August was less than the average, mostly by amounts of less than half an inch, but exceeding half an inch and less than three-quarters of an inch in parts of the east of the Transvaal and Free State. The excesses in the Transvaal were greatest, between 1 inch and 2 inches, in the north, and least in the east and

south-west, varying from 2·19 inches or 429 per cent. at Pigeonhole, in the Zoutpansberg Division, to 0·05 inch or 16 per cent. at Bloemhof. In Natal, the surplus amounts were small, less than a tenth of an inch. In the Cape Province, the *plus* amounts ranged from 3·10 inches, or 134 per cent. of the normal, at Swellendam to 0·01 inch or 1 per cent. at Stutterheim. No rainfall was recorded over the greater part of the northern Karroo, the northern border, Bechuanaland, and Gordonia, and small portions of the central Karroo, over a large part of the west and north-east of the Free State, a considerable portion of the west, south-west, the centre, south and east of the Transvaal. Quantities exceeding 1 inch were confined to the southerly portion on the west coastal area and the south-west of the northern Karroo, the south-west of the Cape Province, including the Cape Peninsula, the southern Karroo, and south coast. The continuity of the area affected by amounts of an inch is broken in the neighbourhood of East London, but reappears a little south of the 32nd parallel, whence it is continued through Natal, Zululand, to the neighbourhood of Delagoa Bay. A narrow, elongated area of similar amount is found in the north of Natal, extending through the west of Swaziland into the Transvaal; also small patches in the east of that Province, in the neighbourhood of Pilgrims Rest, and in the Zoutpansberg, and in the south-west, then extending into the north of the Free State. A fairly large area of precipitation, exceeding 4½ inches, is met with in the south-west of the Cape Province and in detached patches along the south coast. The heaviest precipitation of over 10 inches occurred in the mountainous part of the south-west. In South-West Africa very light rains were confined to the south-west and the neighbourhood of Rietfontein in the north; elsewhere the month was rainless. A light shower of hail occurred at Pretoria on the 12th. Slight showers of snow were of frequent occurrence during the month. Thus it was reported as occurring at Goede Hoop (Division Cradock) and Dordrecht, on the 5th; at Nelspoort and Paardekraal (Division Beaufort West), Groot Rietvlei (Division Somerset East), New Bethesda, Graaff-Reinet, Tarkastad, Fairview (Division Tarkastad), Goede Hoop (Division Cradock), Buxton (Division Stockenstrom), Cala (Kingwilliamstown), Hogsback (Division Victoria East), Saaiplaats (Division Molteno), and on the hills in the neighbourhood of Kokstad, on the 6th; at Cala, Hogsback, and Saaiplaats, on the 10th; Glen Hope and Kokstad, on the 11th; at Dordrecht, Burghersdorp, and Glen Hope (Division Mount Frere), and Kokstad, on the 12th; also in parts of the Harrismith, Bethlehem, Ficksburg, Ladybrand, Thaba 'Nchu, Bloemfontein, Fauresmith, Edenburg, Wepener, Rouxville, Bethulie, and Philippolis Districts of the Free State on the same date; at Deugas (Division Uniondale), on the 17th; at Cala, Hogsback, and Kokstad, on the 18th; at Isidenge (Division Stutterheim) and Kokstad, on the 30th; at Richmond, Droogefontein (Division Cradock), Cathcart, Buxton (Division Stockenstrom), Cala, Hogsback, Kokstad, and in the neighbourhood of Gluckstad and Greytown, in Natal, on the 31st; as well as at a number of stations in the same districts of the Free State as enumerated on the 12th.

The accumulated rainfall since the beginning of the year was mostly below normal. Some exceptional stations, at which the totals were in excess of normal, were to be found in the Zoutpansberg, the east, centre and the west of the high and middle velds of the Transvaal, and in Swaziland; also at one or two stations in the west of Natal, the south of the Orange Free State, and in the north-east, the northern border, and northern Karroo, in the Cape Provinces. Similar conditions prevailed in South-West Africa, an excess in the precipitation for these eight months being confined to Aroab in the south-west, where it was only 0·20 inch, or 3 per cent. above normal, and Voigtsgrund, where it was 4·00 inches, or 61 per cent. above the average. In the Transvaal, the *plus* amounts varied from 0·86 inch or 6 per cent. at Potchefstroom to 6·91 inches

or 45 per cent. at Middelburg. In Swaziland, Mbabane showed a surplus of 2·44 inches, or 8 per cent. of the average; and in Natal, Dundee had a depth of rainfall 0·63 inch, or 16 per cent. greater than usual. In the Cape Province, the surplus amounts lay between 0·64 inch or 5 per cent. at Aliwal North and 2·78 inches or 30 per cent. at Hopetown. In the Free State, Bethulie had an excess of 3·21 inches or 26 per cent. The deficits in the Transvaal were greatest, mainly between 3 and 10 inches in the east and north-east, but rising to 14·38 inches or 30 per cent. at Woodbush; the shortages decreased in the south-east, south-west, and west to 1½ inch to 2½ inches, falling as low as 0·23 inch or 2 per cent. at Zeerust. In the Orange Free State, this period's rainfall was in defect of normal by amounts lying between 1·21 inch or 8 per cent. at Bloemfontein and 4·62 inches or 31 per cent. at Kroonstad. In Natal, the *minus* quantities varied from 1·07 inch or 6 per cent. at Ladysmith to 5·93 inches or 37 per cent. at Weenen. In the Cape Province, the totals were mostly 2–5 inches less than usual, but the deficits increased to 6–7 inches in parts of the south-east and 11–12 inches in portions of the south-west. The range of these deficits was from 0·50 inch or 3 per cent. at Kokstad to 12·24 inches or 20 per cent. at Driefontein in the south-west. In South-West Africa the deficient amounts varied from 0·42 inch or 100 per cent. at Swakopmund to 7·85 inches or 82 per cent. at Rehoboth. In the southern half of the Territory the deficits were mostly between 2½ and 3 inches, as also in the more westerly and south-easterly portions of the northern half. Over the interior north of the Tropic, the totals for the eight months were less than the average, mostly by amounts between 4½ and 7 inches. The total rainfall during the two months, July and August, were mostly less than the average. There were, however, a few exceptional areas where excess amounts were recorded: parts of the north and south-west of the Transvaal; Mbabane, in Swaziland; the east of Kaffraria, the western portion of the south coastal area, and parts of the south-west of the northern Karroo, and the south of the west coastal area; and the south-east of South-West Africa. The excesses in the Transvaal were greatest in the north and least in the south-west, varying between 0·21 inch or 27 per cent. at Potchefstroom and 1·79 inch or 130 per cent. at Pigeonhole (New Agatha), in the Zoutpansberg; Mbabane was 1·01 inch, or 55 per cent. in excess of normal. In the Cape Province, the *plus* amounts were generally less than half an inch, but ranged from 0·11 inch or 4 per cent. at Port St. Johns to 2·33 inches or 52 per cent. at Swellendam. The deficits in the Transvaal lay mostly between a quarter and three-quarters of an inch, varying between 0·14 inch or 15 per cent. at Pilgrims Rest to 0·98 inch or 94 per cent. at Ermelo. In the Free State, the sub-normal amounts were rather higher, half an inch to one inch, being 0·48 inch or 60 per cent. at Kroonstad and 1·18 inch or 94 per cent. at Ladybrand. In Natal, the deficient amounts were generally from slightly under half an inch to three-quarters of an inch, being 0·32 inch or 26 per cent. at Howick and 0·92 inch or 38 per cent. at Stanger. In the Cape Province, the shortages were mostly small, from a few hundredths to about one-third of an inch over the interior, increasing to half an inch to three-quarters of an inch in Bechuanaland, the north-east, and the central Karroo, and to 1–2 inches in portions of the south-east and the south-west. The *minus* quantities ranged from 0·04 inch or 7 per cent. at Victoria West to 4·47 inches or 30 per cent. at Wynberg, in the Cape Peninsula.

State of Country.—Notwithstanding the generally small and mostly inadequate amount of rain during this month in the Transvaal, there were undoubted signs of the approach of spring in the shooting veld and the blossoming of fruit trees, while ploughing operations had been carried out extensively in the District of Rustenburg. Record crops had been reaped in the Waterberg District, and threshing machines were busy all round. In the Zoutpansberg District

the veld was very good where left unburned, and cattle fat. The country was very dry in the Piet Retief and Standerton Districts, and the veld was becoming bare in parts of the Rustenburg area owing to the continued activities of locusts, which had also caused considerable damage to farms in the neighbourhood of Sabie. Cattle were looking well in the Barberton, Waterberg, and Zoutpansberg Districts; only fair in the Rustenburg, Pretoria, and Standerton Divisions; in the Swaziland low veld, cattle were not looking too fit, but were improving in the neighbourhood of Mbabane; in Lichtenburg, they were in very poor condition, and some were dying, as the owners could not afford to feed them. In the Orange Free State the weather during the month was very dry, with strong winds and dust. In the Kroonstad District, farmers were still trekking with their stock, which were in very poor condition, while some had suffered heavy losses. At Rockwood (District Thaba 'Nchu) the winter-feed was scorched and dry, owing to drought and cold winds, so that the outlook for the lambing season was very poor. In the Fauresmith District the veld was getting bare, but stock were still doing well. At Bordeaux (District Boshof) small stock were generally weak. At Rugby (District Bethlehem) stock were in good condition, as was also the case at Groenvlei (District Frankfort), as the result of stalk grazing, which was finished this month, so that fears were expressed that stock would lose condition and so affect ploughing operations when the rains started. At Heilbron the grain crops were apparently worse than had been anticipated, although large quantities of fodder had been gathered; stock there were in fair to poor condition, but sheep doing well. At Mount Morkel (District Ficksburg) crops were giving in, but at Modderpoort (District Ladybrand) the rye lands and veld were gradually turning green in consequence of the light rain that had fallen. Locusts had caused a considerable amount of harm at Bethany, in the District of Edenburg. In Natal, the beneficial effects of the fairly general rains on the 11th and 12th were neutralized to a considerable extent in some parts by cold, and in some cases hot, drying winds, so that the greater part of the country was still in the throes of drought. At Nottingham Road and Maritzburg veld feed for stock was getting scarce. At Paddock, Port Shepstone, Greytown, and Gluckstadt, grazing was improving as the result of the rains, and the young grass beginning to sprout. At Kloofend (District Alexandria) the crops were wholly or partially destroyed, owing to lack of rain with windy weather. At Penicuik (Lower Umfolozi) there was a 30 per cent. decrease in the corn crop and an increase in "streak" disease. The rains at Sawoti (Umzinto) saved the corn from dying, but stock were in poor condition; elsewhere, as at Mid-Illovo, the stock were going off. In the Cape Province, strong drying winds with frequent duststorms and persistent drought were the leading features of the weather over the greater part of the interior. The drought was intense in the Aliwal North, Queenstown, Cathcart, Stutterheim, Bedford, Somerset East, Middelburg, Tsolo, Willowmore, Kenhardt, Vryburg, Mafeking, and Gordonia Divisions. Stock there and in several other Divisions were falling off in condition, and actually dying in the Stutterheim and Middelburg Divisions, owing to lack of grazing, while fears were entertained that a similar state of affairs would prevail shortly in the Tsolo District. Good rains were generally urgently required to save stock farmers from heavy losses. In the Hanover and Mount Currie Divisions live stock were still in good condition. In the Bathurst Division the veld was in fair condition for a distance of ten miles from the coast, but further inland the drought was serious and stock suffering. In parts of Mount Currie, sheep were doing well on the burnt areas. Good, steady, well-distributed rains had fallen over the greater part of the west coast, the south-west and the south coast areas, and in some portions of the last Division the month was said to have been unprecedentedly wet; there was consequently a marked improvement in the condition of the crops, which were

promising well. In the south-west the early fruit was in full bloom, and likely to produce a good crop, but in the Hanover District the cold snaps had negatived all prospects of any fruit harvest. No ploughing was being done in Stutterheim, but in Mount Currie ploughing for maize had been started, wherever possible. In Basutoland a fair amount of wheat had been sown, but was doing badly owing to lack of rain. Notwithstanding the unusually severe cold during this winter at Mount Fletcher, no serious damage had been done to crops. The rains in the Van Rhynsdorp District, although ameliorating conditions there to a limited extent, were too late to enable the ploughed area to be increased, but were expected to improve the veld and crops already planted.

Water Supply: Rivers.—A shortage of water was reported as being felt at Paddock, in Natal; water was failing rapidly at Kraaipan (Division Mafeking), whilst from Somerset East it was stated that the evaporation, due to strong northerly wind, had diminished the already insufficient supply. Water was scarce at Port Alfred (District Bathurst). From Klaver (District Van Rhynsdorp) it was reported that a good flow in the river had been recorded since the 20th of the month.

OBSERVERS' NOTES FOR AUGUST, 1924.

TRANSVAAL.

Groeneboom No. 444 (*Rustenburg*).—The month was a rather cold one in comparison with the same month in other years. There is a marked difference in temperature of the hill range on which the station is situated and the flats north of this range. Peaches are blooming on the station, while on the flats these are well advanced in leaf and fruit. White frost was experienced on the station up to the 29th. Cattle are in fair condition. Veld is becoming bare. Very few grass fires this year; veld being eaten off by locusts. Heavy voetganger infestations expected. Ploughing of black soils started. Day and night temperatures rising during the latter part of the month. Rainfall: 0·45 inch on one day.—F. N. van Nouhuys.

Carolina.—The usual August weather—heavy winds and duststorms, and generally cold. Rainfall: Nil.—*G. F. Mijnhardt.*

Nooitgedacht No. 1739 (*Warmbaths*).—Much wind during the month, and some unusually cold weather. Cattle in fair condition. No reports of voetgangers yet in the immediate neighbourhood. Rainfall: 0·11 inch on one day.—*G. Gordon Brown.*

Pomona Estates (*Pretoria*).—During the month the days have been fairly warm, and not many very windy days have been experienced. The last day of the month was very cold and windy. Rainfall: 0·07 inch on two days.—*E. A. Clark.*

Arbury (*Rustenburg*).—The month has been very windy. During the day the wind changed several times. Highest maximum temperature, 88·0 degrees on 30th. Lowest minimum temperature, 28·0 degrees on the 21st. The only rainfall during the month (0·08 inch on the 16th) not enough to do any good to the already shooting veld.—*G. F. Mills.*

Middelburg.—Warm days with clear, cold nights have obtained during the month, temperatures by day and by night being below the average, as also the number of frosty nights was larger. Cold, biting breezes from the south-west were much in evidence by day, accompanied by duststorms, dust-whirls, or merely dust clouds. The grass is rapidly greening, and the veld taking on a warm hue, in contrast with its bleached appearance for some months past, and everywhere fruit trees are beginning to blossom. Spring is arriving. Rainfall: 0·13 inch on three days.—*Dr. H. A. Spencer.*

Pietersburg.—Heavy frost and cold southerly winds. Days mostly bright. Rainfall: 0·21 inch on two days.—*W. J. Frankleyne.*

Sabie.—Considerable damage done on farms in the locality by the swarm of locusts which settled on the 25th. Rainfall: 0·73 inch on five days.—*W. F. Easton.*

Piet Retief.—Country very dry. Last week very heavy winds. Rainfall: 0·50 inch on four days.—*J. Werner.*

Bralbin (Rustenburg).—Weather has been normal—calm mornings, with haze on horizon. Towards the end of month considerable rise in temperature; wind high or gusty at night, followed by light clouds. Rainfall for month—0·14 inch on the 12th—very unevenly distributed. Veld improving, and most farms are ploughed and cross-ploughed. Maximum temperature for month, 87·5 degrees on 28th; minimum temperature, 27·0 degrees on 19th and 23rd.—*R. C. S. McPherson.*

Potchefstroom (Experiment Farm).—The month, in general, was calm and bright, with cool nights. Rainfall: 0·99 inch on two days.—*D. Moses.*

Krugersdorp.—Temperatures during the month have been about 1 degree under the average. In other respects the month has been a fine one, with no undue extremes of temperature. Rainfall for month, 0·19 inch on two days, against an average of 0·57 inch during the past twenty-one years.—*H. Sharp.*

Berlin Forest Reserve (Barberton).—This month has been a great improvement on last year, when only 0·25 inch of rain fell at the end of the month. The cattle are looking well, and the young trees are showing good growth. Rainfall: 1·49 inch on four days.—*The Forester.*

Gemboksfontein (Middelburg).—The weather was dull towards the middle of the month, and strong winds were prevalent towards the close of the month. Rainfall: 0·10 inch on one day.—*L. C. Skead.*

Mosdene (Naboomspruit).—A bright, sunny month, of normal temperature. Rainfall: 0·12 inch on two days.—*Ernest E. Galpin.*

Myrthley (Standerton).—Very dry, with high winds prevailing. Rainfall: 0·26 inch on one day.—*J. L. Ellis.*

Lichtenburg.—A month of cloudless skies, very cold nights, and dusty days. Cattle in very poor condition; a few dying, as the owners cannot afford to feed them. Rainfall: 0·04 inch on one day.—*E. Newton.*

Weltevreden (Standerton).—Stock in fair condition. Rainfall: 0·16 inch on one day.—*D. Lane.*

Woburn (Waterberg).—Frosts have been severe for the Springbok Flats this month. Record crops of mealies; thrashing machines busy all round. Stock in good condition. Rainfall: 0·16 inch on one day.—*C. W. Brumage.*

Doornkloof No. 507 (Zoutpansberg).—Cattle fat, and veld very good where not burned. Rainfall: 0·03 inch on one day.—*S. M. Ralston.*

SWAZILAND.

Hlatikulu.—For the month of August we have had very changeable weather; some fairly warm days and also one of the coldest experienced here this year. Cattle are not looking too fit, yet, with the few showers we have had, the grass is showing up. Reports from Mahamba, about twenty-four miles south-west from Hlatikulu, state that locusts were seen approaching the district on the 31st, but with the change of wind from west to south-east their course was changed. Rainfall: 1·54 inch on six days.—*J. Pullen.*

Piggs Peak (*Swaziland Police*).—Heavy winds daily, rising towards noon and dropping about 5 p.m. Rainfall: 1·20 inch on three days.—*The Officer in Charge.*.

Mbabane.—The grass is now coming on, and stock improving. Rainfall: 2·44 inches on seven days.—*R. C. S. Markham.*

ORANGE FREE STATE.

Bethany (*Edenburg*).—Locusts have done a great deal of harm, but a good percentage of them had to pay for it dearly, as hundreds of bags full have been collected by the inhabitants of the station and prepared for food for man and beast. Rainfall: Nil.—*Rev. Carl Prozesky.*

Wepener.—Rain is badly wanted; the country round about is very dry, only 0·09 inch having fallen on one day, and a slight fall of snow on the last day of the month, which did not wet the ground. The temperatures during the month were very uneven, the rise and fall being considerable from day to day.—*W. D. Roche.*

Grootkuil (*Winburg*).—After nice warm weather a very severe frost occurred on the night of the 31st. Rainfall: 0·15 inch on one day.—*V. B. Richards.*

Modderpoort (*Ladybrand*).—The rye lands and the veld are gradually becoming green as the result of the little rain we have had. Rainfall: 0·09 inch on three days.—*H. Wilson.*

Kroonstad.—A month of strong winds and cool nights. Rainfall: 0·32 inch on two days.—*A. C. Mason.*

Holfontein (*Kroonstad*).—A very bad month, nothing but wind and dust. Hardly a blade of grass is to be seen. Farmers are still trekking with their stock, which are in a very poor condition. Some farmers have already had very heavy losses. Rainfall: 0·30 inch on one day.—*L. C. McInerney.*

Groenvlei (*Frankfort*).—The weather during this month has been considerably warmer than the previous month, although some cold snaps were experienced off and on. Generally at the time of observation (8.30 a.m.) the weather has been clear and calm, but during the day a strong wind with plenty of dust has sprung up, dropping again to calm towards sunset. On the 16th, during the evening, we had a little rain (0·27 inch), very welcome, but ending in disappointment—weather very promising, expected more. We are hoping for early rains; stalk grazing is now finished; stock in satisfactory condition. Should rain remain away, all classes of stock are bound to suffer and lose condition, possibly affecting ploughing when the rains do appear.—*B. Stollreither.*

Rugby (*Bethlehem*).—Stock generally in good condition. During latter end of the month weather has been very warm, and there has been practically no frost. Rainfall: 0·52 inch on two days.—*A. C. Glynn Baker.*

Middelfontein (*Bethulie*).—Rainfall: 0·44 inch on one day. The rainfall would have done a great deal of good if it were not for the unsettled weather which followed. The lambing season is nearly over, and farmers seem fairly satisfied, as there were not many losses.—*H. J. Joubert.*

Bordeaux (*Boshof*).—During the month there were still cold and unsettled days. Small stock generally weak. Rainfall: Nil.—*D. J. de Waal.*

Mount Morkell (*Ficksburg*).—Very dry; crops giving in. Rainfall: Nil.—*H. J. Morkel.*

Stanleyvale (*Harrismith*).—A very dry month; badly in need of rain. Rainfall: 0·07 inch on one day.—*G. C. Atkins.*

Heilbron.—Crops: Grain crop seems to be worse than was expected. Very little grain is coming forward. Fodder for cattle, however, is plentiful, and large quantities were gathered in. Stock: Live stock are fair; condition poor in some cases, but on the whole fair. No diseases. Sheep, however, are in good condition. Rainfall: 0·23 inch on two days.—*P. A. du P. Naude.*

Rockwood (Thaba 'Nchu).—Owing to drought and cold southerly winds, winter-feed scorched and dry; outlook for lambing bad, and veld kept poor and dry by these abnormally cold winds. Rainfall: 0·42 inch on one day.—*H. Howell.*

Leypan (Fauresmith).—The month was very stormy. Strong winds from north and west. Cloudless, except on the 6th and 31st. On the 6th 0·01 inch of rain fell, but on the 31st the clouds blew over after some drops had fallen. Veld is getting bare, but stock still doing well. Rainfall: 0·01 inch on one day.—*H. C. Ferreira.*

NATAL.

Mid-Illovo.—Exceptionally cold and windy. A nice rain 10th to 12th (1·06 inch). Country still wants rain badly. Stock losing condition. Rainfall: 1·48 inch on seven days.—*Lt.-Col. J. W. V. Montgomery, C.M.G., D.S.O.*

Nottingham Road.—Dry, and everything backward. Barely enough veld grass for sheep. Rainfall: 0·70 inch on six days.—*Miss E. Smythe.*

Paddock.—Nice rains towards the middle of month distinctly relieved the drought situation in so far as making the young grass come on for grazing, but the shortage of water is still felt everywhere. During the latter half of the month we suffered from high winds, blowing nearly full force most days, and each day coming up about 11 a.m. Rainfall: 1·17 inch on five days.—*G. Victor Merriman.*

Newcastle (Convent).—The weather was windy, cold, and dusty towards the end of the month.—*The Mother Superior.*

Port Shepstone.—Fresh to strong winds have prevailed greater part of month, with hardly a calm day. Very welcome rain fell on the 11th and 12th, and grazing has improved. Rainfall: 2·00 inches on seven days.—*E. K. Andreason.*

Umbogintwini.—Wind has been very strong at times, either noon, night, or early morning. Rainfall: 1·44 inch on eight days.—*J. P. Lyle.*

Maritzburg (Mental Hospital).—The month has been cold and dry. Cattle-feed is getting very scarce. Rainfall: 0·99 inch on three days.—*The Staff.*

Dundee.—A very nice rain on 11th and 12th, with bright sunshine after it; the drying winds since have parched everything, thus prolonging a promising early spring. Rainfall: 0·65 inch on three days.—*West Thorrold.*

Paulpietersburg.—Normal month. Rainfall: 0·30 inch on four days.—*Dr. Niel Lipscomb.*

Greytown.—Very cold month, much frost. Rainfall on 11th and 12th of a good soaking nature. Grass beginning to grow, and with warm weather will come on quickly. Rain on 31st much heavier four miles west of this station, 0·46 inch being recorded. Snow fell on the hills to north-west. Rainfall: 1·14 inch on four days.—*J. M. Handley.*

Verulam.—Very dry. Sugar-cane rather bad. Strong winds during month; cold at night. Rainfall: 0·79 inch on three days.—*C. H. Cornelius.*

Stanger.—A very windy month. Rainfall: 1·40 inch on four days.—*Cecil C. Foss.*

Ladysmith.—Dry, hot winds prevailed during the month, and the country is extremely dry. Rain is badly needed. Rainfall: 0·51 inch on three days.—*D. A. R. Leathern.*

Gluckstadt (Vryheid).—On the 12th, 0·54 inch of rain fell, which has prompted the growth of young grass. A unique occurrence took place on the 31st, when a particularly strong westerly wind blew the whole day, followed towards sunset by a counter wind from the east. During the night, which was an absolutely clear starlight one, the wind changed suddenly, and blew from the south, bringing up a bank of clouds and causing a local fall of snow. On the following morning the surrounding mountains were snow-capped, whereas the other mountains situated towards the Drakensberg were free from snow. Snow is seen here once every ten to twenty years. Rainfall: 0·78 inch on five days.—*F. W. J. Schumann.*

Kloofend (Alexandra).—High winds have been the prevailing feature of the month. Crops wholly or partially destroyed owing to lack of rain and the violence of the winds. The weather was also very cold for the coast. Rainfall: 1·13 inch on seven days.—*J. Cruickshank.*

Mtunzini.—Weather quite fair throughout month. Very heavy and dry. Winds frequent, almost daily. Rainfall: 1·78 inch on two days.—*The Magistrate.*

Penicuik (Lower Umfolozi).—Rain is badly needed. 30 per cent. decrease in cane crop from drought, with consequent increase in "streak" disease. Rainfall: 1·53 inch on seven days.—*E. G. Clerk.*

Rongpoort (Weenen).—11th and 12th, very nice steady rain, but by the end of month grass had only grown slightly. Continuous winds throughout the month, and very cold at times. No frosts latter half of month. Rainfall: 0·97 inch on two days.—*J. H. Bartholomew.*

Sawoti (Umzinto).—Country still suffering badly from drought, although the rain saved the cane from dying. Stock poor. Rainfall: 1·42 inch on eight days.—*Archibald and Co.*

Cape Province.

Sydney-on-Vaal (Barkly West).—No rain. Comparatively little high winds. Considerable range in maximum and minimum temperatures. Unusually cold snap at end of month.—*J. G. Richards.*

Klaver (Van Rhynsdorp).—Slightly better rains this month have alleviated the acute conditions slightly, but are too late to increase ploughed area and will only assist the crops already sown, but will improve the veld considerably. Since the 20th a good flow has been recorded in the river. Rainfall: 1·08 inch on ten days.—*W. M. Cameron.*

Postmasburg (Hay).—Very changeable weather—hot, cold. Rainfall: Nil.—*D. Brown.*

Vryburg.—Country becoming dry. Strong northerly winds blowing. Stock getting poor. Rainfall: Nil.—*Chas. Butler.*

Kimberley.—Nothing of importance to report. Last day of month exceptionally cold and windy. Rainfall: Nil.—*C. H. Dowler.*

Rietfontein (Aliwal North).—Dry and cold windy month. Rainfall: 0·34 inch on two days.—*A. G. Smith.*

Cathcart.—A dry windy month. Sharp frost on the 7th, 8th, and 29th. Light snowfall on the night of the 31st. Veld very dry; all stock in poor condition. Rainfall: 0·57 inch on six days.—*C. E. Whibley.*

Aliwal North.—A cold dry month; several days of strong drying winds. Country very dry. Rainfall: 0·25 inch on two days.—*Alex. Alcock.*

Kenhardt.—Continued drought. Rainfall: 0·03 inch on one day.—*R. Seydell.*

Kokstad.—Nice fall of snow and some rains early in month. Rainfall: 1·38 inch on five days.—*H. Coyte.*

Stutterheim.—Rain badly needed. Large and small stock dying from poverty. Many grass fires. No ploughing being done. Rainfall: 0·98 inch on ten days.—*F. C. Bousfield.*

Tsolo.—The wind has been very heavy during the month from the west to south-west and south-east. Stock are falling off through want of rain, as there is no grazing for them, and they will shortly commence to depart this life. Rainfall: 0·51 inch on two days.—*H. P. Tillard.*

Graaff-Reinet (Convent).—Temperature during this month very variable, some days being very warm, others very chilly. Duststorms frequent and dense. Wind variable, but chiefly from a northerly direction. Rainfall: 0·55 inch on four days.—*The Mother Superior.*

Umtata.—Strong winds commenced about middle of month, and experienced on about six days. Wind usually strong from about 10 a.m. to 3.30 p.m. One or two hot sultry days. Cold at nights. Steady light rains from 10th to 12th; otherwise dry. Winds usually from north to west. Rainfall: 0·80 inch on five days.—*P. Hackett.*

Queenstown.—Westerly to north-westerly winds of considerable force prevailed. The temperature has been very variable, a good mixture of mid-winter and bright warm spring. The thermometer on consecutive days was very jumpy, as is evident from the following figures:—Temperature at 8.30 a.m.: From 6th to 10th, 58·0, 38·0, 31·0, 40·5, 56·0 degrees; from 13th to 21st, 38·0 58·0, 61·0, 62·0, 46·5, 53·0, 44·0, 36·0, 60·0 degrees. Maximum: From 5th to 14th, 75·1, 58·4, 46·0, 58·0, 69·9, 71·6, 46·8, 49·0, 66·0, 70·0 degrees; from 27th to 31st, 81·8, 58·1, 59·2, 71·0, 52·5 degrees. Minimum: From 4th to 10th, 31·0, 37·7, 58·0, 35·0, 24·5, 29·7, 39·5 degrees; from 13th to 17th, 32·5, 38·0, 49·3, 57·3, 43·1 degrees; and, again, from the 28th to 31st, 49·6, 29·3, 29·0, 39·0 degrees. The drought is unrelenting. Rainfall: 0·32 inch on four days.—*J. F. C. Rein.*

Queenstown.—A month of dry and windy weather; duststorms. Rain badly needed. Rainfall: 0·35 inch on seven days.—*H. Holley.*

Andriesfontein (Hanover).—Month very windy, with several cold snaps, reducing prospect of fruit to nil. Wind blowing almost night and day. Several swarms of flying locusts passed. Stock in good condition. Rainfall: 0·07 inch on one day.—*H. van der Merwe.*

Somerset East.—Scanty rain, warm days, and frequent strong northerly winds have impoverished the already insufficient water supply. The rainfall on the 6th varied considerably in the district, ranging from about 2 inches on farms to the west to 0·28 inch in town. Rainfall: 0·53 inch on six days.—*C. Harris.*

Clanwilliam.—Wind very calm, and all rains were very soft and none too cold. Rainfall: 1·44 inch on seven days.—*C. B. van Zyl.*

Darling (*Malmesbury*).—Very good rains, evenly distributed: very welcome after the very short rainfall of July. Great improvement in crops, which, on the whole, are very promising. Rainfall: 3·05 inches on twelve days.—*P. H. Drake.*

Louisvale (*Upington*).—An average spring month, with little frost. The prospects of the irrigation farmers are bright, but the outside veld is very dry. Early and copious rains are necessary to save many local stock farmers from very serious loss. Rainfall: 0·02 inch.—*Stuart M. Smith.*

Riversdale.—Drought has been broken. The crops are making good progress owing to 2·01 inches of rain on twelve days during the month. Cattle improving. A good harvest expected.—*Rev. Martin Johnson.*

Port Alfred.—Variable weather during month; cold nights, warm days. About ten miles from coast veld in fair condition. Inland, drought very serious, stock suffering, and water scarce. Rainfall: 2·27 inches on nine days.—*W. H. Pascoe.*

Bedford.—Greatest prevalence of high drying winds. Rainfall for month —1·09 inch on ten days—about the average, but had no beneficial effect on the desiccated ground. Snow on mountain on 7th. Stock rapidly falling off in condition, especially cattle. Severe drought conditions prevail.—*Thos. C. Hall.*

Storms River.—This was an unprecedented wet month. The long drought has been broken. Rainfall: 6·65 inches on eight days.—*H. B. Smallbergen.*

Danger Point.—Nice rains; a few cold days, but no winter to speak of this year. There have not been so many rough heavy seas as usual at this time of the year. Snow on mountains on 31st. Rainfall: 3·88 inches on eleven days.—*H. H. Hews.*

Mount Fletcher.—The weather during the past month has been the coldest ever experienced here during the whole winter. No serious damage to crops in this district. Strong winds followed by snow-clouds and heavy frost in general. Rainfall: 0·64 inch on four days.—*J. McDougall.*

Kraaipan (*Mafeking*).—The drought still continues, and water is failing rapidly. Duststorms have been very prevalent. Rainfall: Nil.—*P. J. Hart.*

Sandflats (*Mount Currie*).—Live stock: Falling off in condition, but still strong and healthy. Weather: Only four calm days during whole of month, the wind being strongest on the 31st. Four abortive attempts to rain, with not much success; 0·45 inch rain during month, to no purpose, owing to succeeding winds, which have generally been cold blasts. Maximum temperature, 79·0 degrees on 27th; minimum temperature, 22·0 degrees on 8th. Ploughing has begun for maize crops, where possible. What little grass makes any growth gets frosted off again; though in other localities sheep are doing well on the burns.—*H. B. Corderoy.*

Grootfontein (*Middelburg*).—Conditions bad. The little drop of rain that fell during the month all became fly-off. Not a drop went into the soil. Sheep, donkeys, ostriches, and goats are dying of thirst in the district. Severe duststorms have been prevalent. Fruit trees are already blossoming, and soil is warming up. Cool weather still in evenings, but the days are becoming very hot. The prospects for September are very gloomy. Rainfall: 0·07 inch on three days.—*E. J. van Merten.*

Vruchtbaar (*Wellington*).—The early fruit trees are in full bloom, and promises a good crop. Rainfall: 5·15 inches on ten days.—*P. J. Cillie and Son.*

Ovendale (*Willowmore*).—The drought is getting very serious indeed. Stock generally in poor condition; lambing a failure. Terrible duststorms. Rainfall: 0·27 inch on three days.—*J. G. Kilian.*

BASUTOLAND.

Mafeteng.—Total rainfall for month 0·07 inch on five days, principally sleet and small hail. Very cold nights, with sharp frosts. Country looking very brown and dry. Fair amount of wheat sown, but looking miserable on account of lack of rain. Stock in fairly good condition considering.—*F. Hodgson.*

BECHUANALAND.

Serowe.—Wind variable. Cool to cold in morning. Hot and dusty mid-day wind generally dropped towards sundown. Rainfall: Nil.—*S. Langton.*

OCTOBER WEATHER CHARACTERISTICS.

The month of October marks the firm establishment of the inland rainy season and a general increase in the intensity of precipitation throughout the Union. In the south-west of the Cape and over the Peninsula, however, the tendency is in the opposite direction, while over the southern and western coastal districts there should be but little change from the preceding month. The heaviest rainfall should now be experienced in Zululand, Swaziland, and Natal, where the normals are about 3·5 inches. The Cape Peninsula receives an average of about 3 inches; Basutoland, the Transvaal eastern border, and the south-eastern coastal districts, 2·5 inches; the south coast and south-west of the Cape Province, 2 inches; the Transvaal high veld, Orange Free State, and east-central Karroo, 1·5 inch; and the remainder of the Union, less than 1 inch. A mean monthly air temperature of 68 degrees occurs in Natal, and 67 degrees in the eastern Transvaal and the northern borders of the Cape Province. The normal in Kaffraria is about 61 degrees; in the Cape coastal districts, 62 degrees; on the Peninsula, 60 degrees; and in the south-west, 61 degrees. On the high veld the mean temperature should range from 63 degrees in the Transvaal and Orange Free State to 60 degrees in Basutoland and on the northern Karroo. Frosts are unusual. Of the total possible number of hours of bright sunshine, about 80 per cent. should be enjoyed over the northern borders of the Cape Province, 58 per cent. in the south-eastern districts, 61 per cent. on the Peninsula, and 65 per cent. in the Transvaal. During this month the winds over the east and interior of the country attain their maximum velocity, whilst over the south-west they are also increasing in force. Compared with the previous month, there is a general decrease in frequency at all stations of those winds blowing between north and north-west, and a general increase of southerly and south-westerly breezes and of north-easterly winds in addition over the summer rainfall area. The prevailing wind directions are south-south-west at Kimberley, north at Johannesburg, north-east at East London, and southerly at Capetown. During October destructive hailstorms are of frequent occurrence, affecting wide areas.

C. STEWART,

Pretoria. *Chief Meteorologist.*

RAINFALL, AUGUST, 1924.

Place.	Observer.	Month. Aug., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	0·00	0·58	− 0·58	12·92	18·65	− 5·73	0·06	0·88	− 0·82
Belfast	The Forester	0·13	0·55	− 0·42	20·16	17·33	+ 2·83	0·15	0·81	− 0·66
Bethal	H. F. Joubert	0·07	0·62	− 0·57	16·07	14·79	+ 1·28	0·07	0·79	− 0·72
Bloemhof	A. Jordaan	0·37	0·32	+ 0·05	—	—	—	0·37	0·64	− 0·27
Claremont	S.A. Police	0·00	0·40	− 0·40	14·13	11·19	+ 2·94	0·00	0·44	− 0·44
Ermelo	The Forester	0·06	0·76	− 0·70	17·60	15·59	+ 2·01	0·06	1·04	− 0·98
Haenertsburg	S.A. Police	1·50	0·30	+ 1·20	21·85	25·25	− 3·40	1·50	0·87	+ 0·63
Heidelberg	W. ter Horst	0·08	0·53	− 0·45	19·29	15·19	+ 4·10	0·08	0·84	− 0·76
Johannesburg (Observatory)	The Staff	0·16	0·58	− 0·42	15·47	17·26	− 1·79	0·16	0·91	− 0·75
Klerksdorp (Strathmore)	C. Scott	1·00	0·40	+ 0·60	11·87	14·21	− 2·34	1·00	0·73	+ 0·27
Komatipoort	B. J. Fothergill	0·45	0·50	− 0·05	11·00	18·55	− 7·55	0·64	0·81	− 0·17
Louis Trichardt	C. L. Cope	1·80	0·25	+ 1·55	20·47	18·93	+ 1·54	2·49	0·74	+ 1·75
Middelburg	Dr. H. A. Spencer	0·13	0·48	− 0·35	22·34	15·43	+ 6·91	0·17	0·57	− 0·40
Nylstroom	G. Bakker	0·24	0·48	− 0·24	17·16	14·79	+ 2·37	0·24	0·68	− 0·44
Pietersburg	W. Frankleyne	0·21	0·24	− 0·03	13·40	11·85	+ 1·55	0·21	0·47	− 0·26
Piet Retief	J. Werner	0·50	0·77	− 0·27	17·88	19·37	− 1·49	0·52	1·12	− 0·60
Pigeonhole (New Agatha)	J. McCallum	2·70	0·51	+ 2·19	36·36	30·23	+ 6·13	3·17	1·38	+ 1·79
Pilgrims Rest	E. M. Skea	0·73	0·57	+ 0·16	16·44	26·70	−10·26	0·81	0·95	− 0·14
Potchefstroom (Exp. Farm)	The Manager	0·99	0·46	+ 0·53	14·30	13·44	+ 0·86	0·99	0·78	+ 0·21
Pretoria (Meteorological Office)	The Staff	0·10	0·55	− 0·45	11·97	16·70	− 4·73	0·10	0·78	− 0·68
Rooiberg	W. P. Watt	0·10	0·66	− 0·56	10·40	15·11	− 4·71	0·10	0·94	− 0·84
Rustenburg	A. Streatfield	0·04	0·56	− 0·52	17·73	15·45	+ 2·28	0·04	0·96	− 0·92
Wakkerstroom	F. Petrick	0·23	0·85	− 0·62	—	—	—	—	—	—
Woodbush I	The Forester	1·99	0·97	+ 1·02	32·81	47·19	−14·38	2·66	1·96	+ 0·70
Zeerust	H. Dietrich	0·04	0·23	− 0·19	14·40	14·63	− 0·23	0·04	0·46	− 0·42
Swaziland—										
Mbabane	Swaziland Police	2·44	1·18	+ 1·26	33·82	31·38	+ 2·44	2·86	1·85	+ 1·01
Orange Free State—										
Bethulie	J. J. Wardhaugh	0·10	0·47	− 0·37	15·45	12·24	+ 3·21	0·14	0·83	− 0·69
Bloemfontein	G. A. Schepers	0·33	0·52	− 0·19	13·56	14·77	− 1·21	0·33	0·88	− 0·55
Boshof	The Postmaster	0·00	0·66	− 0·66	10·50	13·06	− 2·56	0·00	0·97	− 0·87
Harrismith	The Forester	0·10	0·81	− 0·71	14·73	16·68	− 1·95	0·18	1·16	− 0·98
Kroonstad	A. C. Mason	0·32	0·51	− 0·19	10·49	15·11	− 4·62	0·32	0·80	− 0·48
Ladybrand	The Forester	0·08	0·76	− 0·68	14·20	16·54	− 2·34	0·08	1·26	− 1·18
Lindley	—	—	0·47	—	—	14·31	—	—	0·77	—
Natal—										
Dundee	W. Thorrold	0·65	0·86	− 0·21	19·38	18·75	+ 0·63	0·68	1·09	− 0·41
Durban (Point)	The Port Captain	1·62	1·59	+ 0·03	22·39	23·59	− 1·20	2·19	2·80	− 0·61
Empangeni	The Forester	1·70	1·71	− 0·01	22·65	27·96	− 5·31	3·38	3·79	− 0·41
Estcourt	The Town Clerk	0·77	0·70	+ 0·07	—	17·53	—	—	0·96	—
Hlabisa	E. E. Redgrove	1·18	1·20	− 0·02	—	24·93	—	1·40	2·11	− 0·71

RAINFALL, AUGUST, 1924—(*continued*).

Place.	Observer.	Month. Aug., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Natal—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Howick	The Gaoler	0·89	0·92	− 0·03	16·42	19·55	− 3·13	0·92	1·24	− 0·32
Ladysmith	D. A. R. Leathern	0·51	0·92	− 0·41	16·27	17·34	− 1·07	0·51	1·12	− 0·61
Maritzburg (Mental Hospital)	The Staff	0·99	0·99	+ 0·00	16·42	21·35	− 4·93	1·02	1·34	− 0·32
Stanger	C. C. Foss	1·40	1·31	+ 0·09	17·62	22·55	− 4·93	1·47	2·39	− 0·92
Vryheid	The Gaoler	0·33	0·75	− 0·42	16·59	19·36	− 2·77	0·33	1·12	− 0·79
Weenen	The Gaoler	0·57	0·82	− 0·25	10·31	16·24	− 5·93	0·57	1·00	− 0·43
Cape Province—										
Aliwal North	A. Alcock	0·25	0·73	− 0·48	14·38	13·74	+ 0·64	0·40	1·14	− 0·74
Beaufort West	The Gaoler	0·41	0·31	+ 0·10	4·79	6·66	− 1·87	0·41	0·58	− 0·17
Bedford	T. C. Hall	1·09	0·91	+ 0·18	10·90	17·13	− 6·23	1·24	1·56	− 0·32
Britstown	The Gaoler	0·05	0·21	− 0·16	7·24	8·66	− 1·42	0·27	0·45	− 0·18
Calvinia	The Gaoler	1·17	0·87	+ 0·30	1·91	6·52	− 1·61	2·04	1·78	+ 0·26
Capetown (Royal Observatory)	The Staff	3·95	3·37	+ 0·58	14·00	19·54	− 5·45	5·51	7·06	− 1·55
Ceres	A. Heatlie	6·54	5·84	+ 0·70	26·84	30·59	− 3·75	10·81	11·91	− 1·10
Carnarvon	A. P. Malherbe	0·07	0·31	− 0·24	6·96	6·17	+ 0·79	0·45	0·52	− 0·07
Clanwilliam	The Gaoler	1·69	1·11	+ 0·58	4·32	6·83	− 2·51	2·25	2·50	− 0·25
Concordia	F. H. Carstens	0·46	0·73	− 0·27	1·59	5·10	− 3·51	0·90	1·40	− 0·50
Driefontein (French Hoek)	The Forester	12·72	11·18	+ 1·54	47·49	59·73	− 12·24	19·86	21·66	− 1·80
East London	A. Downie	0·45	1·98	− 1·53	12·50	19·70	− 7·20	0·80	3·21	− 2·41
Fraserburg	The Gaoler	0·00	0·32	− 0·32	3·67	5·32	− 1·65	0·95	0·61	+ 0·34
Grahamstown	The Vet. Res. Officer	1·30	1·56	− 0·26	9·62	16·93	− 7·31	1·66	2·70	− 1·04
Garies	The Gaoler	0·79	0·75	+ 0·04	2·02	3·93	− 1·91	1·24	1·46	− 0·22
Graaff-Reinet (Convent)	The Mother Superior	0·55	0·52	+ 0·03	6·67	9·13	− 2·46	0·63	0·95	− 0·32
Groot Drakenstein	A. L. Franceys	6·61	4·73	+ 1·88	26·25	26·99	− 0·74	9·81	9·98	− 0·17
Griquatown	The Gaoler	0·00	0·25	− 0·25	—	9·67	—	0·10	0·46	− 0·36
George	Rev. Canon B. Price	3·06	2·43	+ 0·63	15·42	21·69	− 6·27	4·32	4·03	+ 0·29
Hanover	The Gaoler	0·00	0·33	− 0·33	7·00	9·83	2·83	0·17	0·70	− 0·53
Hopetown	The Gaoler	0·00	0·21	− 0·21	12·09	9·31	+ 2·78	0·15	0·51	− 0·36
Kenhardt	R. Seydell	0·03	1·16	− 0·13	2·25	4·59	− 2·34	0·19	0·36	− 0·17
Kimberley	C. H. Dowler	0·00	0·28	− 0·28	9·01	10·90	− 1·89	0·00	0·58	− 0·58
Knysna	The Gaoler	4·03	2·49	+ 1·54	15·55	18·30	− 2·75	4·85	4·64	+ 0·21
Kokstad	H. D. Coyte	1·38	0·64	+ 0·74	15·76	16·26	− 0·50	1·44	0·87	+ 0·57
Kingwilliamstown	W. Kindness	0·56	1·09	− 0·53	11·23	15·52	− 4·29	0·80	2·09	− 1·29
Kuruman	—	—	0·19	—	—	12·37	—	—	0·43	—
Mafeking (Convent)	The Mother Superior	0·04	0·43	− 0·39	10·03	14·17	− 4·14	0·04	0·83	− 0·79
Mossel Bay (Cape St. Blaize)	The Lightkeeper	2·50	1·44	+ 1·06	9·09	11·37	− 2·28	2·88	2·66	+ 0·22
Murraysburg	W. H. Rose-Innes	—	0·37	—	—	7·98	—	—	0·66	—
O'okiep	J. Burrows	0·29	1·00	− 0·71	1·53	5·52	− 3·99	0·58	1·85	− 1·27
Phillipstown	The Gaoler	0·00	0·36	− 0·36	12·51	9·94	+ 2·57	0·00	0·65	− 0·65

RAINFALL, AUGUST, 1924—(*continued*).

Place.	Observer.	Month. Aug., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Cape Province—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches	Inches.	Inches.	Inches.
Piquetberg	The Gaoler	4·99	2·90	+ 2·09	12·12	15·15	− 3·03	6·11	5·74	+ 0·37
Port Elizabeth	The Lightkeeper	2·89	2·12	+ 0·77	12·54	14·24	− 1·70	3·75	3·99	− 0·24
Port St. Johns	The Lightkeeper	3·10	2·03	+ 1·07	25·12	28·18	− 3·06	3·25	3·14	+ 0·11
Port Nolloth	The Lightkeeper	0·52	0·29	+ 0·23	1·12	1·90	− 0·78	0·54	0·62	− 0·08
Prieska	The Gaoler	0·00	0·19	− 0·19	4·03	7·63	− 3·60	0·12	0·40	− 0·28
Queenstown	H. Holley	0·35	0·57	− 0·22	10·11	15·08	− 4·97	0·38	1·11	− 0·73
Steytlerville	The Gaoler	0·10	0·48	− 0·38	3·04	6·28	− 3·24	0·11	0·69	− 0·58
Sutherland	The Gaoler	1·23	0·90	+ 0·33	4·74	7·27	− 2·53	1·59	1·86	− 0·27
Swellendam	The Gaoler	5·42	2·32	+ 3·10	17·36	20·74	− 3·38	6·82	4·49	+ 2·33
Sydney's Hope	Rev. S. Rippon	1·79	1·17	+ 0·62	11·51	13·76	− 2·25	2·11	2·11	± 0·00
Somerset East	C. Harris	0·53	0·98	− 0·45	10·35	15·97	− 5·62	0·63	1·71	− 1·08
Stutterheim	F. C. Bousfield	0·98	0·97	+ 0·01	15·79	18·18	− 2·39	1·19	1·56	− 0·37
Uitenhage	H. Inggs	1·60	1·31	+ 0·29	7·64	10·87	− 3·23	1·86	2·07	− 0·21
Umtata	B. J. Hackitt	0·80	0·76	+ 0·04	10·18	15·74	− 5·56	0·91	1·28	− 0·37
Uniondale	The Gaoler	1·07	1·30	− 0·23	4·77	9·20	− 4·43	1·32	2·27	− 0·95
Upington	The Gaoler	0·03	0·10	− 0·07	4·85	5·43	− 0·58	0·07	0·22	− 0·15
Victoria West	The Gaoler	0·05	0·27	− 0·22	5·33	7·78	− 2·45	0·51	0·55	− 0·04
Vryburg	Chas. Butler	0·00	0·30	− 0·30	11·44	13·78	− 2·34	0·00	0·55	− 0·55
Worcester	The Gaoler	1·96	1·56	+ 0·40	4·77	9·26	− 4·49	2·57	3·39	− 0·82
Wynberg (Convent)	The Mother Superior	7·79	7·07	+ 0·72	23·51	35·04	−11·53	10·25	14·72	− 4·47
Basutoland—										
Mafeteng	F. Hodgson	0·07	0·89	− 0·82	18·64	20·83	− 2·19	0·07	1·47	− 1·40
South-West Africa—										
Aroab	S.W.A. Police	0·00	0·03	− 0·03	6·47	6·27	+ 0·20	0·00	0·05	− 0·05
Aus	E. Marthins	0·16	0·33	− 0·17	0·56	3·33	− 2·77	0·16	0·57	− 0·41
Bethanie	Rev. Peter	0·00	0·02	− 0·02	0·77	2·66	− 1·89	0·00	0·03	− 0·03
Duesternbrock	R. Matthiessen	0·00	0·04	− 0·04	6·21	11·08	− 4·87	0·00	0·05	− 0·05
Gäbis	Rev. P. Rehor	0·00	0·11	− 0·11	0·92	3·21	− 2·29	0·02	0·22	− 0·20
Garinais	F. Bertling	0·00	0·06	− 0·06	3·67	4·55	− 0·88	0·08	0·11	− 0·03
Gibeon	The Postmaster	0·00	0·05	− 0·05	2·43	5·04	− 2·61	0·00	0·09	− 0·09
Gobabis	Rev. Irle	0·00	0·07	− 0·07	9·19	12·06	− 2·87	0·00	0·09	− 0·09
Grootfontein	Pitkowski	0·00	0·02	− 0·02	10·31	17·21	− 6·90	0·00	0·02	− 0·02
Gr. Witvley	G. Maas	0·00	0·07	− 0·01	4·14	11·14	− 7·00	0·00	0·02	− 0·02
Hatibes	G. Freund	0·00	0·00	± 0·00	2·99	6·42	− 3·43	0·00	0·00	± 0·00
Heirachabis	Rev. P. Stroka	0·00	0·06	− 0·06	1·30	3·10	− 1·80	0·12	0·07	+ 0·05
Kalkfontein S.	S.W.A. Police	0·06	0·00	+ 0·06	1·97	3·65	− 1·68	0·24	0·02	+ 0·22
Fransfontein	H. Janson	0·00	0·02	− 0·02	5·85	7·89	− 2·04	0·00	0·02	− 0·00
Luderitz Bay	E. Stocher	0·01	0·11	− 0·10	—	0·56	—	0·01	0·15	− 0·14

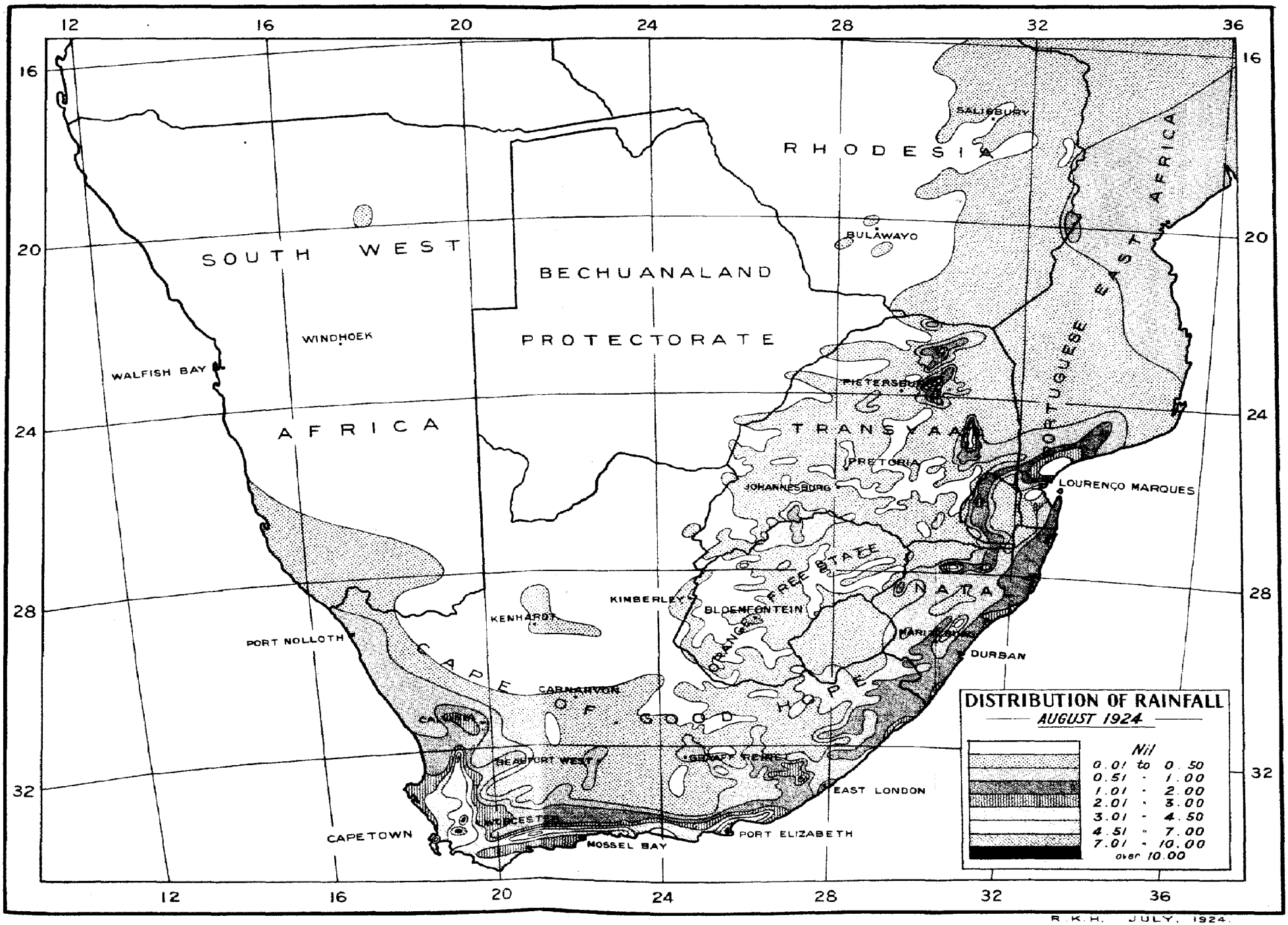
RAINFALL, AUGUST, 1924—(*continued*).

Place.	Observer.	Month. Aug., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Maltahoehe	E. Just	0·00	0·00	± 0·00	3·18	5·35	− 2·17	0·00	0·02	− 0·02
Neu-Heusis	Liebig's Extract Co.	0·00	0·01	− 0·01	4·39	10·99	− 6·60	0·00	0·03	− 0·03
Okahandja	B. Templin	0·00	0·07	− 0·07	6·19	11·16	− 4·97	0·00	0·11	− 0·11
Okasangumingo	R. H. A. Schneider	0·00	0·15	− 0·15	9·36	12·58	− 3·22	0·00	0·15	− 0·15
Omaruru	The Postmaster	0·00	0·02	− 0·02	6·10	12·90	− 6·80	0·00	0·04	− 0·04
Otjiwarongo	The Magistrate	0·00	0·00	± 0·00	8·49	12·22	− 3·73	0·00	0·00	± 0·00
Outjo	The Magistrate	0·00	0·02	− 0·02	3·86	11·69	− 7·83	0·00	0·02	− 0·02
Rehoboth	The Postmaster	0·00	0·11	− 0·11	1·70	9·55	− 7·85	0·00	0·14	− 0·14
Rietfontein	B. Leist	0·01	0·02	− 0·01	7·32	14·33	− 7·01	0·01	0·02	− 0·01
Swakopmund	The Gaoler	0·00	0·04	− 0·04	0·00	0·42	− 0·42	0·00	0·05	− 0·05
Tsumeb	Ing. Schetter	0·00	0·00	± 0·00	11·19	16·78	− 5·59	0·00	0·02	− 0·02
Usakos	Rev. Diehl	0·00	0·00	± 0·00	2·42	4·24	− 1·82	0·00	0·00	± 0·00
Voigtsgrund	A. Voigts	0·00	0·02	− 0·02	10·13	6·13	+ 4·00	0·00	0·03	− 0·03
Warmbad	E. Luchtenstein	0·00	0·09	− 0·09	0·41	3·05	− 2·64	0·01	0·27	− 0·26
Waterberg	D. Hahn	0·00	0·06	− 0·06	9·44	14·80	− 5·36	0·00	0·06	− 0·06
Wilhelmstal	W. Boehmker	0·00	0·03	− 0·03	3·57	9·85	− 6·34	0·00	0·03	− 0·03
Windhoek	Observatory	0·00	0·07	− 0·07	6·91	11·63	− 4·72	0·00	0·11	− 0·11

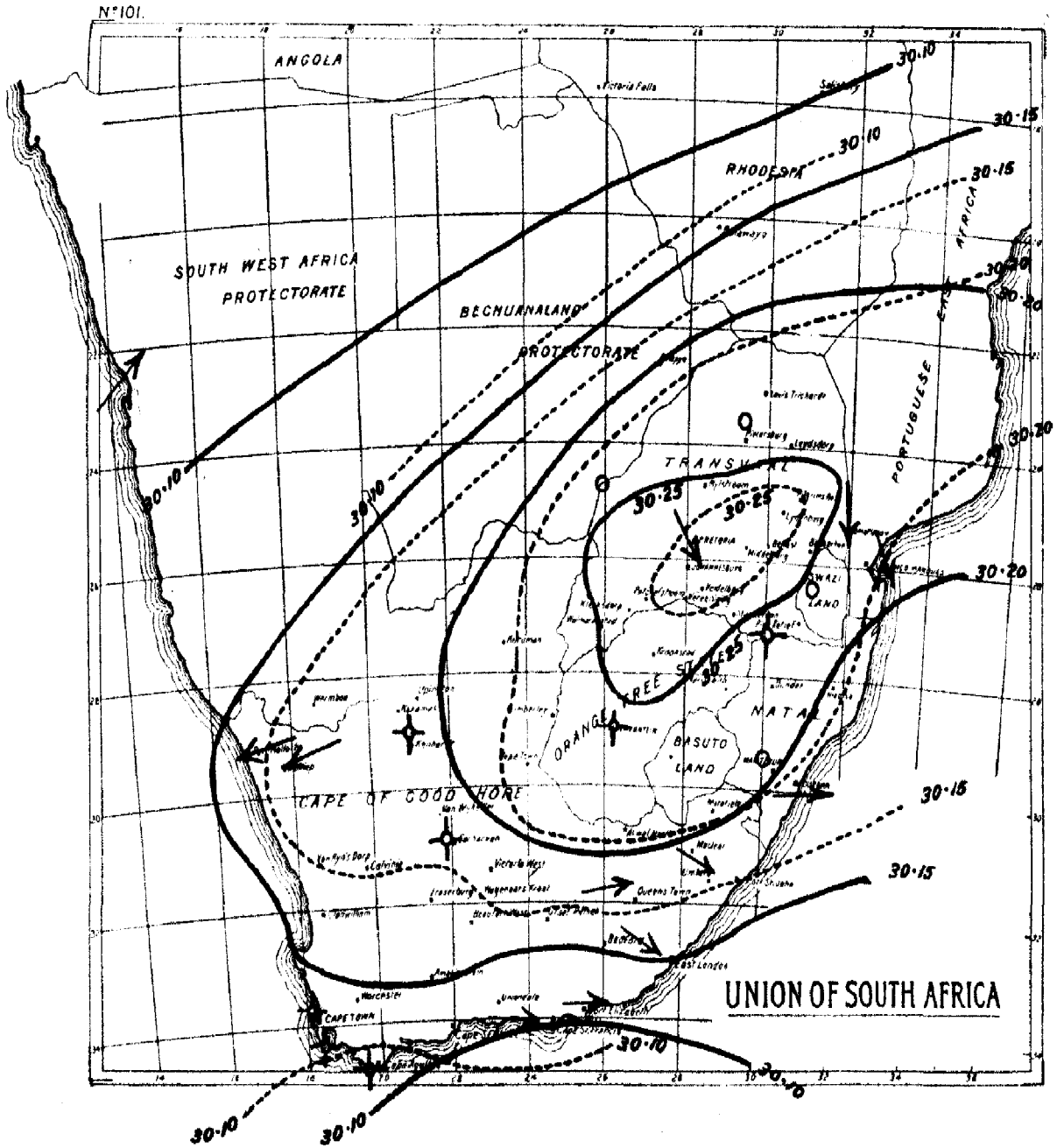
AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), AUGUST, 1924.

Place.	Observer.	Month—August, 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F	° F.	° F.		° F.	
Transvaal—										
Barberton	Walter Grubb	75·8	51·0	63·4	63·4	± 0·0	91·0	23rd	43·0	14th.
Belfast	The Forester	65·7	29·9	47·8	49·5	− 1·7	79·0	2nd	18·0	20th.
Bloemhof	P. J. Jordaan	68·9	35·7	52·3	53·9	− 1·6	83·3	23rd	23·5	8th.
Ermelo	S.A. Police	65·4	36·2	50·8	52·6	− 1·8	77·9	24th	25·6	7th.
Johannesburg (Observatory)	The Staff	63·3	42·0	52·6	54·6	− 2·0	74·6	24th	28·3	7th.
Klerksdorp (Strathmore)	Chas. Scott	70·1	38·5	54·3	55·5	− 1·2	82·0	23rd	26·0	8th.
Komatipoort	B. J. Fothergill	81·5	53·3	67·4	67·4	± 0·0	97·0	18th and 28th	42·0	10th.
Louis Trichardt	C. L. Cope	72·1	45·3	58·7	60·0	− 1·3	88·0	28th	38·0	21st.
Middelburg	Dr. H. A. Spencer	70·5	33·1	51·8	53·8	− 2·0	82·0	23rd and 24th	26·0	20th and 21st.
Nylstroom	G. Bakker	73·7	37·4	55·6	58·0	− 2·4	84·2	28th	30·0	3rd.
Pietersburg	W. J. Frankleyne	73·2	38·7	56·0	57·6	− 1·6	86·5	28th	31·0	9th.
Piet Retief	J. Werner	68·3	42·8	55·6	56·9	− 1·3	83·0	28th	34·0	20th.
Pigeonhole (New Agatha)	Jno. McCallum	65·3	49·2	57·2	—	—	81·0	28th	42·0	21st.
Pilgrims Rest	E. M. Skea	70·0	40·0	55·0	56·1	− 1·1	85·0	23rd	31·0	10th.
Potchefstroom (Exp. Farm)	The Manager	71·8	38·4	55·1	54·0	+ 1·1	83·6	24th	27·1	7th.
Pretoria (Meteorological Office)	The Staff	70·3	40·4	55·4	56·6	− 1·2	81·0	24th	32·5	21st.
Rustenburg	A. Streatfield	72·6	39·1	55·8	59·4	− 3·6	83·0	23rd	32·0	4th and 5th.
Standerton	—	—	—	—	50·0	—	—	—	—	—
Zeerust	H. Dietrich	73·7	37·4	55·6	56·6	− 1·0	85·2	24th	28·0	3rd.
Swaziland—										
Mbabane	Swaziland Police	68·0	44·1	56·0	58·6	− 2·6	86·0	28th	33·0	21st.
Orange Free State—										
Bethulie	J. J. Wardhaugh	66·1	34·5	50·3	52·0	− 1·7	81·3	24th	20·3	8th.
Bloemfontein	G. A. Schepers	65·0	35·3	50·2	51·9	− 1·7	79·5	24th	24·6	7th.
Harrismith	The Forester	60·0	36·6	48·3	49·0	− 0·7	74·0	24th	24·0	20th.
Kroonstad	A. C. Mason	68·1	35·0	51·6	52·2	− 0·6	80·0	24th	25·0	20th.
Ladybrand	The Forester	64·1	35·7	49·9	51·2	− 1·3	77·0	24th	27·0	7th.
Lindley	—	—	—	—	51·0	—	—	—	—	—
Natal—										
Dundee	West Thorrold	70·8	39·1	55·0	58·3	− 3·3	83·0	23rd and 28th	30·0	8th, 9th, 20th, and 21st.
Durban (Point)	The Port Captain	70·0	56·7	63·4	66·0	− 2·6	77·4	27th	48·6	8th.
Empangeni	The Forester	72·8	53·9	63·4	65·2	− 1·8	90·0	27th	45·0	9th.
Estcourt	The Town Clerk	68·1	37·3	52·7	56·9	− 4·2	82·0	28th	26·0	9th.
Hlabisa	E. E. Redgrove	71·5	51·3	61·4	65·6	− 4·2	87·0	27th	42·0	7th.
Ladysmith	D. A. R. Leathern	70·5	41·5	56·0	59·4	− 3·4	83·0	24th and 27th	32·0	9th, 10th, and 11th.
Maritzburg (Mental Hospital)	The Staff	71·7	45·8	58·8	62·4	− 3·6	88·0	27th	33·0	8th.
Stanger	Cecil C. Foss	74·7	54·8	64·8	65·2	− 0·4	96·3	27th	48·0	8th and 9th.
Weenen	The Gaoler	74·3	39·4	56·8	58·0	− 1·2	85·5	27th and 28th	30·0	8th 9th, 20th, and 21st.

SOUTH AFRICA



R. K. H. JULY, 1924.



August, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for August.

AIR TEMPERATURES, AUGUST, 1924—(*continued*).

Place.	Observer.	Month—August, 1924. Mean Max.	Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Cape Province—										
Aliwal North	Alex. Alcock	65·0	34·5	49·8	50·9	− 1·1	81·0	24th	24·5	8th.
Bedford	Thos. C. Hall	65·0	42·6	53·8	57·0	− 3·2	77·0	15th	30·0	8th.
Capetown (Royal Observatory)	The Staff	63·2	47·4	55·3	55·6	− 0·3	77·2	9th	37·9	7th.
Carnarvon	A. P. Malherbe	63·9	34·2	49·0	51·2	− 2·2	79·0	24th	26·0	30th.
Clanwilliam	—	—	—	—	55·8	—	—	—	—	—
East London	The Port Captain	69·7	50·6	60·2	60·9	− 0·7	99·2	27th	40·4	8th.
Graaff-Reinet (Convent)	The Mother Superior	69·6	44·5	57·0	55·4	+ 1·6	86·4	27th	32·0	8th.
Grahamstown	The Vet. Res. Officer	66·4	39·2	52·8	56·4	− 3·6	80·6	27th	27·8	8th.
Groot Drakenstein	A. Franceys	64·8	41·6	53·2	54·4	− 1·2	79·2	13th	33·8	12th.
Kenhardt	R. Seydell	71·3	38·1	54·7	55·8	− 1·1	87·0	24th	30·0	7th, 8th, and 30th.
Kimberley	C. H. Dowler	70·8	39·8	55·3	55·5	− 0·2	84·0	24th	29·0	7th and 8th.
Kingwilliamstown	W. A. Kindness	71·0	43·9	57·4	59·5	− 2·1	93·0	27th	32·0	8th.
Kokstad	H. D. Coyte	65·2	36·8	51·0	49·8	+ 1·2	83·0	27th	22·9	8th.
Mafeking (Convent)	The Mother Superior	72·5	40·3	56·4	59·7	− 3·3	83·5	23rd	30·0	20th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	64·1	51·2	57·6	58·0	− 0·4	80·0	26th	44·0	7th and 31st.
Murraysburg	W. H. Rose-Innes	—	—	—	48·4	—	—	—	—	—
O'okiep	J. Burrows	64·0	42·8	53·4	53·8	− 0·4	77·2	10th	34·5	7th.
Port Elizabeth	The Lightkeeper	64·7	49·4	57·0	59·3	− 2·3	87·0	14th	43·0	8th and 9th.
Port Nolloth	The Lightkeeper	61·7	44·5	53·1	54·2	− 1·1	89·5	13th	89·0	22nd, 29th, and 30th.
Port St. Johns (Cape Hermes)	The Lightkeeper	69·5	55·3	62·4	61·6	+ 0·8	84·0	10th	48·0	9th.
Queenstown	H. Holley	66·1	39·7	52·9	53·4	− 0·5	82·0	27th	25·0	8th.
Somerset East	C. Harris	68·6	42·7	55·6	56·6	− 1·0	88·4	27th	30·6	8th.
Stutterheim	F. C. Bousfield	67·7	42·8	55·2	56·2	− 1·0	87·2	27th	28·0	8th.
Sydney's Hope	Rev. S. Rippon	65·2	46·1	55·6	56·3	− 0·7	86·0	27th	37·5	7th.
Uitenhage	H. Inggs	70·3	41·8	56·6	59·4	− 2·8	88·5	14th	30·5	9th.
Umtata	P. Hackett	71·1	40·0	55·6	57·0	− 1·4	90·7	27th	29·2	8th.
Vryburg	Chas. Butler	71·5	35·1	53·3	52·7	+ 0·6	84·0	23rd	25·0	8th.
Wynberg (Convent)	The Mother Superior	64·2	46·5	55·4	56·6	− 1·2	77·5	13th	41·5	8th.
Basutoland—										
Mafeteng	F. Hodgson	60·4	35·8	48·1	50·1	− 2·0	75·0	24th	25·0	7th.

Blank page retained for pagination

2371—25/3/25—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. **SEPTEMBER, 1924.** **No. 57.**

MEAN atmospheric pressure slightly higher than usual in the south, practically **normal elsewhere** ; mean temperature about 1½ degree below the average, with **cool days and nights** ; a cold snap at the beginning of the month, with killing **frosts, destroying** fruit in many parts ; a warm spell about the 18th to 20th ; **some heavy showers** in the south of the Cape Province at the beginning of the **second week, and** good rains affecting mainly the eastern half of the Union **during** the last ten days of the month, enabling ploughing operations to be **carried** out over a wide area ; precipitation considerably above the normal **over the Transvaal,** Free State, Natal, parts of the east of the Cape Province, **Kaffraria,** and Bechuanaland, also over portions of the northern border and the **Karroos** ; a moderate number of thunderstorms ; some destructive hailstorms **mainly** in the west of the Transvaal and Orange Free State ; a few windstorms **causing** damage to roofs, uprooting trees, etc., a fall of snow mainly on the **22nd to** 23rd, over parts of Natal, the east of the Harrismith District (Orange **Free State)** on the Drakensbergen, the higher stations and mountains in the **east and** south of the Cape Province ; such were the fairly satisfactory weather **conditions** during September, 1924.

Pressure.—Mean pressure during September was very slightly lower than **usual** in the east and along the west coast, but higher than the average over the **interior** and south of the Cape Province. Anticyclonic conditions prevailed throughout the month, high-pressure areas being present every day, principally in the east and west. The first low pressure of the month occurred over South-West Africa and Bechuanaland on the morning of the 6th ; had pushed **further** south well into the Cape Province on the 7th ; on the 8th the head of a **complementary** inverted V-depression had appeared on the south coast ; on the 9th the coast depression had passed off to eastward and was replaced by a high pressure from westward, which had apparently forced the interior "low" northwards into Southern Rhodesia. Another equatorial tongue of **low pressure** appeared on the 11th in the west of the Union, in much the same **position** as that on the 6th to 7th ; pressure had fallen still lower on the 12th, **the isobars** being considerably compressed in consequence of the advance of an

anticyclone on the west coast; an inverted V-depression had also appeared on the south coast; on the 13th the interior depression had been displaced northwards by the advancing cyclone, with an increase in the value of the isobars, whilst the inverted V had pushed to the north-east, and was affecting the south-east of the Union from Zululand to the Peninsula; by the 14th only a small portion of the coastal depression was evident on the south coast, and this had passed off on the 15th; on the 17th and 18th the equatorial depression was again evident over the west of the Union, with a coastal depression on the 19th; this latter had passed to Natal on the 20th, and had entirely disappeared the next day, leaving the country under the influence of an anticyclone with its centre off the south-west coast on the 21st; on the 22nd a well-developed anticyclone covered the Union, having the highest pressure along the south coast and with isobars running practically east and west; on the 23rd the isobars lay in a north-east to south-west direction, whilst there were indications of the formation of a "low" over South-West Africa; the next day (24th) this "low" had developed still further, affecting practically the north-west of the Cape and South-West Africa, whilst the eastern anticyclone was passing off; this equatorial tongue of low pressure persisted over practically the same area, but with a tendency to move to a more central position, with high pressure in the south and east, when the depression seems to have broken through to the coast, forming a "low" over the south-west; on the 29th the coastal depression had moved on to the south coast; this depression on the coast had disappeared on the 30th, leaving the equatorial tongue over the centre with gradually increasing pressure on all sides, i.e. to west, north, and east.

Temperature.—The mean temperature over the Union during September was 59·8 degrees, or 1·3 degree lower than the normal. This deficiency in temperature was mainly due to the days, with a mean of 72·6 degrees, being 2·0 degrees, whilst the nights, with 46·9 degrees, were only 0·8 degree cooler than usual. A deficient mean temperature was common to all the four Provinces, the shortage being greatest (3·2 degrees) in Natal, and least (0·4 degree) over the Cape Province. The mean temperature of the month over these two Provinces were 62·3 degrees and 58·9 degrees respectively; over the Transvaal it was 60·9 degrees, or 1·8 degree lower than usual, whilst in the Free State the mean of 56·4 degrees was sub-normal by 1·1 degree. Both mean maxima and mean minima were lower than the average in the Transvaal, Free State, and Natal, whilst in the Cape Province only the mean maximum was lower, whereas the mean minimum was slightly higher than the average. The largest negative departure of the mean day temperature from normal was experienced in Natal, where the mean maximum of 73·8 degrees was 5·4 degrees lower than usual; the next in order was the Transvaal, where the mean day temperature (75·8 degrees) was 1·8 degree less than normal; in the Cape Province, the corresponding mean of 70·5 degrees was 1·1 degree less; whilst in the Free State, the mean maximum of 71·2 degrees was only 0·8 degree lower than the average. The mean night temperatures over the different Provinces showed much smaller negative departures. Thus in the Transvaal, the mean minimum of 46·0 degrees was less than usual by 1·7 degree; in the Free State, the mean night value of 41·5 degrees was 1·6 degree below the average; and in Natal, the mean minimum (50·8 degrees) was only 1 degree under normal; in the Cape Province, the mean minimum (47·2 degrees) was, on the other hand, 0·2 degree above the corresponding normal. At the individual stations the mean temperature for September was mostly below normal, commonly by 2–3 degrees, particularly in Natal and the Transvaal. Some exceptional areas were, however, met with, in which the temperature of this month was slightly in excess, as in the east of the Free State, the north of Bechuanaland, the more inland portions of the south-east of the Cape Province, parts of the Karroos, of the south coast, the

Cape Peninsula, and the Namaqualand coast. In the Transvaal, the sub-normal amounts varied between half a degree at Johannesburg and Potchefstroom and 3·8 degrees at Louis Trichardt; in Natal, the *minus* quantities lay mostly between 3 and 4 degrees, but ranged from 1·6 degree at Stanger to 4·9 degrees at Dundee; in the Free State, the mean temperature of September was cooler than usual by 1–2 degrees, being greatest (2·0 degrees) at Kroonstad and least (1·2 degree) at Harrismith. In the Cape Province, the deficits in mean temperature were mostly about 2 degrees in parts of the east, and the south-east coastal area and of the south-west, on the Namaqualand plateau, and the south of Bechuanaland, but decreased to less than 1 degree elsewhere; they ranged from 0·2 degree at Queenstown to 2·1 degrees at Uitenhage. At Mbabane, in Swaziland, the month was cooler than usual by 2·9 degrees, and at Mafeteng, in Basutoland, by 3·8 degrees. On the other hand, Ladybrand, on the east of the Orange Free State, was 1 degree warmer than the average during September, whilst in the Cape Province the excesses varied from a tenth of a degree at Port Nolloth, Somerset East, and Bedford to 1·5 degree at Carnarvon. The mean day temperatures were, with few exceptions, sub-normal over the Transvaal, including Swaziland, Natal, and Free State. The deficits in the Transvaal varied from 0·4 degree at Belfast to 4·8 degrees at Komatipoort; in Natal, from 4·2 degrees at Stanger to 6·5 degrees at Ladysmith; and in the Orange Free State, from 0·5 degree at Harrismith and Bloemfontein to 2·1 degrees at Bethulie. The only exceptional stations were Zeerust and Bloemhof, in the Transvaal, at which the mean maxima were 1·4 degree and 0·2 degree respectively higher than usual; and Ladybrand, in the Orange Free State, where there was an excess of 0·7 degree. Similarly the mean night temperatures were mostly lower than the average over these Provinces, the *minus* quantities varying in the Transvaal from 0·2 degree at Potchefstroom to 4·6 degrees at Louis Trichardt. In Natal, the mean minima were from 0·1 degree at Ladysmith to 5·3 degrees at Dundee lower than usual; whilst the shortages in the Free State ranged from 1·5 degree at Bethulie to 2·9 degrees at Bloemfontein. In the Transvaal, however, excesses amounting to 0·8 degree at Pretoria and 0·3 degree at Pilgrims Rest were met with; in Natal, there occurred *plus* amounts of 1·6 degree at Stanger and 0·9 degree at Durban; whilst in the Free State, an excess of 1·4 degree in the mean minimum occurred at Ladybrand. In the Cape Province, the mean day temperatures were mostly below normal, but exceeded the average at some stations in the south-east, in the Cape Peninsula, and also in parts of the innermost plateau. These deficits were large (2–4 inches) on or near the south coast and on the Namaqualand plateau; further inland the shortages decreased to less than a degree in the south-east, also on the Namaqualand coast; in the north-east and Bechuanaland they increased to 1–2 degrees. The variation in amount was from 0·2 degree at Graaff-Reinet and Queenstown to 4·7 degrees at Uitenhage. On the other hand, the excesses ranged from 0·5 degree at Wynberg to 2·0 degrees at Carnarvon. The mean night temperatures were generally higher than usual along the coasts, parts of the south-east and of the interior, but lower than the average elsewhere. The excesses varied from half a degree at Kingwilliamstown and Uitenhage to 3·0 degrees at Mossel Bay, and the deficits from 0·1 degree at Stutterheim to 3·0 degrees at Kenhardt. The mean warmest station during September was Komatipoort, with a temperature of 69·7 degrees, and the mean coolest, Belfast, with 53·2 degrees, both in the Transvaal, showing a difference of 16·5 degrees. The corresponding stations in the other Provinces were, in the Orange Free State, Kroonstad (58·6 degrees) and Harrismith (53·4 degrees), a difference of 5·2 degrees; in Natal, Empangeni (65·4 degrees) and Dundee (58·1 degrees), a difference of 7·3 degrees; in the Cape Province, Mafeking (64·0 degrees) and Port Nolloth (54·8 degrees), a difference of 9·2 degrees. The highest mean maximum was

82·9 degrees at Komatipoort, and the lowest mean minimum, 36·7 degrees at Belfast. The highest temperatures of the month were recorded on fourteen days, viz., 2nd, 3rd, 7th, 13th to 15th, 17th to 21st, and 28th to 30th, principally over the Free State, Natal, and Cape Province on the 18th and 19th, and over the Transvaal on the 20th to 21st. The lowest temperatures were registered on eleven days, viz., 1st to 4th, 14th to 16th, 21st, 23rd, 24th, and 26th, the cold spell, lasting from the 1st to 3rd, being practically general over the whole Union. At no station did the daily maximum reach 100 degrees or over, the highest recorded being 99·0 degrees on the 20th at Komatipoort. In the other Provinces the extreme maxima registered were 98·8 degrees on the 19th at Umtata (Cape Province), 97·2 degrees at Maritzburg (Natal) on the same day, and 88·4 degrees at Bethulie (Orange Free State), also on the same date. At more than half the stations the lowest recorded temperature was 32·0 degrees or under, the extreme minimum being 17·0 degrees on the 3rd at Belfast. Over the remaining Provinces the lowest readings this month were 21·0 degrees on the 1st at Carnarvan (Cape Province), 21·0 degrees on the 2nd at Harrismith (Orange Free State), and 29·0 degrees on the 2nd and 3rd at Dundee (Natal). There was therefore an extreme range during September of 82·0 degrees in the Transvaal, and incidentally over the Union, 77·8 degrees over the Cape Province, 68·2 degrees over Natal, and 67·4 degrees over the Free State. *Hoar-frost* occurred over a very wide area between the 1st and 3rd of the month. Temperature fell unusually low for the month in some areas, causing considerable damage to early fruit, as at Mosdene (Division Waterberg), Pietersburg, and Queenstown, and spoiling quantities of fruit blossoms, as at Nottingham Road. At Arbury (near Brits), in the Rustenburg Division, young plants on the banks of the river were destroyed. Much more local frosts were experienced towards the end of the month, as on the 22nd at Queenstown, where additional damage was caused to various classes of fruit.

Precipitation.—Good rains were general over that portion of the Union lying east of the 25th meridian and south of the 25th parallel, along the south coast, and in the south-west of the Cape Province. Here the amounts registered increased 1 inch in the more northerly and westerly portions to over 7 inches in parts of the Natal and Zululand coasts; along the south coast the quantities exceeded 4½ inches in parts and exceeded 7 inches in part of the mountainous area of the south-west. Amounts of less than an inch occurred over the greater part of the west coastal area, the Karroos, northern border, Bechuanaland, and the northern half of the Transvaal, with the exception of the Zoutpansberg highland, where they rose to over 3 inches; similar small amounts extended into South-West Africa in the middle and north of the eastern portion of that Territory. Compared with the normal, the precipitation during September was in excess of the average in the Transvaal, Natal, the greater part of the Free State, Bechuanaland, and portions of Kaffraria, of the east, and of the Karroos, and of the south-west of the Cape Province. In the Transvaal, the surplus amounts were mostly less than 1 inch, but exceeded that amount in parts of the centre, and east of the high veld, and the south-east of the middle veld; they varied from 0·06 inch at Pilgrims Rest to 2·97 inches at Piet Retief. At Louis Trichardt the rainfall was normal, and at Barberton only one-hundredth of an inch less than usual. In Swaziland, Mbabane had a total of 3·37 inches, or 1·51 inch above the average. In Natal, the *plus* amounts ranged from 0·09 inch at Durban to 2·71 inches at Empangeni. In the Free State, the excesses were between 1 inch and 3 inches in the east and north-east, but less than an inch in the north, centre, and south, ranging from 0·51 inch at Kroonstad to 2·92 inches at Harrismith. In the west, however, Boshof had a total 0·75 inch under the normal amount. In Basutoland, Mafeking had a depth of rainfall 1·67 inch greater than the average. In the Cape Province, the excesses ranged

from 0·08 inch at Stutterheim to 1·97 inch at Uniondale; but were generally less than 1 inch, except in Bechuanaland, where they were greater than this amount. The deficits over the remainder of the Cape Province varied between 0·01 inch at Griquatown and 1·76 inch at Port St. Johns. A total absence of rain, that is, a deficit of 100 per cent., was experienced over a fairly broad stretch of country in the west of the Cape Province, the continuous area including the western portion of the Karroos, part of Gordonia, the greater part of South-West Africa, the north of the Bechuanaland Protectorate, and a small portion of the valley of the Limpopo in the north of the Transvaal. Showers fell in the Zoutpansberg Division of the Transvaal on the 9th: over the Barberton and Lydenburg Divisions on the 11th; whilst more or less local rains occurred over the Province at irregular intervals between the 21st and 28th, and on the 30th. Good rains also fell in Swaziland between the 10th and 13th, 21st, 22nd, 24th to 28th, and on the 30th. In the Free State, light rains fell in the Bethlehem District, and generally between the 22nd and 26th, but were restricted mainly to the north, east, and south on the 28th, and general again on the 30th. In Natal, good rains occurred from the 21st to the end of the month. In the Cape Province, the rains towards the end of the month affected also the greater part of the east, including Kaffraria, part of the northern Karroo, and the northern border. Showers fell over the Cape Peninsula practically every day between the 7th and 21st, and at frequent intervals over the south coast, the south-west, and the more southerly portion of the west coastal area. Elsewhere a few light rains fell at intervals, principally on the 8th, when they were rather heavy over the southern Karroo, also on the 21st and 24th.

Snow fell between the 22nd and 23rd over parts of the Districts of Harrismith, Vrede, and Bethlehem, in the Free State: in the south and west of Natal; and in part of Matatiele, Kokstad, in the east of the Cape Province. It was also reported as lying on the Outeniqua Mountains, the Zwartbergen, the Drakensberg, and Mount Currie. The greatest depth of snow noted was 12 inches at Van Reenen (District Harrismith), whereas at Kromhof, in the same district, it was only 4 inches deep. A number of thunderstorms of moderate intensity were reported during the second half of the month. Destructive hailstorms, accompanied in many cases by strong winds, were much more numerous and widespread than is usual during this month. Thus on the 23rd some damage was done to crops by hail at Legpan, in the District of Fauresmith. At Nieuwjaarsfontein there was a severe hailstorm on the 24th, whilst a cyclone in the vicinity uprooted trees, destroyed huts and motor sheds, and blew down stone walls. A similar phenomenon was seen passing to the north of Meadows Siding at 9 p.m. the same day. On the 24th hail fell at Beltresna No. 304 (Division Wakkerstroom), and the subsequent weather was cold enough to cause the death of several young lambs. On the same day hail at Bainsvlei (District Bloemfontein), causing slight damage to fruit; also at Thorley (District Thaba 'Nchu), where the ground was white. On the 25th a severe hailstorm passed over the farms Sandfontein, Spreeuwfontein, Holpan, Vecht Vallei and Mimosa, in the Bloemhof Division, the stones at Spreeuwfontein being of the size of small hen's eggs. At Sandfontein the accompanying strong wind, described as a cyclone, damaged one farmhouse and some trees; on the farm Mimosa houses were unroofed, trees uprooted, and in some instances the feathers blown off poultry by a "terrific tornado." On the same date hailstorms occurred at Sebastian, Mooivlei No. 56, and Morgenster, in the Ermelo District, causing severe damage to young fruit trees; also at Driehoek (District Kroonstad) large hail caused damage to fruit. On the afternoon of the same day, at Sydney-on-Vaal (Cape), hail, 2½ inches in diameter and weighing up to 2 ounces, continued from 2.45 p.m. to 3.30 p.m.; all quarter-inch glass was broken, even when reinforced with wire netting; galvanized corrugated iron at the hospital

was pierced. Fortunately, there was an absence of wind, otherwise much greater damage would have been done. This storm covered a narrow area, the hail being not much more than a mile in width, and travelled in the line of a point between Griquatown and Postmasburg, through Sydney-on-Vaal, towards Klipdam and Windsorton. On the 26th heavy hailstorms were reported from Blaauwheuvel (District Edenburg) and Paardekraal (District Wepener), causing much damage to fruit trees and vegetable gardens. On the 27th a similar storm caused damage to fruit at Goudhoek (District Winburg), and on the 28th at Bloemhof (District Philippolis); on the 29th at Leeuwkuil (Division Heidelberg), fruit, oats, and gardens were damaged. On the 30th hailstorms of considerable severity occurred at Katdoornput and Bainsvlei, in the Bloemfontein District, at L'Esperance and Clocolan (District Ladybrand), damaging fruit, crops, and window panes. At Bainsvlei the stones were about the size of pigeon's eggs. On the night of the 30th a strong wind, unaccompanied by hail, however, damaged several roofs at Elandsfontein, in the Potchefstroom Division. Rain and hail, accompanied by a south-westerly gale, occurred at Prieska on the last day of the month. About 7 p.m. on the 19th, a fierce windstorm passed over Kimberley, carrying away roofs of sheds and portions of other buildings, causing damage to the Olympia Garden Theatre and the Kimberley Creameries. The accumulated rainfall since the beginning of the year is in excess of the average in the Transvaal over practically the whole of the eastern half of the high veld, part of the west and north-west of the Province, together with portions of the Zoutpansberg highland; in Swaziland, the west of Natal; the north-east and south of the Free State; and detached parts of the north-east of Kaffraria, of the northern Karroo, of the northern border, and Bechuanaland, in the Cape Province. Over the remainder of the Union the rainfall was sub-normal. The surplus amounts varied in the Transvaal from 0·49 inch at Zeerust to 6·81 inches at Pigeonhole; in Natal, between 0·33 inch at Ladysmith and 1·88 inch at Dundee; in the Orange Free State, from 0·97 inch at Harrismith to 3·88 inches at Bethulie; and in the Cape Province, from 0·27 inch at Kokstad to 2·74 inches at Philipstown. The deficits for the nine months, in the Transvaal, lay between 1·27 inch at Johannesburg (Observatory) and 13·48 inches at Woodbush, being between 6 and 10 inches in the east and 1–4 inches in the centre and west. In the Free State, the *minus* quantities were greatest in the north and west and least in the centre and east, varying from 0·40 inch at Bloemfontein to 4·11 inches at Kroonstad. In Natal, the shortages amounted mostly to 2–4 inches, but ranged from 1·11 inch at Durban to 4·92 inches at Weenen. In the Cape Province, the shortages were between 4–8 inches in parts of the south-east, of the east-central Karroo, of the south coast, and Cape Peninsula, and Namaqualand, exceeding 12 inches in portions of the south-west and the Cape Peninsula. Over the remainder of the Province the deficits were generally between 2 and 3 inches. The *minus* quantities ranged from 12·50 inches or 31 per cent. at Wynberg, in the Cape Peninsula, to 0·70 inch or 13 per cent. at Upington. In South-West Africa the only station showing a surplus was Voigtsgrund, where it amounted to 3·69 inches, or 63 per cent. of the normal. Over the southern half of the Territory the rainfall for the nine months was generally 2–3 inches less than usual, but the deficits varied from 0·17 inches or 3 per cent. at Aroab to 3·76 inches or 55 per cent. at Haribes. Over the northern half the sub-normal quantities were mostly between 5 and 7 inches, but ranging from 0·47 inch or 100 per cent. at Swakopmund to 8·03 inches or 83 per cent. at Rehoboth.

The gross totals for the three months, July to September, were above normal in the north-east, south-east, south, south-west, and detached portions of the extreme east and west of the Transvaal; the north, east, and centre of the Free State; the greater part of Natal; Basutoland; detached portions

of Kaffraria and the south-east of the Cape Province; also parts of the west of the south coastal area, the southern and northern Karroos and Bechuanaland. Elsewhere the precipitation during this quarter of the year was under the average. The excesses in the Transvaal were greatest, between 1 inch and 2 inches in the east and mostly less than half an inch elsewhere. The *plus* amounts varied from 2·47 inches or 118 per cent. at Pigeonhole to 0·03 inch or 3 per cent. at Nylstroom. The shortages were mostly less than half an inch, but ranged from 0·83 inch or 44 per cent. of the normal to 0·11 inch or 15 per cent. at Pietersburg. In the Free State the surplus was greatest, 1·94 inch or 87 per cent. at Harrismith in the north-east, and least, 0·03 inch or 2 per cent. at Kroonstad. The deficits were between 1·72 inch or 85 per cent. at Boshof and 0·02 inch or 1 per cent. at Bethulie. Over Natal the excesses were mostly less than an inch, but exceeded 1 inch at Hlabisa and 2 inches at Empangeni; they varied from 0·01 inch or less than 1 per cent. at Vryheid to 2·30 inches or 35 per cent. at Empangeni. The deficits were confined mainly to the Natal coast, but extended inland as far as Maritzburg, where the shortage was 0·18 inch or 5 per cent., but rose to 0·62 inch or 11 per cent. at Stanger. In the Cape Province the *plus* amounts lay mostly between half an inch and an inch, but varied from 0·05 inch or 6 per cent. at Fraserburg to 1·34 inch or 62 per cent. at Kokstad. The *minus* quantities were generally less than half an inch over the interior, rising to 1–2 inches in portions of the east of the central Karroo, the south-east, the south and east coastal areas, and from 2–5 inches over the Cape Peninsula and at East London. The largest deficit was 5·44 inches or 28 per cent. at Wynberg, and the smallest 0·02 inch or 1 per cent. at Aliwal North. As this period constitutes part of the well-marked dry season in South-West Africa, the normal amounts are mostly very small, less than one-third of an inch, except at Aus, where the average for the three months is 0·81 inch. It is therefore not surprising that no rainfall was registered at most of the stations there. Small amounts, however, were recorded in the more northerly and southerly parts, varying from 0·01 inch at Warmbad to 0·93 inch at Gobabis. The latter amount was about 4½ times the normal, whilst small actual excesses of 0·05 inch and 0·22 inch occurred at Heirachabis and Kalkfontein in the south. The other amounts were under the average.

State of Country, etc.—Transvaal: The exceptionally severe cold spell at the beginning of the month caused a considerable amount of damage to early fruit in parts of the Waterberg, Pietersburg, and Rustenburg Divisions. This cool weather was succeeded by warm and occasionally hot days, with local thunderstorms of no great severity. After the middle of the month the heat usual about this time was tempered by a succession of cloudy days, with good soaking rains, particularly over the southern half of the Province. The precipitation was sufficient to enable ploughing and cultivation to be carried out in a number of localities, as, for example, the Ermelo and Rustenburg Divisions, in the latter of which cotton planting was started on most farms, with every prospect of a good season. The veld was improving rapidly in many places, and at Rietvlei No. 102 (Division Ermelo) grass was stated to be plentiful. The beneficial effects of these rains were nullified to some extent by the occurrence of destructive hailstorms and strong winds, which appear to have taken on the character of a tornado in one or two cases, causing damage to fruit, crops, and houses. These storms affected mainly the Bloemhof, Ermelo, Potchefstroom, and Heidelberg Districts. At Beltresna No. 304 (Division Wakkerstroom) the weather succeeding a hailstorm on the 24th was sufficiently cold to cause the death of several young lambs. Generally speaking, cattle were reported to be in wonderfully good condition, considering the long, severe drought broken by the rains of this month. In parts of the Zoutpansberg Division, however, as at Altydmooi, stock were in very low condition and the veld dry. In Swaziland,

where exceptionally good rains had fallen, the veld was coming on very well, and ploughing was general. East Coast fever has broken out in the Hluti District, about forty miles south-east of Hlatikulu, but the veterinary authorities were said to have things well in hand so that the disease was unlikely to spread. *Orange Free State :* Practically identical conditions prevailed during the month over the Free State. The good, steady soaking rains materially benefited the veld, bringing on the grass, and enabled a considerable amount of ploughing to be carried out. Some severe losses in sheep and lambs, and to a less extent among cattle in poor condition, were caused by the cold winds and weather during and after the rains at the end of the month. Snow was mingled with these rains in parts of the Harrismith, Bethlehem, and Vrede Districts. On a farm near Rockwood, in the Thaba 'Nchu District of the Free State, seventy-four sheep were washed away as the result of heavy rain, associated with a severe thunderstorm. *Natal :* Practically all the principal features of the weather experienced in the two previously mentioned Provinces were repeated in Natal. Severe frost at the beginning of the month spoiled quantities of fruit blossom at Nottingham Road. Hot, dry, windy weather was experienced generally during the first half of the month, but the drought was broken by good soaking rains of practically daily occurrence from the 20th. These were accompanied by a cold spell, during which snow fell on the 22nd and 23rd at Ladysmith, Nottingham Road, and on the Drakensberg, causing the loss of a number of lambs and stock from exposure. Ploughing and planting were being actively carried on, whilst pasturage was improving rapidly. No destructive, but only slight hailstorms were reported from this Province. In the *Cape Province* good rains fell towards the end of the month over the more easterly parts of the country, and at intervals during this period over a considerable portion of the interior. These rains served to relieve the drought and save the crops, whilst ploughing and sowing were started over a wide area in the east and part of the interior. In a number of instances, however, as at Bedford, Cathcart, etc., they were insufficient to benefit the land to any material extent. Drought continues unbroken in Namaqualand and over parts of the innermost plateau as far as the Orange River, whilst the absence of rain was beginning to be felt in the Division of Hanover, although stock there were in good condition. Seasonable rains fell over the south-west and frequent soaking showers along the south coast, particularly between the 8th to 9th. Sheep were generally doing well, but cattle were mostly in poor condition, many dying during the month in Stutterheim, Queenstown, Mount Currie, and Kenhardt from starvation, and at Kokstad from cold. In Bechuanaland the unusual rains were general to the north-west and south-east of Mochudi, and the grass was beginning to sprout. High winds were frequent throughout the month. In Basutoland good rains with some severe thunder and hailstorms occurred, causing much damage to fruit and gardens at Maseru. The wheat crops were partially saved, the veld was beginning to look green, and ploughing was being carried out to a considerable extent.

Water Supply, etc.—Comparatively few notes were available as to the state of rivers and water supply. At Barberton, in the east of the Transvaal, sufficient rain had fallen to augment the streams to some extent, whilst from Nylstroom it was reported that the rain had solved the water question for this season. As a result of the abundant rains at Hlatikulu, Swaziland, there was no fear of a shortage there this season. At Rockwood (District Thaba 'Nchu), in the Free State, all dams were filled in two hours as the result of a severe thunderstorm. Some fairly heavy floods in the river at Klaver (Division Van Rhynsdorp) improved the position for summer flow. At Kakamas, the Orange River had practically ceased to flow, and the furrow was very low at the end of the month.

NOVEMBER WEATHER CHARACTERISTICS.

With the exception of the western and south-western coastal districts, where the rainfall is decreasing, there is a general increase in the amount of precipitation throughout the Union.

The heaviest rainfall should now be experienced in the eastern Transvaal and Swaziland, with normals of 5·0 inches. In Zululand, precipitation averages 4·5 inches; in Natal, 4·0 inches; in Kaffraria, 3·5 inches; in the south-east and Basutoland, 3·0 inches; in the western Transvaal and north-east of the Cape Province and along the south coast, 2·5 inches; in the Orange Free State, 2·0 inches; over the northern and east-central Karroo and the Cape Peninsula, 1·5 inch, and slightly more than 1·0 inch in the remainder of the Province, except the western and south-western coastal districts, where the normal is less than 1·0 inch. Severe thunder and hailstorms may occur, more especially inland; in fact, the number of hail days is now at its maximum over the Transvaal, whilst the curve is still rising elsewhere.

The highest mean daily temperature is now experienced over the northern borders of the Cape Province, where the normal is 72 degrees. In Natal and the eastern Transvaal a mean temperature of 71 degrees may be anticipated, and on the west-central Karroo, 69 degrees; on the southern Karroo, 68 degrees; on the east-central Karroo and in the Orange Free State, 67 degrees; in the Peninsula, 62 degrees; and over the remainder of the Union, 65 degrees, should be reached. Frosts are unlikely.

Wind shows a decrease in the mean velocity compared with October, except over the south-west, where there is a slight increase in force. The prevalent directions are north-north-west over the Transvaal, south-south-west over the northern border, north-east over the south-east of the Cape Province, and south over the Cape Peninsula. In comparison with the preceding month, there is a falling off at Kimberley of all winds from east round by south to south-west, but an increase in those from all other directions, especially north-north-east. At Johannesburg there is an increase in frequency of winds between west-north-west and north-north-west, but a decrease in all others, more particularly northerly and south-south-westerly. At East London there is a greater frequency of winds from those points between north-east and south, as well as from north-north-east, but a diminution of those from all other directions. At Capetown the main increase is in those from points between south-south-east and south-south-west and from north-west, but a decrease of those from west and west-north-west.

Of the total possible number of hours of bright sunshine, about 84 per cent. should be enjoyed over the northern border, and about 50 per cent. over the south-east of the Cape Province; about 68 per cent. over the Peninsula, and 67 per cent. over the Transvaal.

C. STEWART,
Chief Meteorologist.

Pretoria.

OBSERVERS' NOTES FOR SEPTEMBER, 1924.

TRANSVAAL.

Ermelo.—Nice rains fell from the 20th to 28th, and the farmers are busily engaged ploughing and cultivating their lands. Rainfall: 1·80 inch on nine days.—*J. Dean.*

Piet Retief.—Drought completely broken. Splendid soaking rains. Rainfall: 4·15 inches on nine days.—*J. Werner.*

Middelburg.—Rainy weather set in about the middle of the month. The mean temperature in town is lower than usual, the advent of rainy and dull days interfering with the hot days usual at the end of this month. The frosts of winter were continued longer than usual. The winter now passed has been the severest recorded in twenty-one years here. Rainfall: 1·97 inch on eleven days.—*Dr. H. A. Spencer.*

Mosdene (*Naboomspruit*).—The month was remarkable for the very cold snap on the 2nd, when 6 degrees of frost were registered, the first time during my six years' residence that there has been any frost at all in September or later than the 21st August. It has destroyed the early fruit crop of almonds, apricots, figs, and peaches. A large swarm of locusts from the north passed over on the 26th, flying in a south-westerly direction. Live stock remain in excellent condition. Rainfall: 0·64 inch on four days.—*Ernest E. Galpin.*

Nylstroom.—The rainfall of 0·94 inch on five days has solved the water question for Nylstroom for this season. It was just in time for the grass, but will cause an early appearance of locusts. Everything is, however, very promising.—*G. Bakker.*

Pietersburg.—Bitterly cold snap beginning of month, most of early fruit nipped. Duststorms frequent. Misty rains, doing no particular good. Rainfall: 0·41 inch on four days.—*W. J. Frankleyne.*

Nooitgedacht No. 1739 (*Warmbaths*).—Very welcome rains, to which the veld is responding well. No locust hatching reported yet in the immediate neighbourhood. Rainfall: 1·10 inch on seven days.—*G. Gordon Brown.*

Lichtenburg.—Farmers taking advantage of the rains and are planting mealies. Every prospect for a good year. Fruit trees in full bearing. Rainfall: 1·93 inch on four days.—*E. Newton.*

Arbury (*Brits*).—The month has been very windy, especially during the night; generally fine during the day. Every day clouds appeared, but were blown away during the night. Warmest day (93·0 degrees) on the 20th, and coldest (30·0 degrees) on the 3rd, when frost killed young plants on the banks of the river. Rainfall: 0·82 inch on five days.—*G. F. Mills.*

Barberton.—Dry weather, with occasional very hot days, prevailed until the 23rd, when the situation was relieved by some showers. Enough rain has now fallen to bring the grass on and augment the streams to some extent. Rainfall: 1·01 inch on six days.—*Walter Grubb.*

Christiana.—Nothing unusual to report. Dusty winds during month. Soft soaking rains. Rainfall: 0·72 inch on three days.—*W. J. Meintjes.*

Gemboksfontein (*Middelburg*).—Nice weather was experienced during the month. It was not until the 24th before a good rain (0·50 inch) fell; previous to this, thunderstorms passed all around this station. The rain just came in time, as trees were beginning to feel the effects of the dry spell. Rainfall: 1·18 inch on eight days.—*L. C. Skead.*

Bralbin (*Rustenburg*).—Normal climatic conditions. Calm atmosphere and clouds gradually gathering during the day; at night wind rises and temperature drops. On the 18th the first distant lightning was observed, and on the 22nd rain fell. Maximum temperature for month, 95·5 degrees on 21st; minimum temperature, 22·0 degrees on 2nd. Very high wind has preceded the thunderstorms; the latter have not yet been severe. On most of the farms cotton planting has begun, whilst ploughing is in full swing. Conditions shape for an excellent cotton season for this area. Rainfall: 1·39 inch on five days.—*R. S. McPherson.*

Krugersdorp.—The month commenced with the coldest snap ever registered here since records have been kept; the temperature in the screen on the 1st falling to 26·0 degrees. After this cold snap the weather conditions experienced were more or less normal. Rainfall: 1·43 inch on eight days.—*H. Sharp.*

Groeneboom No. 444 (*Rustenburg*).—The weather has been giving very much satisfaction this month. White frost occurred in the first few days of the month. Day and night temperatures went up considerably. The light rains towards the end of the month were very welcome. Ploughing and sowing has started. In some places voetgangers have hatched out, but the worst is still to come. Veld is becoming green rapidly. Cattle not too bad. Rainfall: 1·30 inch on four days.—*F. N. van Nouhuys.*

Zwartkopjes (*Heidelberg*).—Late frosts at beginning of month. Rainfall the biggest in September for many years. Rainfall: 2·38 inches on nine days.—*E. Taylor.*

Rietvlei No. 102 (*Ermelo*).—The month in the beginning and at the end was very cold. Good soaking rains from the 20th. Grass plentiful, and cattle in good condition. Rainfall: 2·89 inches on ten days.—*P. J. Steenkamp.*

Elandsfontein (*Potchefstroom*).—A strong wind during the night of 30th September; several roofs were damaged by it. Rainfall: 2·76 inches on five days.—*P. Davidtz.*

Beltresna No. 304 (*Wakkerstroom*).—24th September, hail. Weather very cold, causing the death of several young lambs.—*D. S. Groenewald.*

Altijdmooi (*Zoutpansberg*).—Stock in very low condition; veld dry. Rainfall: 0·26 inch on four days.—*Mrs. A. Gettiffe.*

Doornkloof No. 507 (*Zoutpansberg*).—Cattle in good condition; grass fires on farms on five occasions, and high winds rendered extinction difficult. Rainfall: 0·28 inch on four days.—*S. M. Ralston.*

Tweefontein (*Pretoria*).—The wheat which escaped the locusts is doing well, and all fruit trees are in good condition. Rainfall: 1·44 inch on three days.—*F. C. Kraamwinkel.*

Brakpan No. 156 (*Wolmaransstad*).—Considering the long drought, now broken, it is wonderful how well the stock is looking. Rainfall: 1·49 inch on four days.—*J. C. Lombard.*

Vechtvallei (*Bloemhof*).—25th September, a frightful hailstorm is passing over at 5.30 p.m. Rainfall: 1·17 inch on three days.—*A. du Toit.*

Spreeuwfontein (*Bloemhof*).—25th September, severe hailstorm, stones as large as small hen's eggs. Rainfall: 2·27 inches on four days.—*J. M. Wessels.*

Sandfontein (*Bloemhof*).—25th September, fifteen minutes' hailstorm and a cyclone, which damaged one farmhouse and some trees. Rainfall: 2·02 inches on four days.—*T. McLetchie.*

Holpan (*Bloemhof*).—25th September, on the adjoining farm Mimosa, houses were unroofed, trees uprooted, and in some instances the very feathers blown off poultry, by a terriffic tornado. Rainfall: 2·41 inches on three days.—*W. H. Hambly.*

Sebastian (*Ermelo*).—25th September, severe hailstorm, 1.30 a.m. to 1.35 a.m. Heavy damage to young fruit trees, such as plums and apricots. No other damage. Rainfall: 1·81 inch on five days.—*G. A. Smits.*

Mooivlei No. 56 (*Ermelo*).—25th September, heavy hailstorm; damage to fruit trees. Rainfall: 1·40 inch on seven days.—*G. T. Beveridge.*

Leeuwkuil (*Heidelberg*).—29th September, hail; damage to fruit, oats, and gardens. Rainfall: 2·13 inches on five days.—*S. Carter.*

SWAZILAND.

Mbabane.—The country is looking nice and green. Rainfall : 3·37 inches on nine days.—*R. C. S. Markham.*

Hlatikulu.—For the month of September we have had very good rains, and reports from the district state that the rains have been general. Ploughing is now in full swing. The grass has come on wonderfully these last ten days, and there is no fear of a shortage this season. East Coast fever has broken out in the Hluti district, about forty miles south-east Hlatikulu ; movements of cattle are prohibited, and the Government Veterinary Officer has things well in hand, and the disease is not likely to spread. Quite a few settlers have come to the Territory the last few months, with a view of ranching and cotton cultivation. Rainfall : 5·13 inches on thirteen days.—*J. Pullen.*

Arizona (*Swaziland*).—Ploughing general ; veld good ; stock medium. Locusts reported. Rainfall : 2·21 inches on eight days.—*W. Mathers.*

ORANGE FREE STATE.

Wepener.—Very welcome rains, mingled with hail, have fallen generally throughout the district since the 22nd of the month. Rainfall : 1·87 inch on eight days.—*W. D. Roche.*

Groenvlei (*Frankfort*).—The first half of this month was remarkable for the sudden rise and fall of temperature, but since the 17th it has been consistently warmer, with every indication that rain was near. Beautiful, soft soaking rains began to fall on the 22nd, and have continued since. Grazing has come along very well, and ploughing is now almost in full swing throughout the district. Some severe losses are reported amongst poor cattle and lambs. Rainfall : 2·54 inches on seven days.—*B. Stollreither.*

Holfontein (*Kroonstad*).—Nothing but dust and wind during early part of month. Stock in general in very poor condition. Some farmers have had heavy losses. The rains came none too soon. Farmers hard busy ploughing. Rainfall : 1·43 inch on four days.—*L. C. McInerney.*

Shannon (*Bloemfontein*).—These rains have made a wonderful difference to the veld ; grass is to-day about a couple of inches high, and in a few days there will be plenty of grazing. Ground is wet about 8 inches deep, and a lot of ploughing is in progress. Rainfall all round in excess of what we usually get. Rainfall : 1·13 inch on five days.—*J. G. Hatchard, M.I.Mech.E.*

Smithskraal (*Boshof*).—I cannot remember such good rains in this district in September for the last twenty-five years. Rainfall : 1·30 inch on four days.—*K. Leo.*

Houmoed (*Boshof*).—26th, much hail and fair amount of damage to fruit. Also several cattle died from cold. Rainfall : 1·47 inch on three days.—*G. J. Knoetze.*

Molopposdraai (*Ficksburg*).—The few remaining seeds will now come on. Stock in fair condition ; few losses among cattle and sheep, owing to cold winds during and after the rains. Rainfall : 4·00 inches on five days.—*J. P. le Roux.*

Belladale (*Frankfort*).—Fine rains for September—almost a record here for the last fifteen years. The lambing season is in full swing. I am afraid losses have been rather severe, especially to those farmers who had little or no shelter. Slight losses among cattle. Rainfall : 2·21 inches on seven days.—*D. McCalman.*

Commando Drift (*Hoopstad*).—A number of heavy losses reported in stock from effects of hail and cold during the last week of this month. Veld is coming on well. Rainfall : 1·12 inch on four days.—*J. W. Nawn.*

Waterpan (*Kroonstad*).—Great losses in cattle and sheep, 22nd and 23rd, owing to cold rain and very cold winds; some stock in poor condition. Rainfall: 1·30 inch on four days.—*H. R. King.*

Draaihoek (*Smithfield*).—Rains fell in the afternoon usually, and were of a gentle nature, and as the lambing season is in full swing we were pleased that the weather broke with soft rains. The lambing season is very fair; it is unfortunate, however, that the locusts had almost entirely finished off the green fodder on some farms, but we still expect an average of about 80 per cent. Rainfall: 0·83 inch on four days.—*J. A. van Aswegen.*

Rockwood (*Thaba 'Nchu*).—24th, 1·90 inch. Very heavy lightning. Dams filled in two hours, and some sheep, about seventy-four, washed away on farm near here. Losses on whole not great. Some farms about fourteen miles away dust not laid. Rainfall: 2·77 inches on four days.—*H. Howell.*

NATAL.

Nottingham Road.—Hard frost on 2nd (minimum temperature in screen, 19·0 degrees) spoilt quantities of fruit blossom. Snowstorm on the 22nd lasted fourteen hours, and was 5½ inches deep. No wind with it, and mild afterwards. The veld is looking beautiful. A large number of lambs were killed by the snow. Rainfall: 2·29 inches on nine days.—*Miss E. Smythe.*

Dundee.—After a very dry spell working up to summer heat, good soaking rains set in, lasting over a week with a cold spell; the last two days of the month being fine and bright, culminating in a storm about midnight. Rainfall: 2·49 inches on nine days.—*West Thorrold.*

Umbogintwini.—Nice rains have made the veld and trees look green. Rainfall: 2·99 inches on eleven days.—*J. P. Lyle.*

Mid-Illovo.—Maximum temperature, 93·0 degrees on 19th; minimum temperature, 42·0 degrees on 2nd and 24th. Drought broken up on 20th. Ploughing in full swing. Stock in fair condition, though losses from exposure reported. Rainfall: 2·97 inches on eleven days.—*Lt.-Col. J. W. V. Montgomery, C.M.G., D.S.O.*

Greytown.—Up to 20th the drought was becoming serious. Since then we have had beautiful rains. Warm weather will soon bring on an abundance of grass. Stock on the whole has stood winter better than was expected. Rainfall: 3·27 inches on nine days.—*J. M. Handley.*

Paddock.—Dry, hot, and windy for first half of month, followed by intense heat, then nice soft, warm rain during the latter half. Rainfall: 2·11 inches on ten days.—*G. Victor Merriman.*

Cedara (*School of Agriculture*).—Very cold towards end of month. Several cloudy days. Fine soaking rainfall. Heavy snowfall on berg, 22nd. Rainfall: 3·17 inches on fourteen days.—*The Principal.*

Maritzburg (*Mental Hospital*).—The drought has been relieved by rain towards the end of the month. Rainfall: 2·46 inches on eight days.—*The Staff.*

Ladysmith.—Up to and including the 20th of the month the weather was very dry, and for the most part hot. The first rain during this month commenced to fall on the evening of the 21st, and during nine out of the last ten days of the month rain fell in varying quantities, the total fall during this period being 2·35 inches. Ploughing is now in full swing. Grass is already showing signs of improvement, and the country generally is looking much better than it has done for some considerable time. Snow fell for half an hour on the morning of the 23rd, but melted immediately.—*D. A. R. Leathern.*

Bluebank (*Klip River*).—Drought quite broken, and veld coming on splendidly. Ploughing going strong, and prospects very good, especially for cotton. Rainfall: 2·11 inches on nine days.—*T. N. Niland.*

Glückstad (*Vryheid*).—The drought has been completely broken. Steady successive rains have fallen since the 21st. Ploughing and planting have commenced. Rainfall: 2·60 inches on ten days.—*F. W. J. Schumann.*

Rongpoort (*Weenen*).—Very dry until the last week of the month, when we had glorious rains. A slight fall of snow took place on the 23rd. Grass is coming on quickly. Rainfall: 2·59 inches on seven days.—*J. H. Bartholomew.*

Cape Province.

Stutterheim.—Splendid warm rain on 26th (1·09 inch), which was badly needed. Farmers busy ploughing as much as poverty-stricken oxen will allow. Sheep in fairly good, but cattle in very poor condition; thousands died during the month on farms that were overstocked. Rainfall: 1·97 inches on seven days.—*F. C. Bousfield.*

O'okiep.—Continued drought. Rainfall: 0·04 inch on two days.—*J. Burrows.*

Belvedere (*Knysna*).—The principal feature of the weather for the month has been the prevalence of fresh to strong south-easterly winds, which usually commenced about the middle of October. Rainfall: 3·13 inches on twelve days.—*F. Thornbury.*

Andriesfontein (*Hanover*).—The want of rain is beginning to be felt. Stock in good condition, especially the lambs. Rainfall: 0·66 inch on two days.—*H. van der Merwe.*

Kenhardt.—Continued drought. Rainfall: 0·16 inch on two days.—*R. Seydell.*

Graaff-Reinet (*Convent*).—Weather during the month on the whole pleasant; some days, however, were rather warm; others rather chilly. Mists frequent. Winds variable. Rainfall: 1·21 inch on five days.—*The Mother Superior.*

Tsolo.—No cattle diseases reported. The rain has come in time to allow of ploughing, and if no cold snap comes, all will be well. Rainfall: 1·83 inch on eight days.—*H. P. Tillard.*

Port Alfred.—The drought was becoming very serious, more particularly in the inland portion of district; no crops were in, water was scarce, and stock falling off in condition. The rains which fell on the 21st and 23rd to 26th altered things considerably, the rains being general. Farmers are busy ploughing, and the prospects for the spring are very promising. Rainfall: 2·39 inches on eight days.—*W. H. Pascoe.*

Queenstown.—Up to the time the first rain fell on the 19th, the maximum temperature had gradually risen from 57·0 degrees to 91·5 degrees, at which it stood on the 18th and 19th. Since the first fall of rain the maximum temperature dropped to 53·3 degrees, on the 22nd, at its lowest, and rose to 78·7 degrees, on the 29th, at its highest. This cool weather allowed the land to draw the greatest benefit from the moisture, which was able to soak well in and to a remarkable depth. No perceptible change yet in the veld, and this shows to what extent even the roots of vegetation suffered during the prolonged and severe drought. The green carpet will no doubt deck the landscape more and more day by day. One severe hoar-frost (25·3 degrees) on the 2nd, and one black-frost (30·3 degrees) on the 22nd; both did more or less damage to some classes of fruit. North-westerly winds prevailed early part of month. Rainfall: 0·97 inch on seven days.—*J. F. C. Rein.*

Danger Point.—Veld looking grand in vicinity. Rainfall: 0·91 inch on ten days.—*H. H. Hews.*

Rietfontein (Aliwal North).—Beautiful soaking rains at end of month will save the wheat crop. Month on the whole very cold. Rainfall: 2·52 inches on nine days.—*A. G. Smith.*

Klaver (Van Rhynsdorp).—Occasional strong easterly winds have been an abnormal feature for this season of the year. Some fairly heavy floods occurred during the month in the river, and position for summer flow is now more encouraging. Rainfall: 0·39 inch on four days.—*W. M. Cameron.*

Somerset East.—The temperature during the first three weeks was high for September. The closing week was cloudy and cool, with soft soaking rains amounting to 0·61 inch in town, but considerably more over the greater part of the district. Rainfall: 1·29 inch on eight days.—*C. Harris.*

Aliwal North.—A dry month up to the last week, when we had the best and only good rains since the month of April, farming prospects being much improved. Rainfall: 1·60 inch on nine days.—*Alex. Alcock.*

Cathcart.—Fair rains have fallen during the latter part of the month; the country is still very dry, and much more rain is needed. Rainfall: 1·84 inch on eight days.—*C. E. Whibley.*

Mafeking (The Convent).—The veld looks green already after the rains of last week. Rainfall: 1·82 inch on five days.—*The Mother Superior.*

Kimberley.—Wind and dust very frequent during the month. Every promise of rain for some days, but, although rain fell in some parts of the district, it missed the town of Kimberley. A fierce windstorm swept over Kimberley just after 7 p.m. on the 19th, and, similar to a like visitation at Alexandersfontein some time ago, did an enormous amount of damage to property. In different parts of the town roofs of sheds and portions of other buildings were carried away in a sudden and bewildering manner by the violence of the storm, which spared nothing in its course. At the Olympia Garden Theatre a huge tree which had been standing for many years was uprooted, and in its fall seriously damaged the operating box in the centre of the enclosure. At the establishment of the Kimberley Creameries, in Maude Street, much damage was done to a portion of the buildings, which the gale carried away during its passage. While it lasted the violence of the storm was most alarming, but, fortunately, the unwelcome intruder was not of long duration. Rainfall: 0·22 inch on one day.—*C. H. Dowler.*

Darling.—Conditions favourable; normal timely rains; crops extremely promising. Rainfall: 1·98 inch on nine days.—*P. H. Drake.*

Kokstad.—The drought broke towards the end of the month. Snow and soaking rains. Much stock died from the cold, however. Rainfall: 2·10 inches on ten days.—*H. D. Coyte.*

Liwandi-Addo (Uitenhage).—Only one spell of bad winds experienced during month. With a few exceptions all the days of the month were cloudy and overcast. The rain on the 8th to 9th (1·68 inch) fell in gentle soaking showers, with no wind. It did much good to lands and grazing in the Addo bush. Rainfall: 2·51 inches on ten days.—*Major J. Kreft.*

Nelspoort (Beaufort West).—Cold during early part of month. Fruit trees in blossom. In middle of month several very oppressively hot days followed by very cold days, with a south wind. Rain fell on the 23rd; this station seemed to get the tail end of a storm passing north-east to south-west away to the north-east. On the 28th some peals of thunder and a few drops of rain. Rainfall: 0·20 inch on one day.—*Dr. P. Allan.*

Mount Fletcher.—Weather changeable. Good rainfall, and good prospects for crops this year. Rainfall: 1·65 inch on nine days.—*J. McDougall.*

Kakamas.—Towards the end of the month the furrow became very low. The Orange River has practically stopped flowing. Crops are promising well. Rainfall: Nil.—*M. J. Oosthuizen.*

Louisvale (Kenhardt).—A seasonable month, closing with windy days. Veld very dry, and numbers of stock perishing through drought conditions. Only copious and early rains will prevent serious loss. Rainfall: 0·07 inch on one day.—*Stuart M. Smith.*

Carnarvon.—Rain on 23rd (1·25 inch) fairly general. Prospects of district good. Rainfall: 1·30 inch on two days.—*A. P. Malherbe.*

Umtata.—Winds and temperature variable. Strong winds experienced first half of month. Good soaking rains 19th to 30th, and drought broken. Cold at nights and some warm days. Rainfall: 1·87 inch on ten days.—*P. Hackett.*

Prieska.—Most noticeable feature of the month has been perhaps the prevalence of south-easterly and easterly winds. The barometer has usually dropped during the day (with frequent change of wind to north-west), but has again risen at night. Rain on 23rd (1·00 inch) very heavy, but local, confined almost entirely to valley of Orange River itself. On the 30th very sudden change of weather between 2 p.m. and 3 p.m.; clouds came up from west and north-west, but did not appear dense. Rain at first with slight thunder, then furious gale from south-west with hail only. Clouds driven away to east, but dust so thick that sun could barely shine through. Rainfall: 1·02 inch on two days.—*E. G. Bryant.*

Storms River (Humansdorp).—Very much wet weather was experienced during the month. Rainfall: 4·27 inches on twelve days.—*H. B. Smalberger.*

Bedford.—Changeability of temperature; high winds and unbroken drought, the few showers being insufficient for beneficial purposes. Rainfall: 1·04 inch on ten days.—*Thos. C. Hall.*

Sandflats (Mount Currie).—Weather: The long-looked-for rain arrived at last on the 20th, and up to the end of the month 1·89 inch fell on ten days, which all soaked in. The drought was getting serious, and old-established trees dying off before the advent of this rain. Live stock: A good many head of cattle have died locally from poverty. Sheep holding out quite well, in spite of shortage of green grazing. Agriculture: Maize ploughing has begun, and a few crops of oats have been sown. Every indication of a good spring now. Maximum temperature for month, 86·0 degrees on 19th; minimum temperature, 25·0 degrees on 2nd. Rainfall: 1·89 inch on ten days.—*Hewson B. Corderoy.*

Vineyard (Albert).—Wheat crops very promising. Sheep in good condition. Cattle very poor. Rainfall: 2·39 inches on five days.—*C. J. Hoar.*

Kilcullen (Barkly East).—Large stock in very poor condition. Ploughing is now in full swing. Rainfall: 1·00 inch on five days.—*O. Voster.*

Hendham (Queenstown).—Cattle dying of starvation; sheep getting bad too. Rainfall: 0·41 inch on four days.—*S. J. Fletcher.*

Hoogstede (Albert).—Farmers sustained no losses amongst their stock; the rain was very welcome, and a good wheat crop is generally expected. Rainfall: 2·75 inches on five days.—*S. G. Grisel.*

Sydney-on-Vaal (Barkly West).—Normal month, except for sudden high temperatures 17th to 19th. Hail on 25th exceptionally large; a few measured

here were 2½ inches in diameter and weighed up to 2 ounces. Storm started at 2.45 p.m. with hail, and hail continued to fall until 3.30 p.m.—large stones at the beginning, and large stones towards the end of the hail shower. All quarter-inch glass was broken, and also quarter-inch glass reinforced with wire netting. Galvanized corrugated iron was pierced at the hospital here. Fortunately, there was an absence of wind, otherwise much greater damage would have been done. This storm was over a narrow area, the hail portion covering not much more than a mile in width, and travelled in the line of, say, a point between Griqualand and Postmasburg, through here, and on towards Klipdam and Windsorton. Rainfall: 1·02 inch on one day.—*J. G. Richards.*

BECHUANALAND.

Kalamari.—Nothing unusual to report. Rainfall: 0·48 inch on two days.—*E. Smith.*

Mochudi.—The rains were soft and penetrating. Grass just coming out. No sign of locusts yet. I have been out by motor 100 miles south-east and 60 miles north-west from here, and rain has been general where I went. Rainfall: 1·74 inch on three days.—*Rev. J. Reyneke.*

Serowe.—Weather variable. Trees beginning to break into leaf. Rainfall: 0·05 inch on two days.—*L. Langton.*

Mahalapye.—Unusual to have rain so early. Rainfall: 0·56 inch on two days.—*Miss M. Giles.*

Dikgatlong Ranch.—The only outstanding features of the month have been the almost daily high winds. Heat has been moderate, and there is every prospect of early rains. Have only had two small showers—24th, 0·15 inch, and 26th, 0·05 inch. No sign of locusts.—*Paul Jansse.*

BASUTOLAND.

Mafeteng.—Glorious rains fell from the 22nd to the 30th of the month. Severe thunderstorms and some hail, but little damage done. Veld already looking green. Wheat crops partially saved. Ploughing in full swing. Mealies and kaffir corn can now be planted. Every prospect of a good season. Rainfall: 3·11 inches on eight days.—*F. Hodgson.*

Maseru.—Heavy hailstorms passed round Maseru. Much damage to fruit and vegetable gardens. Numbers of cattle died during the cold rain, mostly old cattle. The wheat is looking very well. Rainfall: 2·21 inches on seven days.—*J. G. Green.*

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), SEPTEMBER, 1924.

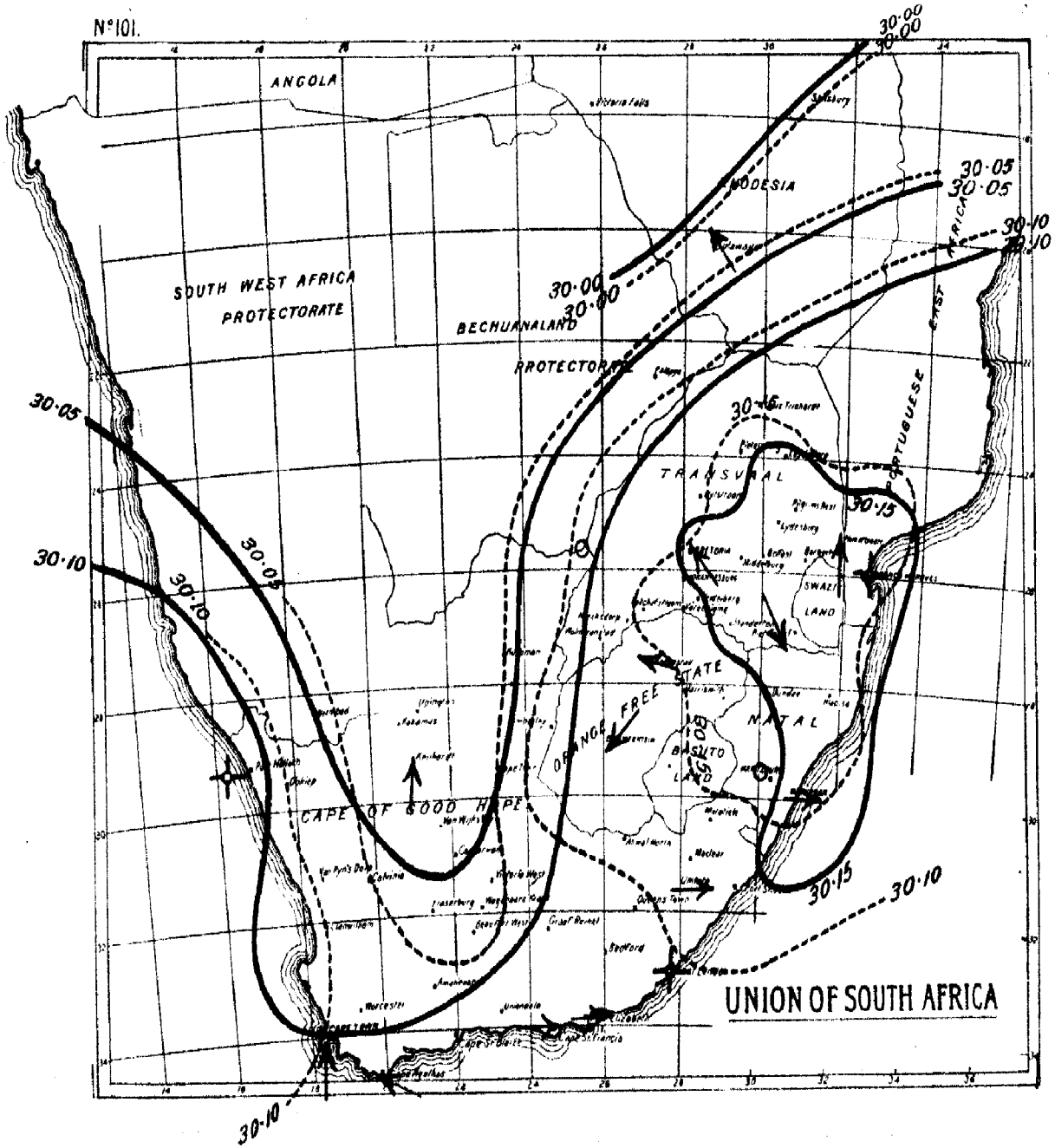
Place.	Observer.	Month—Sept., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
Transvaal—		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Barberton	Walter Grubb	77·2	53·9	65·6	66·6	− 1·0	95·0	20th	41·0	2nd.
Belfast	The Forester	69·8	36·7	53·2	55·2	− 2·0	83·0	21st	17·0	3rd.
Bloemhof	Sergt. P. J. Jordaan	78·2	43·8	60·5	61·8	− 1·3	92·5	19th	25·5	2nd.
Ermelo	J. Dean	70·5	40·6	55·6	58·6	− 3·0	83·6	19th	22·4	1st.
Johannesburg (Observatory)	The Staff	69·4	47·7	58·6	59·1	− 0·5	82·2	18th	26·0	1st.
Klerksdorp (Strathmore)	Chas. Scott	76·4	43·4	59·9	63·3	− 3·4	89·0	20th	28·0	2nd.
Komatipoort	H. J. Evans and B. J. Fothergill	82·9	56·5	69·7	72·8	− 3·1	99·0	20th	41·0	2nd and 3rd.
Louis Trichardt	C. L. Cope	74·0	50·4	62·2	66·0	− 3·8	92·0	14th	36·0	3rd.
Middelburg	Dr. H. A. Spencer	75·8	40·4	58·1	60·2	− 2·1	86·0	18th, 19th, and 21st	26·0	2nd and 3rd.
Nylstroom	G. Bakker	78·6	45·7	62·2	64·5	− 2·3	90·5	21st	27·5	2nd.
Pietersburg	W. J. Frankleyne	77·5	46·2	61·8	62·9	− 1·1	91·5	14th	30·0	2nd and 3rd.
Piet Retief	J. Werner	70·7	46·4	58·6	61·0	− 2·4	88·0	20th	32·5	1st.
Pigeonhole (New Agatha)	Jno. McCallum	68·0	50·9	59·4	—	—	84·0	20th	38·0	2nd.
Pilgrims Rest	E. M. Skea	73·9	45·7	59·8	60·6	− 0·8	90·0	20th	29·0	3rd.
Potchefstroom (Exp. Farm)	The Manager	77·5	43·6	60·6	61·1	− 0·5	90·1	19th	29·0	1st.
Pretoria (Meteorological Office)	The Staff	75·8	48·2	62·0	63·4	− 1·4	86·1	21st	33·6	2nd.
Rustenburg	A. Streatfield	78·5	47·1	62·8	65·0	− 2·2	91·0	21st	33·0	2nd and 3rd.
Standerton	—	—	—	—	56·6	—	—	—	—	—
Zeerust	H. Dietrich	81·0	45·7	63·4	63·4	± 0·0	95·1	20th	28·4	2nd.
Swaziland—										
Mbabane	Swaziland Police	69·6	47·0	58·3	61·2	− 2·9	87·0	20th	33·0	3rd.
Orange Free State—										
Bethulie	J. J. Wardhaugh	71·6	41·3	56·4	58·2	− 1·8	88·4	19th	21·8	1st.
Bloemfontein	G. A. Schepers	72·7	42·1	57·4	59·1	− 1·7	87·7	18th	26·8	2nd.
Harrismith	The Forester	67·0	39·3	53·4	54·6	− 1·2	81·0	19th	21·0	2nd.
Kroonstad	A. C. Mason	75·1	42·0	58·6	60·6	− 2·0	88·0	19th	27·0	3rd.
Ladybrand	The Forester	69·8	42·7	56·2	55·2	+ 1·0	84·0	19th	28·0	1st.
Lindley		—	—	—	59·0	—	—	—	—	—
Natal—										
Dundee	West Thorrold	73·6	42·6	58·1	63·0	− 4·9	90·0	20th	29·0	2nd and 3rd.
Durban (Point)	The Port Captain	70·5	50·6	65·0	67·6	− 2·6	76·6	29th	50·8	3rd.
Empangeni	The Forester	74·2	56·5	65·4	68·3	− 2·9	91·0	19th	46·0	4th.
Estcourt	The Town Clerk	73·2	44·5	58·8	62·4	− 3·6	90·0	19th	32·0	3rd.
Hlabisa	E. E. Redgrove	72·5	54·0	63·2	66·7	− 3·5	86·0	19th	45·0	2nd.
Ladysmith	D. A. R. Leathern	76·1	47·3	61·7	65·0	− 3·3	94·0	19th	34·0	1st.
Maritzburg (Mental Hospital)	The Staff	73·7	49·7	61·7	65·2	− 3·5	97·2	19th	37·2	3rd.
Stanger	Cecil C. Foss	73·6	57·0	65·0	66·6	− 1·6	91·0	19th	48·0	3rd, 23rd, and 24th.
Weenen	The Gaoler	76·6	46·1	61·4	64·6	− 3·2	95·0	19th	32·0	3rd and 4th.

AIR TEMPERATURES, SEPTEMBER, 1924—(*continued*).

Place.	Observer.	Month—Sept., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Cape Province—										
Aliwal North	Alex. Alcock	71·7	38·1	54·9	56·7	− 1·8	89·0	18th	23·5	2nd.
Bedford	Thos. C. Hall	71·6	45·8	58·7	58·6	+ 0·1	92·0	19th	33·0	2nd.
Capetown (Royal Observatory)	The Staff	65·5	52·2	58·8	57·0	+ 1·8	75·4	2nd	41·8	1st.
Carnarvon	A. P. Malherbe	71·1	40·3	55·7	54·2	+ 1·5	86·0	18th	21·0	1st.
East London	The Port Captain	69·5	53·2	61·4	61·8	− 0·4	87·0	3rd	44·0	3rd.
Graaff-Reinet (Convent)	The Mother Superior	74·6	48·0	61·3	60·2	+ 1·1	90·0	17th	35·8	1st.
Grahamstown	The Vet. Res. Officer	67·5	43·9	55·7	58·2	− 2·5	86·6	19th	31·0	2nd.
Groot Drakenstein	A. Franceys	65·8	46·8	56·3	58·3	− 2·0	78·0	28th	33·8	14th.
Kenhardt	R. Seydell	78·3	43·2	60·8	61·5	− 0·7	93·0	18th	29·0	1st.
Kimberley	C. H. Dowler	78·0	46·9	62·4	62·4	± 0·0	92·0	18th	30·0	1st.
Kingwilliamstown	W. Kindness	71·4	48·9	60·2	61·8	− 1·6	91·0	19th	34·0	2nd.
Kokstad	H. D. Coyte	69·5	40·5	55·0	56·8	− 1·8	89·0	19th	27·8	2nd.
Mafeking (Convent)	The Mother Superior	70·2	48·7	64·0	62·7	+ 1·3	91·9	18th	31·0	1st.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	63·7	54·3	59·0	58·4	+ 0·6	71·0	13th	45·0	1st.
Murraysburg	W. H. Rose-Innes	—	—	—	53·6	—	—	—	—	—
O'okiep	J. Burrows	68·5	45·9	57·2	58·8	− 1·6	81·4	18th	36·5	21st.
Port Elizabeth	The Lightkeeper	64·9	53·7	59·3	59·7	− 0·4	80·0	2nd	45·0	1st.
Port Nolloth	The Lightkeeper	62·5	47·1	54·8	54·7	+ 0·1	88·0	2nd	41·0	1st, 15th, 16th, and 26th.
Port St. John's (Cape Hermes)	The Lightkeeper	69·5	57·7	63·6	64·0	− 0·4	76·0	15th	50·0	2nd.
Queenstown	H. Holley	72·4	43·7	58·0	58·2	− 0·2	92·0	18th	27·0	2nd.
Somerset East	C. Harris	71·5	46·0	58·8	58·7	+ 0·1	92·8	19th	35·4	2nd.
Stutterheim	F. C. Bousfield	71·2	45·9	58·6	57·8	+ 0·8	96·2	19th	36·7	2nd.
Sydney's Hope	Rev. S. Rippon	65·7	48·3	57·0	59·0	− 2·0	81·0	7th and 19th	39·5	1st.
Uitenhage	H. Inggs	69·9	48·3	59·1	61·2	− 2·1	84·5	2nd	33·0	2nd.
Umtata	P. Hackett	73·3	46·9	60·1	60·4	− 0·3	98·8	19th	32·1	3rd.
Vryburg	Chas. Butler	78·1	43·3	60·7	62·6	− 1·9	91·0	18th	24·0	2nd.
Wynberg (Convent)	The Mother Superior	67·9	50·3	59·1	58·2	+ 0·9	—	—	40·5	1st.
Basutoland—										
Mafeteng	F. Hodgson	61·9	42·1	52·0	55·8	− 3·8	74·0	30th	25·0	1st.

RAINFALL, SEPTEMBER, 1924.

Place.	Observer.	Month. Sept., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	1·01	1·02	− 0·01	13·93	19·67	− 5·74	1·07	1·90	− 0·83
Belfast	The Forester	1·27	0·78	+ 0·49	21·43	18·11	+ 3·32	1·42	1·59	− 0·17
Bethal	H. F. Joubert	1·00	0·72	+ 0·28	17·07	15·51	+ 1·56	1·07	1·51	− 0·44
Bloemhof	P. J. Jordaan	1·54	0·76	+ 0·78	—	13·22	—	1·91	1·40	+ 0·51
Claremont	S.A. Police	0·25	0·13	+ 0·12	14·38	11·32	+ 3·06	0·25	0·57	− 0·32
Ermelo	The Forester	1·56	1·00	+ 0·56	19·16	16·59	+ 2·57	1·62	2·04	− 0·42
Haenertsburg	S.A. Police	1·81	0·71	+ 1·10	23·66	25·96	− 2·30	3·31	1·58	+ 1·73
Heidelberg	W. ter Horst	1·84	0·83	+ 1·01	21·13	16·02	+ 5·11	1·92	1·67	+ 0·25
Johannesburg (Observatory)	The Staff	1·38	0·86	+ 0·52	16·85	18·12	− 1·27	1·54	1·77	− 0·23
Klerksdorp (Strathmore)	C. Scott	1·41	0·66	+ 0·75	13·28	14·87	− 1·59	2·41	1·39	+ 1·02
Komatipoort	H. J. Evans and B. Fothergill	1·95	0·52	+ 1·43	12·95	19·07	− 6·12	2·59	1·33	+ 1·26
Louis Trichardt	C. L. Cope	0·44	0·44	± 0·00	20·91	19·37	+ 1·54	2·93	1·18	+ 1·75
Middelburg	Dr. H. A. Spencer	1·97	0·49	+ 1·48	24·31	15·92	+ 8·39	2·14	1·06	+ 1·08
Nylstroom	G. Bakker	0·94	0·47	+ 0·47	18·10	15·26	+ 2·84	1·18	1·15	+ 0·03
Pietersburg	W. Franklyne	0·41	0·26	+ 0·15	13·81	12·11	+ 1·70	0·62	0·73	− 0·11
Piet Retief	J. Werner	4·15	1·18	+ 2·97	22·03	20·55	+ 1·48	4·67	2·30	+ 2·37
Pigeonhole (New Agatha)	J. McCallum	1·40	0·72	+ 0·68	37·76	30·95	+ 6·81	1·57	2·10	+ 2·47
Pilgrims Rest	E. M. Skea	0·99	0·93	+ 0·06	17·43	27·63	− 10·20	1·80	1·88	− 0·08
Potchefstroom (Exp. Farm)	The Manager	2·09	0·67	+ 1·42	16·39	14·11	+ 2·28	3·08	1·45	+ 1·63
Pretoria (Meteorological Office)	The Staff	0·76	0·41	+ 0·35	12·73	17·11	− 4·38	0·86	1·19	− 0·33
Rooiberg	H. N. Munro	0·98	0·33	+ 0·65	11·38	15·44	− 4·06	1·08	1·27	− 0·19
Rustenburg	A. Streatfield	1·09	0·59	+ 0·50	18·82	16·04	+ 2·78	1·13	1·55	− 0·42
Woodbush	The Forester	2·54	1·64	+ 0·90	35·35	48·83	− 13·48	5·20	3·60	+ 1·60
Zeerust	H. Dietrich	1·24	0·52	+ 0·72	15·64	15·15	+ 0·49	1·28	0·98	+ 0·30
Swaziland—										
Mbabane	Swaziland Police	3·37	1·86	+ 1·51	37·19	33·24	+ 3·95	6·23	3·71	+ 2·52
Orange Free State—										
Bethulie	J. J. Wardhaugh	1·38	0·71	+ 0·67	16·83	12·95	+ 3·88	1·52	1·54	− 0·02
Bloemfontein	G. A. Schepers	1·67	0·86	+ 0·81	15·23	15·63	− 0·40	2·00	1·74	+ 0·26
Boshof	The Postmaster	0·31	1·06	− 0·75	10·81	14·12	− 3·31	0·31	2·03	− 1·72
Harrismith	The Forester	3·99	1·07	+ 2·92	18·72	17·75	+ 0·97	4·17	2·23	+ 1·94
Kroonstad	A. C. Mason	1·40	0·89	+ 0·51	11·89	16·00	− 4·11	1·72	1·69	+ 0·03
Ladybrand	The Forester	3·42	1·64	+ 1·78	17·62	18·18	− 0·56	3·50	2·90	+ 0·60
Lindley	—	—	1·00	—	—	15·31	—	—	1·77	—
Natal—										
Dundee	W. Thorrold	2·49	1·24	+ 1·25	21·87	19·99	+ 1·88	3·17	2·33	+ 0·84
Durban (Point)	The Port Captain	3·21	3·12	+ 0·09	25·60	26·71	− 1·11	5·40	5·92	− 0·52
Empangeni	The Forester	5·48	2·77	+ 2·71	28·13	30·73	− 2·60	8·86	6·56	+ 2·30
Estcourt	The Town Clerk	2·40	0·98	—	—	18·51	—	—	1·94	—
Hlabisa	E. E. Redgrove	4·17	2·28	+ 1·89	—	27·21	—	5·57	4·39	+ 1·18



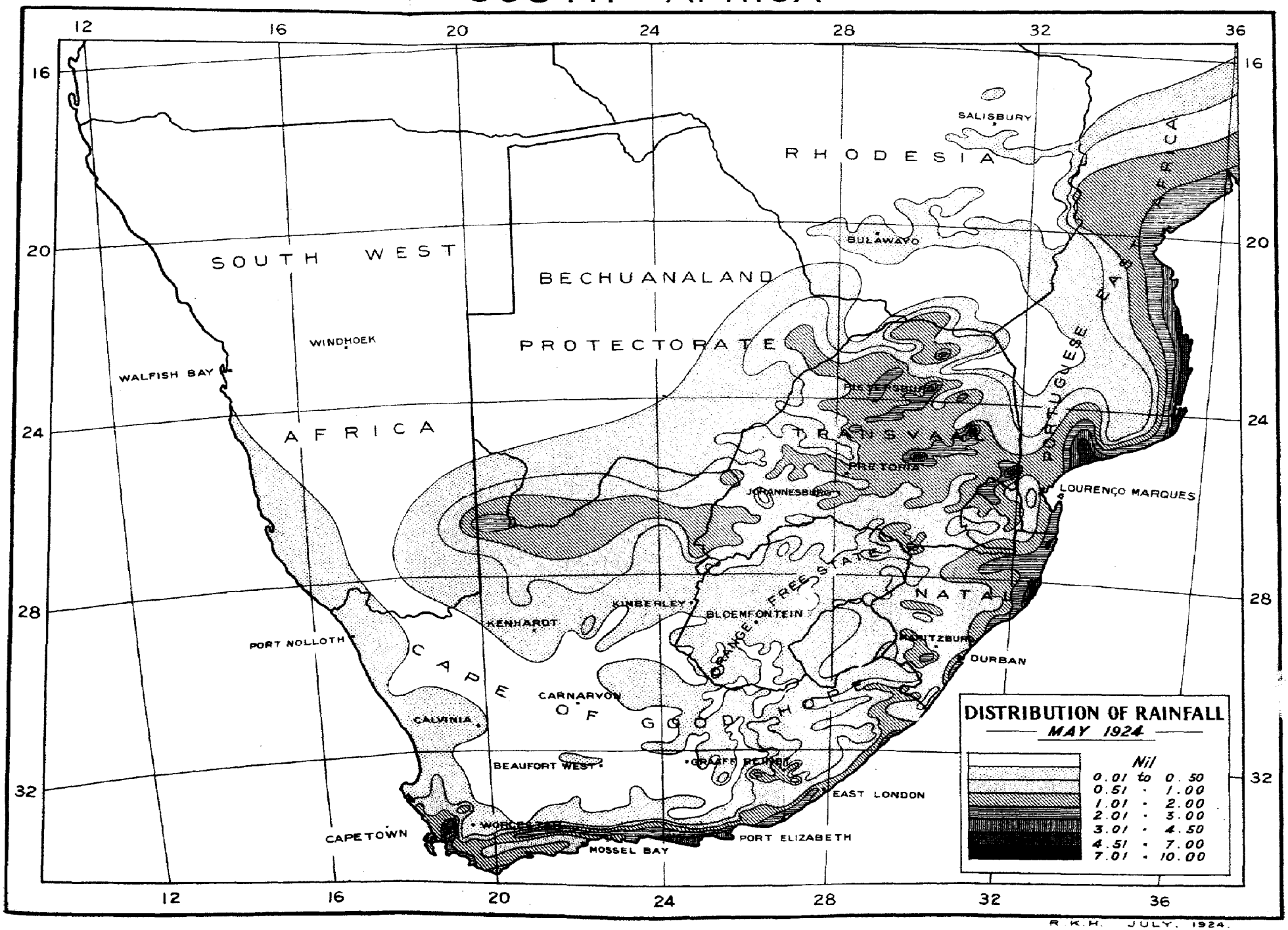
September, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for September.

ERROR IN SEQUENCE OF RAINFALL MAPS.

The Rainfall Map for May contained in this number houlds have appeared in No. 54, instead of the map for June contained therein; this latter should be transferred to No. 55, the map for July to 56, and that for August to No. 57.

The neccessary alterations in the sequence should be made before binding.

SOUTH AFRICA



R.K.H. JULY, 1924.

RAINFALL, SEPTEMBER, 1924—(*continued*).

Place.	Observer.	Month. Sept., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Natal—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Howick	The Gaoler	2·55	1·68	+ 0·87	18·97	21·23	− 2·36	3·47	2·92	+ 0·55
Ladysmith	D. A. R. Leathern	2·35	0·95	+ 1·40	18·62	18·29	+ 0·33	2·86	2·07	+ 0·79
Maritzburg (Mental Hospital)	The Staff	2·46	2·32	+ 0·14	18·88	23·67	− 4·79	3·48	3·66	− 0·18
Stanger	C. C. Foss	3·51	3·21	+ 0·30	21·13	25·76	− 4·63	4·98	5·60	− 0·62
Vryheid	The Gaoler	2·27	1·47	+ 0·80	18·86	20·83	− 1·97	2·60	2·59	+ 0·01
Weenen	The Gaoler	2·07	1·06	+ 1·01	12·38	17·30	− 4·92	2·64	2·06	+ 0·58
Cape Province—										
Aliwal North	A. Alcock	1·60	0·88	+ 0·72	15·98	14·62	+ 1·36	2·00	2·02	− 0·02
Beaufort West	The Gaoler	0·14	0·66	− 0·52	4·93	7·32	− 2·39	0·55	1·24	− 0·69
Bedford	T. C. Hall	1·04	2·02	− 0·98	11·94	19·15	− 7·21	2·28	3·58	− 1·30
Britstown	The Gaoler	0·29	0·58	− 0·29	7·53	9·24	− 1·71	0·56	1·03	− 0·47
Calvinia	The Gaoler	0·10	0·61	− 0·51	5·01	7·13	− 2·12	2·14	2·39	− 0·25
Capetown (Royal Observatory)	The Staff	1·38	2·29	− 0·91	15·47	21·83	− 6·36	6·89	9·35	− 2·46
Ceres	The Gaoler	2·93	4·21	− 1·28	29·77	34·80	− 5·03	13·74	16·12	− 2·38
Carnarvon	A. P. Malherbe	1·30	0·29	+ 1·01	8·26	6·46	+ 1·80	1·75	0·81	+ 0·94
Clanwilliam	The Gaoler	0·45	0·79	− 0·34	4·77	7·62	− 2·85	2·70	3·29	− 0·59
Concordia	F. R. Carstens	0·11	0·51	− 0·40	1·70	5·61	− 3·91	1·01	1·91	− 0·90
Driefontein (French Hoek)	The Forester	7·81	7·58	+ 0·23	55·30	67·31	− 12·01	27·67	29·24	− 1·57
East London	A. Downie	1·85	3·06	− 1·21	14·35	22·76	− 8·41	2·65	6·27	− 3·62
Fraserburg	The Gaoler	0·00	0·29	− 0·29	3·67	5·61	− 1·94	0·95	0·90	+ 0·05
Grahamstown	The Vet. Res. Officer	1·50	2·43	− 0·93	11·12	19·36	− 8·24	3·16	5·13	− 1·97
Garies	The Gaoler	0·40	0·43	− 0·03	2·42	4·36	− 1·94	1·64	1·89	− 0·25
Graaff-Reinet (Convent)	The Mother Superior	1·21	1·04	+ 0·17	7·88	10·17	− 2·29	1·84	1·99	− 0·15
Groot Drakenstein	A. L. Franceys	3·28	3·39	− 0·11	29·53	30·38	− 0·85	13·09	13·37	− 0·28
Griquatown	The Gaoler	0·36	0·37	− 0·01	—	10·04	—	0·46	0·83	− 0·37
George	Rev. Canon B. Price	3·19	3·22	− 0·03	17·61	24·91	− 7·30	7·51	7·25	+ 0·26
Hanover	The Gaoler	0·53	0·67	− 0·14	7·53	10·50	− 2·97	0·70	1·37	− 0·67
Hopetown	The Gaoler	0·15	0·43	− 0·28	12·24	9·74	+ 2·50	0·30	0·94	− 0·64
Kenhardt	R. Seydell	0·16	0·18	− 0·02	2·41	4·77	− 2·36	0·35	0·54	− 0·19
Kimberley	C. H. Dowler	0·22	0·58	− 0·36	9·23	11·48	− 2·25	0·22	1·16	− 0·94
Knysna	The Gaoler	2·43	2·86	− 0·43	17·98	21·16	− 3·18	7·28	7·50	− 0·22
Kokstad	H. D. Coyte	2·10	1·33	+ 0·77	17·86	17·59	+ 0·27	3·54	2·20	+ 1·34
Kingwilliamstown	W. K. Kindness	1·79	1·81	− 0·02	13·02	17·33	− 4·31	2·59	3·90	− 1·31
Kuruman	—	—	0·41	—	—	12·78	—	—	0·84	—
Mafeking (Convent)	The Mother Superior	1·82	0·62	+ 1·20	11·85	14·79	− 2·94	1·86	1·45	+ 0·41
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·45	1·72	− 1·27	9·54	13·09	− 3·55	3·33	4·38	− 1·05
Murraysburg	W. H. Rose-Innes	—	0·58	—	—	8·56	—	—	1·24	—
O'okiep	J. Burrows	0·04	0·62	− 0·58	1·57	6·14	− 4·57	0·62	2·47	− 1·85
Philipstown	The Gaoler	0·78	0·61	+ 0·17	13·29	10·55	+ 2·74	0·78	1·26	− 0·48

RAINFALL, SEPTEMBER, 1924—(*continued*).

Place.	Observer.	Month. Sept., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Cape Province—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Piquetberg	The Gaoler	1·53	2·26	− 0·73	13·65	17·41	− 3·76	7·64	8·00	− 0·36
Port Elizabeth	The Lightkeeper	0·82	2·27	− 1·45	13·36	16·51	− 3·15	4·57	6·26	− 1·69
Port St. Johns	The Lightkeeper	2·44	4·20	− 1·76	27·56	32·38	− 4·82	5·69	7·34	− 1·65
Port Nolloth	The Lightkeeper	0·03	0·21	− 0·18	1·15	2·11	− 0·96	0·57	0·83	− 0·26
Prieska	The Gaoler	0·66	0·23	+ 0·43	4·69	7·86	− 3·17	0·78	0·63	+ 0·15
Queenstown	H. Holley	1·05	1·07	− 0·02	11·16	16·15	− 4·99	1·43	2·18	− 0·75
Steytlerville	The Gaoler	1·22	0·66	+ 0·56	4·26	6·94	− 2·68	1·33	1·35	− 0·02
Sutherland	The Gaoler	0·15	0·65	− 0·50	4·89	7·92	− 3·03	1·74	2·51	− 0·77
Swellendam	The Gaoler	1·70	2·76	− 1·06	19·06	23·50	− 4·44	8·52	7·25	+ 1·27
Sydney's Hope	Rev. S. Rippon	2·19	1·94	+ 0·25	13·70	15·70	− 2·00	4·30	4·05	+ 0·25
Somerset East	C. Harris	1·29	1·99	− 0·70	11·64	17·96	− 6·32	1·92	3·70	− 1·78
Stutterheim	F. C. Bousfield	1·97	1·89	+ 0·08	17·76	20·07	− 2·31	2·98	3·45	− 0·47
Uitenhage	H. Inggs	1·44	1·75	− 0·31	9·08	12·62	− 3·54	3·30	3·82	− 0·52
Umtata	B. J. Hackitt	1·87	1·76	+ 0·11	12·05	17·50	− 5·45	2·80	3·04	− 0·24
Uniondale	The Gaoler	3·28	1·31	+ 1·97	8·05	10·51	− 2·46	4·60	3·58	+ 1·02
Upington	The Gaoler	0·02	0·14	− 0·12	4·87	5·57	− 0·70	0·09	0·36	− 0·27
Victoria West	The Gaoler	1·32	0·53	+ 0·79	6·65	8·31	− 1·66	1·83	1·08	+ 0·75
Vryburg	Chas. Butler	1·45	0·37	+ 1·08	12·89	14·15	− 1·26	1·45	0·92	+ 0·53
Worcester	The Gaoler	—	1·27	—	—	10·53	—	—	4·66	—
Wynberg (Convent)	The Mother Superior	3·77	4·74	− 0·97	27·28	39·78	−12·50	14·02	19·46	− 5·44
Basutoland—										
Mafeteng	F. Hodgson	3·11	1·44	+ 1·67	21·75	22·27	− 0·52	3·18	2·91	+ 0·27
South-West Africa—										
Aroab	S.W.A. Police	0·00	0·03	− 0·03	6·47	6·30	− 0·17	0·00	0·08	− 0·08
Aus	E. Martins	0·00	0·24	− 0·24	0·56	3·57	− 3·01	0·16	0·81	− 0·65
Bethanie	Rev. Peter	0·00	0·06	− 0·06	0·77	2·72	− 1·95	0·00	0·09	− 0·09
Duesternbrock	R. Matthiessen	0·00	0·10	− 0·10	6·21	11·18	− 4·97	0·00	0·15	− 0·15
Gabis	Rev. P. Rehor	0·00	0·10	− 0·10	0·92	3·31	− 2·39	0·02	0·32	− 0·30
Garinais	F. Bentling	0·00	0·01	− 0·01	3·67	4·56	− 0·89	0·08	0·12	− 0·04
Gibeon	The Postmaster	0·00	0·09	− 0·09	2·43	5·13	− 2·70	0·00	0·18	− 0·18
Gobabis	Rev. Irle	0·93	0·12	+ 0·81	10·12	12·18	− 2·06	0·93	0·21	+ 0·72
Grootfontein	Pitkowski	0·00	0·06	− 0·06	10·31	12·27	− 1·96	0·00	0·08	− 0·08
Gr. Witvley	G. Maas	0·10	0·13	− 0·03	4·24	11·27	− 7·03	0·10	0·15	− 0·05
Haribes	G. Freund	0·00	0·33	− 0·33	2·99	6·75	− 3·76	0·00	0·03	− 0·03
Hierachabis	Rev. P. Stroka	0·00	0·00	± 0·00	1·50	3·10	− 1·60	0·12	0·07	+ 0·05
Kalkfontein S.	S.W.A. Police	0·00	0·00	± 0·00	1·97	3·65	− 1·68	0·24	0·02	+ 0·22
Franzfontein	H. Janson	0·00	0·07	− 0·07	5·85	7·96	− 2·11	0·00	0·09	− 0·09
Luderitz Bay	E. Stoeber	0·00	0·07	− 0·07	—	0·63	—	0·00	0·22	− 0·22

RAINFALL, SEPTEMBER, 1924—(*continued*).

Place.	Observer.	Month. Sept., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
South-West Africa—(contd).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Maltahoehe	E. Just	0·00	0·05	− 0·05	3·18	5·40	− 2·22	0·00	0·07	− 0·07
Neu-Heusis	Liebig's Extract Co.	0·00	0·16	− 0·16	4·39	11·15	− 6·76	0·00	0·19	− 0·19
Okahandja	B. Templin	0·00	0·10	− 0·10	6·19	11·26	− 5·07	0·00	0·21	− 0·21
Okasangumingo	R. H. A. Schneider	0·00	0·16	− 0·16	9·36	12·74	− 3·38	0·00	0·31	− 0·31
Omaruru	The Postmaster	0·00	0·07	− 0·07	6·10	12·97	− 6·87	0·00	0·11	− 0·11
Otjiwarongo	The Magistrate	0·00	0·10	− 0·10	8·49	12·32	− 3·83	0·00	0·10	− 0·10
Outjo	The Magistrate	0·00	0·05	− 0·05	3·86	11·74	− 7·88	0·00	0·07	− 0·07
Rehoboth	The Postmaster	0·00	0·18	− 0·18	1·70	9·73	− 8·03	0·00	0·32	− 0·32
Rietfontein	B. Leist	0·00	0·04	− 0·04	7·32	14·37	− 7·05	0·00	0·06	− 0·06
Swakopmund	The Gaoler	0·00	0·05	− 0·05	0·00	0·47	− 0·47	0·00	0·10	− 0·10
Tsumeb	Ing. Schetter	0·02	0·16	− 0·14	11·21	16·94	− 5·73	0·02	0·18	− 0·16
Usakos	Rev. Diehl	0·00	0·08	− 0·08	2·42	4·32	− 1·90	0·00	0·08	− 0·08
Voigtsgrund	A. Voigts	0·00	0·10	− 0·10	10·13	6·23	+ 3·90	0·00	0·13	− 0·13
Warmbad	E. Luchtenstein	0·00	0·07	− 0·07	0·41	3·12	− 2·71	0·01	0·34	− 0·33
Waterburg	D. Hahn	0·00	0·06	− 0·06	9·44	14·86	− 5·42	0·00	0·12	− 0·12
Wilhelmstal	W. Boehmker	0·00	0·08	− 0·08	3·51	9·93	− 6·42	0·00	0·11	− 0·11
Windhoek	Observatory	0·00	0·09	− 0·09	6·91	11·72	− 4·81	0·00	0·20	− 0·20

Blank page retained for pagination

3930—26/5/25—800

LIBRARY
NOV 7 - 1925
Weather Bureau

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. **OCTOBER, 1924.** **No. 58.**

ATMOSPHERIC pressure practically normal; mean temperature half a degree lower than usual; nights normal, but days more than 1 degree cooler than the average; an alternation of warm and cool spells; local frosts on the 8th, 18th, 21st, and 26th, causing some damage to fruit and crops in portions of the Transvaal and the east of the Cape Province; an excess of rainfall in the north, east, south-east, and extreme south-west of the Transvaal and the adjoining parts of Bechuanaland, also in the north and east of the Free State, the west of Natal, in the extreme east of Kaffraria, portions of the south-west of the Cape Province and the Peninsula; a sub-normal precipitation elsewhere; a continuation of droughty conditions in the midlands, a considerable portion of the east of the Cape Province, Namaqualand, the south-west of the northern Karroo and Gordonia; frequent thunderstorms, often accompanied by very light rains; a few destructive hailstorms in parts of all the Provinces, causing damage to fruit and crops; some snow in the Uniondale and Kingwilliamstown Districts of the Cape Province; strong, drying winds and gales in portions of the east of the Cape Province and of Natal; such were the more outstanding features of the weather of October, 1924, which caused a great improvement in agricultural conditions over a large portion of the Union.

Pressure.—Mean pressure during October was practically normal over the whole country. The equatorial tongue of low pressure was present during the greater part of the month, being occasionally very intense, and at times extending as far as to the coast. During the first three days of the month the Union was under anticyclonic conditions, but on the morning of the 4th a tongue of low pressure had pushed southwards from the interior to the south-west coast as far as the Peninsula; pressure fell still further on the 5th and 6th by about a tenth of an inch and the low was then affecting the south and east coasts. On the 7th, the pressure had risen in the south, south-east, and particularly in the west and south-west, but continued low over South-West Africa, Bechuanaland, Rhodesia, and Portuguese East Africa, and continued to rise generally on the 8th. On the morning of the 9th, pressure was still high in the east, but had fallen in the west and south-west, foreshadowing a

"low," which was well established the next morning affecting the greater part of the country, and with its axis on the eastern boundary of South-West Africa, while fragments of high-pressure areas lay on the east and west coasts. On the 11th, the axis lay in a north-west to south-east direction, and a low had appeared on the east coast, whilst an isobar of 30 inches had made its appearance in the south-west and south. On the 12th, the eastern low was replaced by the 30 inches isobar, but pressure continued low over the interior. On the 13th, another low had appeared in the east and the outer isobars of a high in the west. On the 14th, pressure had fallen to 29·70 inches on the south coast, and next day this low had moved on to the coast of Portuguese East Africa, whilst a high had appeared in the west. This latter had progressed by the 16th so far as to cover the whole Union. On the 17th, a "col" occupied the central portions of the Cape Province, which developed into a fairly well-marked "low" over the interior on the 19th, extending to the east coast; on the 20th, the southern half of the Union was occupied by an anticyclone having its highest pressure in the south-east, the low having retreated northwards; on the 21st, the highest isobars lay along the east and south-east coasts, with the lowest pressure in South-West Africa and Rhodesia; on the 22nd, the highest pressure was in the neighbourhood of Lourenco Marques, whilst the axis of a "low" lay almost north and south over the western interior and extending beyond the coast; by the 23rd, pressure had fallen over the interior and along the south and south-east, where an isobar of 29·70 inches lay just off the coast; on the 24th, pressure had increased slightly along the south-east but had fallen on the east at Lourenco Marques; otherwise conditions were unchanged; on the 25th, the western high was found to have advanced a short distance eastwards over part of the Cape Province, so that the axis of the interior "low" lay in a north-west to south-east direction, causing a slight decrease in pressure at certain stations; on the 26th, the anticyclone covered practically the whole of the Union, with the highest isobar over the south and south-west coasts. Pressure had increased by about one-tenth on the 27th, but otherwise the distribution was unchanged; on the 28th, pressure was highest on the east coast, and there were indications of the formation of a low in the west; on the 29th, pressure had increased in the west by one-tenth of an inch and decreased in the east by two-tenths, whilst the northern extremity of a low was on the south-east coast; on the 30th, the low in the south-east had disappeared and a tongue of low pressure stretched from the central interior to the south and south-west coasts, in much the same position as on the 4th.

Temperatures.— The mean temperatures during October over the Union was 64·0 degrees or 0·6 degree less than the average. This shortage was entirely due to the days, with a mean of 76·0 degrees, being 1·3 degree cooler than usual, whilst the nights, having a mean of 52·0 degrees, were a tenth of a degree in excess of normal. A deficient monthly temperature was common to the Orange Free State, Natal, and Cape Province, whilst the Transvaal had a temperature slightly in excess. Thus the Orange Free State with a mean of 61·0 degrees was sub-normal by 1·5 degree; this minus departure was brought about by the mean day temperature (73·9 degrees) being 3·2 degrees under the average, whereas the night temperature (48·2 degrees) was 0·3 degree above the average. Similarly, the mean for Natal (66·1 degrees) was 2·3 degrees less than usual, the mean maximum (75·5 degrees) being 5·5 degrees lower, but the mean minimum (56·7 degrees) 0·9 degree higher than the corresponding normal values. On the other hand, the shortage of 0·4 degree in the mean temperature for the month (62·4 degrees) in the Cape Province was due mainly to the mean night temperature (50·1 degrees) being 0·7 degree, whilst the mean day temperature (74·6 degrees) was 0·1 degree lower than the respective averages. In the Transvaal, the mean for October (66·5 degrees) was 0·2 degree

in excess of the normal, a result brought about by the nights, with a temperature of 53·6 degrees, being 0·8 degree in excess, whereas the days, with 79·4 degrees, were 0·5 degree in defect of the average. Considering the stations separately, it is found that the temperature of the month was normal in the east of the Transvaal high veld, in Swaziland, part of the northern border, and the Namaqualand plateau; above the average mostly by less than 1 degree in the greater part of the north, east, south, and west of the Transvaal, and the major portion of the east of the Cape Province, including Kaffraria and the east central Karroo, as well as in the south of the Cape Peninsula. Temperature was sub-normal elsewhere; that is to say, in the centre, part of the eastern low veld and of the south-west of the Transvaal, the whole of the Orange Free State and Natal, the south, south-east, and west coastal districts, and the innermost plateau, including Bechuanaland. In the Transvaal, the excesses varied from 0·1 degree at Pilgrims Rest to 1·8 degree at Bloemhof; and the deficits from 0·1 degree at Pretoria to 1·6 degree at Strathmore, near Klerksdorp. Over the Orange Free State, the minus quantities ranged from 0·6 degree at Bloemfontein to 3·1 degrees at Harrismith; in Natal, the deficits lay between 0·6 degree at Stanger and 4·5 degrees at Estcourt. In the Cape Province, the surplus amounts were least, 0·2 degree at Aliwal North and Umtata, and greatest 2·1 degrees at Graaff-Reinet, while the negative departures from normal ranged from 0·2 degree at Capetown and East London to 3·0 degrees at Uitenhage. The mean day temperatures were in excess of normal at half the stations in the Transvaal, at most stations in the east of the Cape Province, also in the Cape Peninsula, on the Namaqualand plateau, and parts of the northern Karroo. In the Transvaal, the excesses varied from 0·1 degree at Johannesburg (Observatory) to 2·0 degrees at Zeerust, and the deficits from 0·2 degree at Pilgrims Rest to 3·6 degrees at Strathmore, near Klerksdorp. In the Cape Province, the amounts of the mean maximum above the average lay between 0·1 degree at O'okiep and 3·4 degrees at Stutterheim, and the minus quantities varied from 0·8 degree at Kingwilliamstown to 3·7 degrees at Carnarvon. In the Orange Free State and Natal, where deficits alone prevailed, the minus quantities were generally in excess of those in the other two Provinces. Thus in the Orange Free State, the negative departures ranged from 0·7 degree at Bloemfontein to 5·7 degrees at Harrismith; and in Natal, from 2·7 degrees at Stanger to 8·5 degrees at Ladysmith. The mean minimum or night temperatures in the Transvaal were mostly higher than usual, the excesses being between 0·3 degree at Nylstroom and 3·7 degrees at Potchefstroom; the deficits varied from 0·3 degree at Louis Trichardt to 1·7 degree at Belfast. At Barberton and Mbabane (Swaziland) the mean minima were normal. In the Orange Free State, the nights were warmer than usual by 0·4 degree at Kroonstad in the north and by 2·3 degrees at Ladybrand in the east; small deficits were met with elsewhere, ranging from 0·1 degree at Bethulie to 0·6 degree at Harrismith. In Natal, the night temperatures were mostly higher than usual by slightly more than 1 degree, although deficits of 1·9 degree and 1·6 degree were met with at Dundee and Estcourt. In the Cape Province, the mean minimum temperatures were higher than the average in Kaffraria, and a few places in the south-east, south coast, Cape Peninsula, the central Karroo, and the northern border; but were lower than usual at the majority of stations. The excesses lay between 0·2 degree at Mossel Bay and 2·5 degrees at Port St. Johns, while the deficits varied from 0·2 degree at Aliwal North and Somerset East to 4·4 degrees at Kenhardt. The mean warmest station was Komatipoort, with a temperature of 75·6 degrees; and the mean coolest Port Nolloth, with a temperature of 54·5 degrees, a difference of 21·1 degrees. The mean warmest and coolest stations in the various Provinces were as follows:—In the Transvaal: Komatipoort (75·6 degrees) and Belfast (58·0 degrees), a difference of

17·6 degrees; Orange Free State: Kroonstad (64·4 degrees) and Harrismith (56·6 degrees), a difference of 7·8 degrees; Natal: Stanger (68·4 degrees) and Dundee (62·4 degrees), a variation of only 6·0 degrees; Cape Province: Mafeking (68·8 degrees) and Port Nolloth (54·5 degrees), a difference of 14·3 degrees. The highest mean maximum for October was 88·0 degrees at Komatipoort, and the lowest mean minimum 43·2 degrees at Belfast. During October there was an absence of any general hot spell, the highest readings for the month were recorded on seventeen days, viz., 4th, 6th, 7th, 9th to 11th, 14th, 15th, 18th, 19th, 22nd to 24th, 27th, 28th, 30th, and 31st. Extreme maxima were most numerously reported on the last two days. Cold spells were more prominent, that on the 16th being most widely felt, whilst that on the 8th was confined mainly to the Transvaal, the north of the Orange Free State, and the more northerly portions of the Cape Province. Extreme minima were reported on fourteen days of the month, viz., 1st, 3rd, 4th, 7th, 8th, 10th, 15th to 18th, 21st, and 25th to 27th. Although the highest temperature readings were mostly above 90 degrees, Komatipoort (T.P.), with 101·0 degrees on the 6th, 24th, and 31st, was the only station at which a temperature necessitating the use of three figures for the whole degree was attained. The highest readings in the other Provinces were: 98·0 degrees at Groot Drakenstein on the 11th and Kenhardt on the 30th, in the Cape Province; 94·0 degrees on the 14th at Stanger, in Natal; and 86·0 degrees on the 18th at Kroonstad, in the Orange Free State. The lowest shade temperature was 29·0 degrees on the 21st at Bedford, in the Cape Province. The only other station showing an extreme minimum under freezing point was Belfast, in the Transvaal, where 30·0 degrees was registered on the 18th. In the Free State the lowest temperature was 34·2 degrees on the 16th at Bethulie; and in Natal, 42·0 degrees, also on the 16th at Estcourt. There was an extreme range of 72·0 degrees during the month over the Union. In the various Provinces the extreme ranges were 71·0 degrees in the Transvaal; 69·0 degrees in the Cape Province; 52·0 degrees in Natal; and 51·8 degrees in the Free State.

Ground Frosts occurred on the 8th at Zwartkoppies (District Heidelberg), destroying a considerable amount of fruit in the neighbourhood, also at Queenstown on the same date; at Sandflats (Mount Currie) on the 10th and 17th and the 18th at Belfast; on the 21st at Bedford, where 3 degrees of frost were recorded; and the cotton crops on Sydney-on-Vaal, on lands adjoining the river banks, showed strong evidence of frost on the 26th. Frost was also reported as occurring on several days at Kokstad, Droogefontein (District Hanover), and Hoogstede (District Albert), causing damage to crops; but no dates were given.

Precipitation.—Steady, soaking rains, varied by thunderstorms, fell at frequent intervals, mainly over the northern and eastern portions of the Transvaal and Orange Free State; also to a less extent in the east of the Cape Province and Natal. The totals recorded at a number of stations were greater than had been experienced for many years. The showers during the first fortnight were mostly local, but the rains from about the 20th were much more widespread. Compared with the normals, precipitation was in excess in the north, east, south-east, and south-west of the Transvaal, the north and east of the Orange Free State, the west of Natal, parts of Kaffraria, the south-west of the Cape Province, and of Bechuanaland. The excesses in the Transvaal were greatest, 2 to 3 inches in the Zoutpansberg area, but were mostly under 1 inch elsewhere. The variation was from 0·03 inch or 1 per cent. at Pilgrims Rest to 2·64 inches or 62 per cent. at Woodbush. The totals for the month over the centre, west, and south were in defect by amounts ranging from 0·16 inch or 8 per cent. at Nylstroom to 1·83 inch or 73 per cent. at Rustenburg. At Mbabane, in Swaziland, the total 9·30 inches was 4·62 inches or 99 per cent.

above normal. In the Free State there occurred excesses of 1·63 inch or 67 per cent. at Ladysmith and 3·27 inches or 169 per cent. at Kroonstad. The shortages were considerably less, varying from 0·07 inch or 2 per cent. at Harrismith to 0·66 inch or 56 per cent. at Bethulie. In Natal the surplus amounts were between 1 and 1½ inch, being 1·45 inch or 53 per cent. at Ladysmith and 1·22 inch or 50 per cent. at Estcourt. The deficit exceeded the excesses in amount, being between 3·00 inches or 54 per cent. at Stanger and 0·27 inch or 9 per cent. at Dundee. In the Cape Province the plus quantities were mostly under an inch, but varying from 0·14 inch or 8 per cent. at the Royal Observatory (Capetown) to 2·36 inches or 77 per cent. at Driefontein in the south-west. A state of absolute drought continued throughout the month over the greater part of the southern, central, and northern Karroo and part of the northern border. In South-West Africa small excesses of less than half an inch to a few hundredths were almost general over the northern half of the country, whereas small deficits occurred at most of the stations in the southern half. The excesses ranged from 1·97 inch, or almost five times the average, at Okahandja to 0·03 inch at Neu Heusis and Kalkfontein, where this amount represented 9 and 17 per cent. of the respective averages. The shortages were generally under half an inch, but lay between 0·03 inch at Outjo and Garinais and 0·44 inch or 44 per cent. at Okasangumingo. No rainfall was recorded at Gabis and Warmbad in the extreme south; at Gibeon and Maltahoehe in the north of the southern half of the Territory and at Luderitz Bay on the coast. *Thunderstorms* were of frequent occurrence over the Union—the lightning proving fatal in some places to man and beast. According to a newspaper report the lightning proved fatal on the night of the 1st to a husband and wife in the tent on a wagon near Loubad, whilst a baby, clasped in the dead woman's arms was found to be uninjured. Two dogs under the wagon were also killed, and the other two children were slightly burned. At Kokstad on the 12th the chimney of the public school hostel was struck and destroyed and portion of the roof badly damaged. *Hail* was of frequent occurrence in all the Provinces, causing considerable damage in some areas to crops and fruit, and particularly the east and west of the Transvaal, the east of the Orange Free State and Cape Province, and the north of Natal. At Hoogstede, in the Division of Albert, in the east of the Cape Province, hail was reported as associated with almost any light shower, causing a considerable amount of damage. According to a newspaper report, a severe storm broke over Wakkerstroom between 6.30 and 8.30 p.m. on the 30th. Hail the size of walnuts, mingled with *snow*, fell covering the ground to a depth of 6–8 inches. Windows were broken, trees striped of leaves and fruit, houses flooded, and small spruits converted into raging torrents. This was considered the worst storm for the last twenty years. *Snow* was also reported on the 15th at De Hoop (Robertson District) and Keiskama Hoek (Kingwilliamstown District). Although the rains were mostly steady and light to moderate, some showers of considerable intensity were noted, as at Rockwood (Meadows), in the district of Thaba 'Nchu. This presented some peculiar features which are detailed in the account given by Mr. H. Howell in the "Notes" attached. As a result of this highly localized storm of rain and hail, a total of 1.27 inch was collected, of which 1·09 inch fell between 3.20 and 3.40 p.m.; that is, at the rate of 3·27 inches per hour. Some exceptionally strong windstorms (or tornadoes ?) occurred during the month. Thus, on the 2nd, a farm homestead near Bethlehem, Orange Free State, was unroofed, a chimney blown down, veranda columns broken, and large trees uprooted in a few minutes. On the night of the 12th at 11.30 p.m. an extremely violent "south-easter" is reported to have blown down and wrecked a travelling-crane weighing 40 to 50 tons, at the south area of the docks, Capetown.

The accumulated rainfall since the beginning of the year was in excess in the Transvaal, over the east, south-east, and south of the high veld, as well as portions of the north, centre, and west of the Province; the north-east, east, and south of the Orange Free State; some stations in the west of Natal; as well as portion of Kaffraria and of the north-east of the Cape Province, as well as at a few stations in the northern Karroo. The excesses in the Transvaal were generally between 1 and 3 inches, but varied from 0·95 inch at Rustenburg to 7.77 inches at Middelburg. The deficits were commonly from 4 to 6 inches in the east, centre, and west, ranging, however, between 0·38 inch at Haenertsburg and 10·84 inches at Woodbush; Pilgrims Rest also showed a shortage of 10·17 inches. In the Orange Free State, the surplus amounts lay between 0·92 inch at Harrismith and 3·22 inches at Bethulie; and the deficiencies between 0·56 inch at Bloemfontein and 3·69 inches at Boshof. In Natal, the plus amounts were between 1 and 2 inches, whilst the minus quantities were much larger, commonly from 3 to 6 inches, but varying from 2·50 inches at Durban to 7·63 inches at Stanger. The few excesses in the Cape Province varied from 0·82 inch at Aliwal North to 2·03 inches at Philipstown. The deficits there were usually between 1 and 3 inches over the more inland portions, rising to 4 to 10 inches in the east, south-east, parts of the south coast and the south-west, as well as on the Namaqualand plateau. These latter lay between 1·07 inch at Port Nolloth and 12·34 inches at Wynberg. In South-West Africa surplus quantities were confined to Voigtsgrund in the north of the southern half of the Territory and Aroab in the south-east, which stations had excesses amounting to 58 and 1 per cent. respectively. In the southern half, the deficits were generally between 1 and 3 inches, but varying from 0·92 inch or 19 per cent. at Garinais to 4·15 inches or 58 per cent. at Haribes. In the northern half, the minus quantities lay mostly between 3 and 7 inches, falling to less than 2 inches in the more westerly and south-easterly portion and to 0·43 inch at Swakopmund; the greatest shortfall was 9·44 inches or 93 per cent. at Rehoboth. The gross totals for the four months, July to October, were in excess of normal in the north, east, the extreme south-east, and the south-west of the Transvaal; the north, east, and centre of the Orange Free State; the west of Natal and at a few stations in the southern Karroo; the south-west and the northern Karroo and over Bechuanaland. The surplus quantities showed considerable variation within comparatively small areas, ranging from 0·08 inch at Clermont in the north-west to 5·06 inches at Pigeonhole (New Agatha) in the north-east, where the plus amounts were greatest; that is, between 3·50 and 5 inches. The deficits were mostly less than 1 inch, ranging, however, from 0·05 inch at Pilgrims Rest to 2·25 inches at Rustenburg. At Mbabane, in Swaziland, there was a surplus of 7·14 inches or 85 per cent. above normal. In the Orange Free State, the excesses were mostly between 2 and 3 inches, but varying from 0·10 inch or 3 per cent. to 3·30 inches or 91 per cent. at Kroonstad. Deficits of 0·68 inch and 2·10 inches, however, occurred at Bethulie in the north and Boshof in the west, representing 25 and 64 per cent. of the respective normals. A small excess of 0·23 inch or 5 per cent. occurred at Mafeteng, in Basutoland. The surplusage in the west of Natal lay between 0·57 inch or 11 per cent. at Dundee and 2.24 inches or 46 per cent. at Ladysmith; whilst the deficiencies were mostly between 2 and 3 inches, but ranged from 0·39 inch or 3 per cent. at Empangeni to 3·62 or 33 per cent. at Stanger. In the Cape Province, the excesses were generally small, under three-quarters of an inch, ranging between 0·10 inch or 3 per cent. at Mafeking and 2·19 inches or 52 per cent. at Kokstad. The deficits amounted to less than an inch over the greater part of the west coastal area and of the innermost plateau, but exceeded 1 inch in the eastern portion fringing the Orange Free State, as also in the central Karroo, and parts of the north-east and Kaffraria, the deficit

increased still further to more than 2 inches in the Namaqualand plateau and over 3 inches on the south-east and the southerly portion of the Peninsula. The deficit amounts varied from 0·09 inch or less than 1 per cent. at George to 6.25 inches or 63 per cent. at East London. In South-West Africa the grand totals for the four months were in excess of the averages at most of the stations in the northern, but at only one or two stations in the southern, half, e.g. Bethany and Kalkfontein. The plus amounts were less than three-quarters of an inch at the majority of these stations, ranging from 0·03 inch or 5 per cent. at Waterberg to 1·76 inch or about three times the usual amount at Okahandja. The negative departures from normal were all small, from three-quarters of an inch to a few hundredths, a natural consequence of this period constituting part of the dry season; they varied from 0·75 inch or 57 per cent. at Okasangumingo to 0·06 inch or 38 per cent. at Swakopmund.

State of Country: Transvaal.—The precipitation during October over the Transvaal was to a large extent local and unequally distributed, not only in different parts of the Province but in different parts of the same division. Some portions of a district received good, penetrating rains, accompanied by cool, cloudy, and occasionally windy weather, enabling ploughing, sowing, and planting to be carried out, whereas other parts of the same district experienced hot, sultry weather and received only light showers, which were soon dried up by sun or wind, leaving the ground too hard to plough. This latter type of rain, however, benefited winter crops and veld. In a few places, however, some heavy showers of considerable intensity occurred, as at Piet Retief on the 13th, when 1·51 inch feel in thirty-five minutes, damaging river bridges. The most favourable conditions occurred over the east, south-east, and part of the north-east; while the least favourable were experienced in the south, the centre, part of the Zoutpansberg in the north, and portions of the west. Generally speaking, veld and winter crops improved considerably, and stock were in fair to good condition. In the Rustenburg Division most of the cotton was planted. A good proportion had come up, but in some parts was either totally destroyed by "voetgangers" or in danger of being destroyed by them. In parts of the Zoutpansberg the ground was too hard to plough, and fears were entertained that the usually abundant rain might come too late to enable cotton to be planted. A series of heavy hailstorms in the Carolina District, a few in Barberton, and individual falls at Rietfontein (Division of Pretoria) on the 20th; at Parktown North (Johannesburg) on the 26th; at Zwagerfontein (Division Lydenburg) on the 31st; and at Goedgelegen (District Marico), caused more or less damage to fruit. A late frost on the morning of the 8th at Zwartkopje (District Heidelberg) helped still further to reduce the fruit crop. In Swaziland the weather was generally favourable for agricultural operations; the veld had come on well, and cattle were once more in good condition. No further outbreak of East Coast fever was reported.

Orange Free State.—Steady, light rains fell in small quantities at frequent intervals. These following on the good rains of the preceding month enabled a considerable amount of ploughing and sowing to be carried out during the month, particularly in the Bethlehem District. A comparatively dry spell from the 12th to 27th, however, caused ploughing operations to be discontinued for a time in some areas, as at Groenvlei (District Frankfort). The rain on the 28th enabled work in this direction to be resumed at the end of the month. As a result of alternate sunshine and rain, natural pasturage made considerable progress and early planted mealies came up well. Some farmers in the Kroonstad District suffered heavy losses in stock, but, generally speaking, cattle and sheep were rapidly getting once more into good condition as the result of abundance of grazing. These conditions prevailed mainly over the north, east,

and part of the central divisions, but good heavy soaking rains were still required over the greater portion of the south, south-west, and west. From Belladale (District Frankfort) it was reported that, on the whole, the lambing season had been good. Some damage was caused to fruit and crops by the frequent hailstorms in the Kroonstad, Ladybrand, Thaba 'Nchu, Philippolis, and Rouxville Districts.

Natal.—Cool, cloudy weather with frequent mists and drizzling rains enabled crops and grass to come on well but retarded the germination of seeds. Stock were consequently improving rapidly. Occasional heavy showers, associated with thunderstorms, saturated the ground and enabled ploughing to be carried on in some areas, as at Paddock, Greytown, Rongpoort (District Weenen), etc. Wattle shipping was going ahead at Paddock. In other portions of the Province more rain was required to soften the ground thoroughly. A few hailstorms occurred, causing damage to fruit, crops, and gardens, and breaking window-panes, e.g. at Vryheid on the 11th, Colenso and Rongpoort (Division Weenen) on the 13th, and Loskop (Division Newcastle) on the 24th.

Cape Province.—The drought continued with unabated severity in Namaqualand, Gordonia, a considerable portion of the northern, central and southern Karroo, parts of the north-east and south-east. Light rains of short duration, and mostly associated with thunderstorms, fell over portions of these areas, but were very irregularly distributed. The beneficial effects that might have been expected to ensure were to a great extent neutralized by strong, drying winds from some westerly direction, principally north-west. Hail and frost also adversely affected the few growing crops, and the generally cool weather retarded the growth of the veld. The severity of the drought may be gauged to some extent by the descriptive terms employed in indicating the state of the country. Thus at O'okiep (Namaqualand) the state of affairs was said to be "desperate": at Steinkopf, in the same division, the drought was "terrible," also at Visgat, in the Fraserburg Division: whereas farmers were trekking with stock to Victoria West and Richmond: at Bedford it was intensive; at Glencoe (Division Middelburg) the drought was awful, cattle nearly all dead, fountains having a normal flow of 80,000 gallons a day were all but dry, and no lucerne: at Somerset East, the drought was becoming more and more a menace in town and country; in Queenstown District the outlook was serious for the farming community. At Lovedale (Division Alice) the amount recorded this month (0·39 inch on four days) was the lowest since 1880, the next being October, 1899, with 0·58 inch. At Sandflats (Division Mount Currie) and at Cathcart, trees were suffering severely from drought. From Louisvale (Division Kenhardt), on the Orange River, it was reported that farmers outside were losing heavily; the river had ample water, however, and lucerne at the irrigation settlement was fetching good prices. A very dry spell at Darling (Division Malmesbury) had affected the crops to some extent. As a result of the erratic distribution of rainfall, only in certain parts of the Riversdale Division were crops showing up well. At Port Alfred the veld was scorched and orchards and crops suffering from the severe drought. Some ploughing and planting were being carried on in the Mount Currie and Tsolo Divisions. Generally speaking, the surviving cattle and stock were healthy but in poor condition or falling off. In the Albert Division, crops were very promising but required a considerable amount of rain to bring them on properly. There was a very good fruit crop in Wellington District and cereals were satisfactory.

Water Supply, etc.—At Klaver (Division Van Rhynsdorp) the flow of the river was decreasing rapidly, but the rainfall on the 23rd improved matters considerably. In the Caledon District, the rains, although well distributed, were too light to fill the dams. At Louisvale, the Orange River was stated to

have ample water. In Bedford District, the farmers were complaining more of want of water than want of veld. The serious decrease in the flow of fountains in the Middelburg District has been already noted. The Klip River (Natal) rose 5 feet in fifteen minutes at Ladysmith on the 13th. The Mooi River at Potchefstroom (Transvaal) was in unusually high flood on the morning of the 28th. At the beginning of the month—an unusually early date—the Vaal River was running 3 to 4 feet deep, as the result of freshets from the Bamboes and Maquassi Spruit as well as from the Valsch and Vet Rivers. At the end of the month there was reported to be ample water in the Orange River at Louisvale (Division Kenhardt).

OBSERVERS' NOTES FOR OCTOBER, 1924.

TRANSVAAL.

Zwartkopjes Pumping Station (*Heidelberg*).—The gentle, soaking rains have done a lot of good in the district; all of these (with the exception of the storm on the 2nd, 1·52 inch) have sunk into the ground and not run off. A late ground frost occurred on the morning of the 8th, which killed a lot of fruit in exposed situations, but did not appear to do much damage inside the station. Rainfall: 2·97 inches on fourteen days.—E. Taylor.

Jakhalsfontein (*Pietersburg*).—Generally cloudy and overcast, with great changes of temperature. Some light rains. Rainfall: 1·38 inch on six days.—Rev. James C. Palmer.

Amatava (*Potgietersrust*).—Hot and sultry weather relieved by a few light rains. Rainfall: 1·51 inch on five days.—A. Troye.

Mosdene (*Naboomspruit*).—Rainfall for the month, 1·37 inch on five days, which is considerably below the average for October. It is to be hoped that the plenteous rains which usually fall towards the end of the month have only been delayed and will fall early in November so that maize and other summer crops upon which we depend may be planted in good time. Following the rains received, locusts have hatched out in the neighbourhood in enormous quantities. Rainfall: 1·37 inch on five days.—Ernest E. Galpin.

Pietersburg.—Fair rainfall. Veld coming on well. Rainfall: 2·25 inches on seven days.—W. J. Franklyne.

Rietfontein, Pomona Estates (*Pretoria*).—Heavy hailstorm occurred on the 20th, with slight damage to fruit; otherwise splendid and steady rains have fallen during the month. Rainfall: 2·11 inches on ten days.—E. A. Clark.

Arbury (*Brits*).—The rain that fell did not do much good, as next day the sun dried it all up. Voetgangers are very bad, and everybody has left farm work to kill them. Rainfall: 0·65 inch on five days.—G. F. Mills.

Carolina.—Weather cool, sometimes cold, with very heavy hailstorms in most parts of the district, causing much damage to fruit. A few very heavy storms, but otherwise rains were slow, soft, and penetrating, and the year promises well. Rainfall: 5·18 inches on eight days.—G. F. Mynhardt.

Rietvlei No. 102 (*Ermelo*).—Much wind and cloud during the month. Grass plentiful and cattle in good condition. Rainfall: 3·31 inches on sixteen days.—C. J. Steenkamp.

Kopje Alleen No. 1052 (*Springbok Flats*).—With only 1·16 inch on six days, we have had the smallest rainfall in October since 1919, when 0·30 inch on two days was recorded. Thunderstorms have been seen approaching, but

few brought rain here, though farther south some heavy showers fell. Locusts began to hatch out on the 16th, exactly twelve weeks after they were first noticed to be pairing off; since then about twenty large swarms have been destroyed on this farm. Dust-whirls were frequent, and several nasty dust-storms were experienced during the month.—J. Lyall-Soutter.

Parktown North (Johannesburg).—Unsettled and cloudy weather prevailed throughout the month. Good, steady rains fell generally overnight, the days being fresh and cool. On the 26th, hail the size of marbles fell for about ten minutes, doing slight damage. Crops and veld in good condition. Rainfall: 2·67 inches on ten days.—G. S. Garnett.

Bralbin (Rustenburg).—Weather for October has been most useful from an agricultural point of view. Rain has never set in, but in extremely local showers (very heavy), some farms getting an inch, whilst the next farm nothing. Most of the cotton is planted and a great percentage is up. This, however, is in danger of being attacked by large swarms of voetgangers, due to laxity on the part of Government in control of same. The weather has been excellent for all crops. Maximum temperature, 95·0 degrees on the 31st; minimum temperature, 41·5 degrees on the 8th. Rainfall: 1·07 inch on eight days.—R. C. S. McPherson.

Krugersdorp.—The month of October has been free from all extreme weather conditions. The average temperature has been about 3 degrees under normal. At date of writing, agricultural prospects are good. Rainfall: 2·80 inches on eight days, against an average of 2·63 inches for the past twenty-one years.—H. Sharp.

Nooitgedacht No. 777 (Warmbaths).—Weather very dry, with considerable wind. Voetgangers have been hatching out throughout the month in vast numbers, which have taxed all available means of destruction to the utmost. The swarms tend to move northward, and most of them seem to originate in the more sandy country lying to the south of this area. Rainfall: 0·81 on five days.—G. Gordon Brown.

Potchefstroom.—The first two-thirds of the month were characterized by bright, warm days, with little rain, but strong winds. The last third of the month was characterized by cloudy weather, high temperatures, and rain. Rainfall: 1·78 inch on eight days.—D. Moses.

Piet Retief.—Heavy rain on the 13th, 1·51 inch in thirty-five minutes, doing damage to river bridges. Country looking splendid. Rainfall: 4·54 inches on fourteen days.—J. Werner.

Barberton.—Sufficient rain has fallen during the month to enable the farmers to plough and plant crops. A few violent hailstorms have occurred in various parts of the district, but the damage has been slight. Rainfall: 3·66 inches on nine days.—W. Grubb.

Pretoria (Transvaal University College Experiment Farm).—The rainfall (0·95 inch on five days) during the month was of value to winter cereals, and also kept the veld grass alive, thus providing ample grazing for the stock. Owing to long intervals between the falls, it was of very little value for ploughing, and we are still waiting on a sufficient fall to start planting operations. No locusts appeared during the month.—The Manager.

Karreefontein (Bloemhof).—Ploughing proceeding, and grass quite long enough for stock to graze. Small stock improving in condition. Rainfall: 0·59 inch on two days.—J. Versfeld.

Uitgevallen (Heidelberg).—Although veld is in splendid condition and stock fair, conditions for crops are very dry and ploughing is difficult. Rainfall: 1·05 inch on seven days.—L. Turner.

Middelkop (*Rustenburg*).—The whole country in this vicinity overrun by locusts, dry cotton planted totally destroyed, lots of damage done to veld as well. Rainfall: 2·34 inches on six days.—W. J. Retief.

Lacotte (*Zoutpansberg*).—Rain wanted very badly, ground too hard to plough, and cotton should be planted by 15th November. Rainfall: 0·55 inch on four days.—W. H. Andrews.

Goedgelegen (*Marico*).—Heavy hailstorm, damage to fruit. (Date not given.) Rainfall: 1·14 inch on three days.—J. Lubbe.

Swagershoek (*Lydenburg*).—31st October, hail; much damage to fruit and plants. Rainfall: 3·10 inches on three days.—J. Nel.

SWAZILAND.

Hlatikulu.—For the month of October we had a fair amount of rain, and the grass has come on well, there being no shortage. Cattle are once more in good condition but, owing to East Coast fever there is no sale. No further outbreaks of East Coast fever have been reported. We have had locusts in the district, but only in the voetganger stage, and they were soon destroyed.—J. Pullen.

Matendele.—An excellent month for planting; all agricultural work well forward. Rainfall: 2·13 inches on five days.—H. S. Parry.

ORANGE FREE STATE.

Kroonstad.—Weather seasonable. Rains of the greatest benefit, very little run off. Highest rise of river, 4 feet above normal level. Rainfall: 5·20 inches on twelve days.—A. C. Mason.

Groenvlei (*Frankfort*).—Although rain fell on ten days (2·21 inches) during the month, on each occasion the fall was very disappointing, with the exception of the fall during the early morning hours of the 28th. Indications were very good, but it simply could not rain, the threatening clouds disappeared for no apparent reason. The 2½ inches that fell during September, together with the falls on the 5th, 10th, and 11th of October, enabled us to plough until the 19th, when we stopped ploughing because the soil became too dry. We recommenced ploughing on the 29th. Seed in ground and grazing have benefited largely from these frequent showers. Stock are picking up in condition; plenty of grazing.—B. Stollreither.

Holfontein (*Kroonstad*).—A very good month. Rains came none too soon, though some farmers have had very heavy losses in stock. Rainfall: 4·60 inches on seven days.—L. C. McInerney.

Modderpoort (*Ladybrand*).—We have had very satisfactory rains and one or two heavy hailstorms, but very little damage was done. Rainfall: 3·32 inches on seven days.—H. Wilson.

Rockwood No. 32 (*Thaba 'Nchu*).—A peculiar rain fell to-day, 5th October, 1924. I saw some thunder-clouds in the west, wind gentle north-east, and started to collect my different lots of weak lambs and ewes. I had only got half-way when rain and fine hail fell like a waterspout, making it impossible for man or beast to move, the fall was so heavy and rush so strong. I feared my big dams would go, but luckily it lasted twenty minutes only. In my top camp, south of house, I had a lot of lambs out, and expected the herd to report twenty or more dead, but he says he sat quite dry, watching the rain near the house, and says it was like a moving wall quite easy to see; some grass and ground not damp, and rushing water not 100 yards away. I hear on a farm

two miles away west, dust was hardly laid. Lightning was very heavy and close. Where the flood ran into the dam hail floated 3 feet deep in one block. Rainfall: 1·27 inch, of which 1·09 inch fell from 3.20 a.m. to 3.40 a.m.—H. Howell.

Rugby (*Bethlehem*).—A month of good growing weather, light showers alternating with hot sunshine. Grazing for all classes of stock plentiful. An abnormally large amount of ploughing and maize planting for this time of year has already taken place, many farmers having completed their ploughing operations. Rainfall: 2·82 inches on eleven days.—A. C. Glynn Baker.

Wildealspoort (*Fauresmith*).—Veld in quite good condition for this time of year, but we badly need a good soaking rain. Rainfall: 1·09 inch on five days.—J. M. Blakeney.

Belladale (*Frankfort*).—Although rainfall was much below normal, the veld is in good condition, and cattle are picking up fast. Sheep are doing very well; as a whole, the lambing season has been good. Ploughing is well away; early planted mealies have come up well and are going ahead nicely. Rainfall: 1·63 inches on eight days.—D. McCalman.

Heilbron.—Crops: Great headway has been made in ploughing operations. Stock: Stock are in good condition, and no diseases are evident. Veld: Grazing is coming on fine, and stock are already getting the benefit of the natural pasturage. The greater part of the rain we have had has fallen in the form of steady soaking showers, so that very little has run off. Rainfall: 2·56 inches on ten days.—P. A. du P. Naudé.

Paardekraal (*Winburg*).—A fine month. Country beautiful. All stock good—no deaths. Rainfall: 3·89 inches on nine days.—G. S. Lowe.

NATAL.

Weenen.—Heavy thunderstorms accompanied with wind. Rainfall: 3·72 inches on nine days.—G. J. Goodwin.

Ladysmith.—Excellent rains well distributed throughout the month. Country generally shows a great improvement and is now looking beautifully green. Rainfall: 4·20 inches on fifteen days.—D. A. R. Leathern.

Maritzburg (*Mental Hospital*).—Good growing month. Rainfall: 1·54 inch on eleven days.—The Staff.

Dundee.—A good deal of cold and cloudy weather for October, but very pleasant generally and good spring growth all round. Rainfall: 2·78 inch on twelve days.—West Thorrold.

Paddock.—The best month since the rains started. A good deal of misty rain. Thunderstorms in afternoon and evening. Ploughing and wattle stripping going ahead. Rainfall: 3·13 inches on fifteen days.—G. Victor Merriman.

Mid-Illovo.—Frequent light thunderstorms, with only a total rainfall of 2·47 inches on eighteen days. Gales on nights of 23rd and 24th. Ground softening, but more rain required.—Lt.-Col. J. W. V. Montgomery, C.M.G., D.S.O.

Nottingham Road.—Cold and misty rains. Seeds will not germinate quickly. The veld is good and stock of all kinds healthy. Rainfall: 2·06 inches on thirteen days.—Miss E. Smythe.

Greytown.—Good rains and much dull weather. Until the 29th, with its rainfall of 2·19 inches, the ground showed no signs of saturation, but is now thoroughly soaked, and a good planting season seems assured. Much land already ploughed up. Grass has come on well, and cattle are rapidly improving in condition. Rainfall: 5·60 inches on eighteen days.—J. M. Handley.

Paulpietersburg.—Only light showers registered in the village during the month, but much heavier reported in the district, and some hail. Rainfall: 1·80 inch on sixteen days.—Dr. N. Lipscomb.

Impendhle.—The weather has been generally very misty, chiefly towards evening, with fine rain. General state of surrounding country good.—The Gaoler.

Thornlea (Lower Umfolozi).—Light showers and drizzles only, with light to strong south-south-westerly winds. Crops and veld in excellent condition as result of good rains at end of September. Rainfall: 1·26 inch on eight days. —S. W. Rutherfoord.

Rongpoort (Weenen).—Considerably better. Lovely rains and grass beautifully green, but still short. Stock improving rapidly. Ploughing in full swing at the end of the month. Hail on the 13th, which did damage to gardens and fruit. Rainfall: 3·36 inches on twelve days.—J. H. Bartholomew.

CAPE.

Darling.—Very dry early part of month, and crops suffered to some extent. Rainfall: 1·08 inch on ten days.—P. H. Drake.

Prieska.—Calm mornings, with strong north-westerly winds during the day, working up for rain on several occasions, with westerly winds at night have been the chief features of the month. Nights almost cloudless. On the 28th the weather was exceptionally heavy about midday, and a few local showers fell, but soon after 3 p.m. everything was clear again. Rainfall: 0·01 inch on one day.—E. G. Bryant.

Sandflats (Mount Currie).—Weather: A great amount of wind during the month. On the 19th veld going off and more old trees giving in. 23rd, very dry and parched. 24th, sharp showers about 12 noon, accompanied by thunder and lightning: strong north-westerly wind and dust; more thunder and lightning about sundown, and south-westerly and westerly wind 7 p.m. 28th, heavy storm passed north-west–north-east about 3 p.m., eighteen miles north-west of station. 29th, thunderstorm, with wind and lightning, 7.14 p.m. to 7.26 p.m., 0·39 inch. Live stock: Improving in condition all round, notwithstanding very dry spell between 5th and 22nd. Agriculture: Some maize crops completed sowing and coming up. Others in various stages of planting. Temperature: Maximum, 84·5 degrees on 18th; minimum, 36·0 degrees on 16th. Two light frosts during the month on the grass: 1½ degree on 10th and 5 degrees on 17th. Rainfall: 1·44 inch on ten days.—Hewson B. Corderoy.

Rietfontein (Aliwal North).—Destructive hailstorms in the district. Cold snaps retarded growth of veld. Rainfall: 1·10 inch on four days.—A. G. Smith.

Lovedale.—This is the lowest rainfall on record for October. Since our observations began in 1880 we have had less than an inch of rain in October only in nine years, the next lowest being 0·58 inch in 1899, a very dry year. Rainfall: 0·39 inch on four days.—Charles A. Pilson.

Andriesfontein (Hanover).—Month very windy. Stock falling off in condition. Several swarms of voetgangers in the district. Rainfall: Nil.—H. v. d. Merwe.

Port Alfred.—Most exceptional weather during month. Dry, high winds and gales prevailed. Drought very severe, veld scorched, orchards and crops suffering. Cattle healthy, but in poor condition. Rainfall: 0·87 inch on three days.—W. H. Pascoe.

Klaver (Van Rhynsdorp).—The river flow was decreasing rapidly, but the rainfall on the 23rd flattened the curve very considerably. Rainfall: 0·33 inch on six days.—W. M. Cameron.

Riversdale.—In certain parts of the district the crops are showing up very well. This is due to the rainfall not being general. Rainfall: 0·94 inch on nine days.—Rev. Martin Johnson.

Sydney-on-Vaal (*Barkly West*).—Alternately hot and cold days. All rain was from short showers during thunderstorms, and was therefore very variable over comparatively small areas. Cotton crops on lands adjoining the river banks showed evidence of frost on the 26th. No locusts yet hatched in this neighbourhood, nor have any been seen up to the present. Rainfall: 0·79 inch on three days.—J. G. Richards.

Queenstown.—The rainfall amounted to only 0·49 inch on six days; greatest 0·21 inch on the 5th. On the morning of the 8th there was a slight hoar-frost. The temperature was equable, though the extremes of maxima fluctuated from 59·3 degrees on the 20th to 92·9 degrees on the 30th, and of minima from 35·1 degrees on the 8th to 59·4 degrees on the 29th. Strong north-westerly winds prevailed. Hopes raised last month of improvement in the veld vanished, these drying winds counteracting whatever promise there was of a green carpet decking the landscape.—J. F. C. Rein.

Kruaipan (*Mafeking*).—A comparatively cool month, the average temperature being 6 degrees less than for October of last year. Rainfall: 1·02 inch on five days.—P. J. Hart.

Tsolo.—Cattle, etc., are in a bad way owing to want of grass. Ploughing has commenced in some parts of the district. No cattle disease. Rainfall: 0·86 inch on nine days.—H. N. Tillard.

Louisvale (*Kenhardt*).—No rain has fallen here yet this season, and outside farmers are losing heavily. Some are keeping lucerne from the irrigation settlement to feed their more valuable stock. Along the river, things are prospering. The river has ample water, and lucerne is fetching good prices.—Stuart N. Smith.

Cathcart.—A dry month, with moderate winds. Stock very poor. Trees suffering severely from drought. Rainfall: 0·87 inch on five days.—C. E. Whibley.

Kokstad.—Alternate heat and cold; some frost and hail. Rainfall: 2·88 inches on fifteen days.—H. D. Coyte.

O'okiep.—Continued drought; condition of country desperate. Rainfall: 0·07 inch on two days.—J. Burrows.

Kenhardt.—Continued drought. Rainfall: Nil.—R. Seydell.

Graaff-Reinet (*The Convent*).—A warm and very dry month. Winds variable. Rainfall: 0·07 inch on one day.—The Mother Superior.

Dunghye Park (*Caledon*).—Frequent light rains and cold weather. Generally light showers during the past winter, well distributed, afforded little run-off to stock dams. Rainfall: 1·63 inch on eleven days.—J. J. de Villiers.

Aliwal North.—October on the whole has been a month of low temperature. A good deal of thunder, but very little rain. Hail in many parts of the district, which has done a good deal of damage to crops. Rainfall: 0·93 inch on five days.—Alex. Alcock.

Kimberley Gaol.—Chilly nights most of the month. Duststorms frequent. Rainfall: 0·82 inch on three days.—C. H. Dowler.

Carnarvon.—A cool month, temperature being on the average 6 or 7 degrees lower than for the corresponding month last year. Strong winds from north-west and south-west during the latter part of the month. Rainfall: Nil.—A. P. Malherbe.

Somerset East.—The month has been remarkable for the extremes in temperature and air pressure. Temperature, clouds, and low barometer have often given unfulfilled promise of rain. The drought becomes more and more a menace in both town and district. Rainfall: 0·22 inch on four days.—C. Harris.

Bedford.—Large variations in temperature. Intense drought. Farmers complaining of want of water more than veld. Three degrees of frost on the grass on the 21st, and maximum temperature 89·0 degrees on the 22nd. Rainfall: 0·40 inch on six days.—Thomas C. Hall.

Queenstown.—A month of drought, with strong northerly and westerly winds and duststorms. Clouds gathered and a few showers fell, but clouds scattered and light. Outlook serious for farming community. Rainfall: 0·43 inch on six days.—H. Holly.

Vruchtbaar (Wellington).—A few very cold nights and mornings, but a good month for all cereal crops. A very good fruit crop in our district. Rainfall: 2·68 inches on seven days.—P. J. Cillie & Son.

Steinkopf (Namaqualand).—Terrible drought here. Rainfall: 0·05 inch on one day.—W. J. Drury.

Groot Rietvlei (Somerset East).—Stock in fair condition; cattle very poor; so far, no losses. Rainfall: Nil.—A. M. van Gend.

Droogefontein (Hanover).—Late frosts occurred about three nights during the month, which did considerable damage to crops.—Rainfall: Nil.—Lindsay Brothers.

Visgat (Fraserburg).—The drought is terrible. Farmers are trekking with their stock towards Victoria West and Richmond. Rainfall: Nil.—G. le Roux.

Glencoe (Middelburg).—Drought awful about here. Cattle nearly all dead. Fountain, normal flow 80,000 gallons per day, all but dry. No lucerne. Rainfall: 0·05 inch on one day.—C. L. Hart.

Hoogstede (Albert).—Severe frosts during the month, causing damage to crops. All the little rains were accompanied by hail, which did considerable damage in some parts. On the whole the crops are very promising throughout the district, but require more rain badly. Rainfall: 1·01 inch on four days.—S. G. Griesel.

BECHUANALAND.

Mochudi.—Locusts reported to have hatched out on all sides, especially in a strip ten miles east of railway line. At Mochudi a kind of fly has been noticed depositing a grub in the neck of the locust, the locust subsequently dying. Rainfall: 2·09 inches on three days.—Rev. W. J. Reyneke.

Dikgatlong Ranch.—Season evidently back to normal after three years. Heat very moderate. Good steady rains on five days during the month, amounting to 2·18 inches. Veld quite green and good. So far, only three small hatchings of locusts on this ranch.—Paul Jousse.

BASUTOLAND.

Mafeteng.—Good rains fell on the 22nd (0·83 inch), 24th (0·23 inch), and 30th (0·83). Total for month, 1·96 inch on four days. Veld and wheat crops looking well.—F. Hodgson.

C. STEWART,
Chief Meteorologist.

AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), OCTOBER, 1924.

Place.	Observer.	Month—Oct., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		°F.	°F.	°F.	°F.	°F.	°F.		°F.	
Transvaal—										
Barberton	Walter Grubb	80·8	58·8	69·8	68·8	+ 1·0	94·0	15th	51·0	17th.
Belfast	The Forester	72·8	43·2	58·0	58·0	± 0·0	81·0	24th	30·0	18th.
Bloemhof	Sergt. P. J. Jordaan	82·5	53·2	67·8	66·0	+ 1·8	91·6	30th	42·5	7th.
Ermelo	J. Dean	72·8	48·9	60·8	60·8	± 0·0	83·1	31st	42·0	16th.
Johannesburg (Observatory)	The Staff	72·5	51·3	61·9	61·4	+ 0·5	82·3	31st	42·0	8th.
Klerksdorp (Strathmore)	Chas. Scott	79·4	53·5	66·4	68·0	− 1·6	90·0	31st	39·0	8th.
Komatipoort	H. J. Evans	88·0	63·1	75·6	76·0	− 0·4	101·0	6th, 24th, and 31st	55·0	18th.
Louis Trichardt	C. L. Cope	79·0	55·8	67·4	67·2	+ 0·2	94·0	7th	47·0	4th and 10th.
Middelburg	Dr. H. A. Spencer	—	—	—	64·0	—	—	—	—	—
Nylstroom	G. Bakker	82·5	54·4	68·4	69·2	− 0·8	90·5	31st	44·0	8th.
Pietersburg	W. J. Frankleyne	81·0	54·3	67·6	66·9	+ 0·7	92·0	7th and 15th.	44·0	10th.
Piet Retief	J. Werner	74·0	53·0	63·5	63·9	− 0·4	84·0	19th	44·5	16th.
Pigeonhole (New Agatha)	Jno. McCallum	73·5	55·1	64·3	—	—	87·0	15th	47·0	16th and 17th.
Pilgrims Rest	E. M. Skea	76·9	51·6	64·2	64·1	+ 0·1	89·0	15th	46·0	3rd and 18th.
Potchefstroom (Exp. Farm)	The Manager	79·0	52·6	65·8	64·8	+ 1·0	87·0	31st	39·0	8th.
Pretoria (Meteorological Office)	The Staff	79·6	55·4	67·5	67·6	− 0·1	89·0	31st	48·1	8th.
Rustenburg	A. Streatfield	83·7	54·6	69·2	69·6	− 0·4	95·0	11th	44·0	8th.
Standerton	—	—	—	—	61·8	—	—	—	—	—
Zeerust	H. Dietrich	85·7	54·8	70·2	69·0	+ 1·2	97·8	31st	38·8	8th.
Swaziland—										
Mbabane	Swaziland Police	74·0	52·9	63·4	63·4	± 0·0	87·0	24th	45·0	16th and 17th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	76·4	47·7	62·0	62·8	− 0·8	85·5	18th	34·2	16th.
Bloemfontein	G. A. Schepers	76·5	48·9	62·7	63·3	− 0·6	84·1	18th	37·2	7th.
Harrismith	The Forester	68·0	45·1	56·6	59·7	− 3·1	79·0	24th	35·0	17th.
Kroonstad	A. C. Mason	77·6	51·2	64·4	65·8	− 1·4	86·0	18th	39·0	8th.
Ladybrand	The Forester	71·1	48·2	59·6	61·0	− 1·4	79·0	18th	38·0	16th.
Lindley	—	—	—	—	61·6	—	—	—	—	—
Natal—										
Dundee	West Thorrold	74·6	50·3	62·4	66·0	− 3·6	90·0	31st	43·0	16th.
Durban (Point)	The Port Captain	72·5	62·8	67·6	69·7	− 2·1	79·6	23rd	55·4	16th.
Empangeni	The Forester	75·7	60·9	68·3	70·4	− 2·1	93·0	23rd	51·0	17th.
Estcourt	The Town Clerk	74·7	50·3	62·5	67·0	− 4·5	87·0	18th	42·0	16th.
Hlabisa	E. E. Redgrove	74·5	57·4	66·0	67·5	− 1·5	89·0	31st	48·0	16th.
Ladysmith	D. A. R. Leathern	77·5	54·9	66·2	69·8	− 3·6	92·0	31st	46·0	16th and 17th.
Maritzburg (Mental Hospital)	The Staff	75·5	56·2	65·8	67·4	− 1·6	91·5	23rd	47·0	16th.
Stanger	Cecil C. Foss	76·5	60·2	68·4	69·0	− 0·6	94·0	14th	53·0	16th.
Weenen	The Gaoler	77·9	57·6	67·8	69·0	− 1·2	91·0	18th and 19th	45·0	10th.

AIR TEMPERATURES, OCTOBER, 1924—(*continued*).

Place.	Observer.	Month—Oct., 1924. Mean Max.	Month—Oct., 1924. Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Extremes. Date.	Extremes. Lowest.	Extremes. Date.
Cape Province—		°F.	°F.	°F.	°F.	°F.	°F.		°F.	
Aliwal North	Alex. Alcock	76·7	45·8	61·2	61·0	+ 0·2	88·0	30th	35·0	17th.
Bedford	Thos. C. Hall	77·0	47·3	62·2	61·6	+ 0·6	92·0	28th	29·0	21st.
Capetown (Royal Observatory)	The Staff	69·0	51·8	60·4	60·6	− 0·2	78·2	9th	39·8	26th.
Carnarvon	A. P. Malherbe	76·4	44·2	60·3	62·9	− 2·6	90·0	30th	35·0	25th.
Clanwilliam	—	—	—	—	64·6	—	—	—	—	—
East London	The Port Captain	71·5	55·6	63·6	63·8	− 0·2	76·5	11th	48·6	16th.
Graaff-Reinet (Convent)	The Mother Superior	81·9	49·6	65·8	63·7	+ 2·1	96·8	28th	36·2	16th.
Grahamstown	The Vet. Res. Officer	71·8	44·5	58·2	60·7	− 2·5	88·4	28th	35·5	21st.
Groot Drakenstein	A. Franceys	72·7	48·1	60·4	61·1	− 0·7	98·0	11th	37·7	3rd.
Kenhardt	R. Seydell	83·5	47·7	65·6	67·5	− 1·9	98·0	30th	37·0	1st.
Kimberley	C. H. Dowler	83·0	53·3	68·2	68·2	± 0·0	92·0	4th, 30th, and 31st	45·0	16th.
Kingwilliamstown	W. A. Kindness	76·5	51·7	64·1	64·5	− 0·4	97·0	28th	41·0	21st.
Kokstad	H. D. Coyte	71·8	47·3	59·6	58·0	+ 1·6	86·2	18th	35·0	17th.
Mafeking (Convent)	The Mother Superior	82·6	54·9	68·8	69·8	− 1·0	93·8	31st	43·8	8th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	66·9	54·9	60·9	61·4	− 0·5	77·0	14th	48·0	15th.
Murraysburg	W. H. Rose-Innes	—	—	—	61·8	—	—	—	—	—
O'okiep	J. Burrows	74·5	48·7	61·6	61·6	± 0·0	87·7	9th	34·0	26th.
Port Elizabeth	The Lightkeeper	67·5	54·2	60·8	62·0	− 1·2	79·8	27th	45·0	21st.
Port Nolloth	The Lightkeeper	62·3	46·7	54·5	57·2	− 2·7	92·0	9th	38·0	26th.
Port St. Johns (Cape Hermes)	The Lightkeeper	72·0	59·9	66·0	65·4	+ 0·6	78·0	10th and 22nd	51·0	16th.
Queenstown	H. Holley	78·0	47·8	62·9	62·2	+ 0·7	93·0	30th	36·0	8th and 16th.
Somerset East	C. Harris	77·0	48·1	62·6	62·3	+ 0·3	93·4	30th	37·2	21st.
Stutterheim	F. C. Bousfield	74·4	48·6	61·5	60·2	+ 1·3	93·8	30th	36·2	21st.
Sydney's Hope	Rev. S. Rippon	72·0	48·6	60·3	59·8	+ 0·5	90·0	28th	39·5	16th.
Ultenhage	H. Inggs	74·4	48·3	61·4	64·4	− 3·0	94·2	22nd	37·0	16th.
Umtata	P. Hackett	74·1	50·8	62·4	62·2	+ 0·2	92·3	23rd	37·8	18th.
Vryburg	Chas. Butler	82·8	52·5	67·6	69·6	− 2·0	92·0	31st	38·0	8th.
Wynberg (Convent)	The Mother Superior	70·0	51·2	60·6	59·8	+ 0·8	80·0	4th	44·5	27th.
Basutoland—										
Mafeteng	F. Hodgson	70·5	47·0	58·8	59·8	1·0	79·0	18th	35·0	21st.

RAINFALL, OCTOBER, 1924.

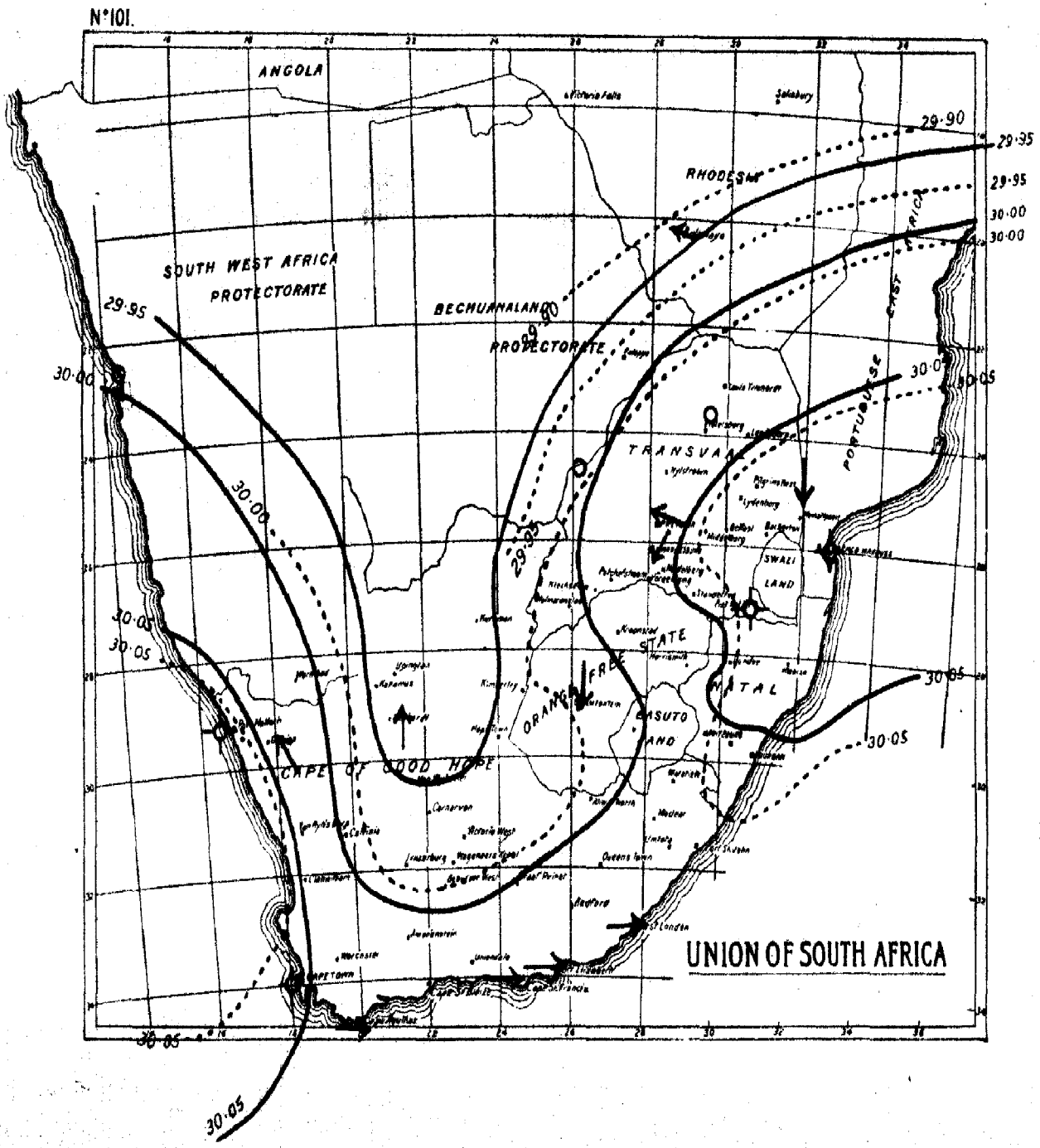
Place.	Observer.	Month. Oct., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Transvaal—		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Barberton	W. Grubb	3·66	2·47	+ 1·19	17·59	22·14	− 4·55	4·73	4·37	+ 0·36
Belfast	The Forester	2·66	3·36	− 0·70	24·09	21·47	+ 2·62	4·08	4·95	− 0·87
Bethal	H. Joubert	3·25	3·44	− 0·19	20·32	18·95	+ 1·37	4·32	4·95	− 0·63
Bloemhof	B. J. Jordaan	1·88	1·23	+ 0·65	—	14·45	—	3·79	2·63	+ 1·16
Clermont	S. A. Police	1·71	1·31	+ 0·40	16·09	12·63	+ 3·46	1·96	1·88	+ 0·08
Ermelo	The Forester	3·13	4·64	− 1·51	22·29	21·23	+ 1·06	4·75	6·68	− 1·93
Haenertsburg	S.A. Police	4·71	2·79	+ 1·92	28·37	28·75	− 0·38	8·02	4·37	+ 3·65
Heidelberg	W. ter Horst	1·51	2·68	− 1·17	22·64	18·70	+ 3·94	3·43	4·35	− 0·92
Johannesburg (Observatory)	The Staff	2·28	2·74	− 0·46	19·13	20·86	− 1·73	3·82	4·51	− 0·69
Klerksdorp (Strathmore)	C. Scott	1·42	1·91	− 0·49	14·70	16·78	− 2·08	3·83	3·30	+ 0·53
Komatipoort	H. J. Evans	2·16	1·96	+ 0·20	15·11	21·03	− 5·92	4·75	3·29	+ 1·46
Louis Trichardt	C. L. Cope	1·53	2·13	− 0·60	22·44	21·50	+ 0·94	4·46	3·31	+ 1·15
Middelburg	Dr. H. A. Spencer	2·33	2·95	− 0·62	26·64	18·87	+ 7·77	4·47	4·01	+ 0·46
Nylstroom	G. Bakker	1·83	1·99	− 0·16	19·93	17·25	+ 2·68	3·01	3·14	− 0·13
Pietersburg	W. Franklyne	2·25	1·85	+ 0·40	16·06	13·96	+ 2·10	2·87	2·58	+ 0·29
Piet Retief	J. Werner	4·54	4·41	+ 0·13	26·57	24·96	+ 1·61	9·21	6·71	+ 2·50
Pigeon Hole (New Agatha)	J. McCallum	5·51	2·92	+ 2·59	43·27	33·87	+ 9·40	10·08	5·02	+ 5·06
Pilgrims Rest	E. M. Skea	2·17	2·14	+ 0·03	19·60	29·77	−10·17	3·97	4·02	− 0·05
Potchefstroom	The Manager	1·78	2·16	− 0·38	18·17	16·27	+ 1·90	4·86	3·61	+ 1·25
Pretoria (Meteorological Office)	The Staff	1·44	2·69	− 1·25	14·17	19·80	− 5·63	2·30	3·88	− 1·58
Rooiberg	W. P. Watt	1·04	1·65	− 0·61	12·42	17·09	− 4·67	2·12	2·92	− 0·80
Rustenburg	A. Streatfield	0·70	2·53	− 1·83	19·52	18·57	+ 0·95	1·83	4·08	− 2·25
Wakkerstroom	—	—	—	—	—	—	—	—	—	—
Woodbush	The Forester	6·92	4·28	+ 2·64	42·27	53·11	−10·84	12·12	7·88	+ 4·24
Zeerust	H. Dietrich	0·73	1·66	− 0·93	16·37	16·81	− 0·44	2·01	2·64	− 0·63
Swaziland—										
Mbabane	Swaziland Police	9·30	4·68	+ 4·62	46·49	37·92	+ 8·57	15·53	8·39	+ 7·14
Orange Free State—										
Bethulie	J. J. Wardhaugh	0·53	1·19	− 0·66	17·36	14·14	+ 3·22	2·05	2·73	− 0·68
Bloemfontein	G. A. Schepers	1·53	1·69	− 0·16	16·76	17·32	− 0·56	3·53	3·43	+ 0·10
Boshof	The Postmaster	0·83	1·21	− 0·38	11·64	15·33	− 3·69	1·14	3·24	− 2·10
Harrismith	The Forester	3·25	3·32	− 0·07	21·97	21·07	+ 0·90	7·42	5·55	+ 1·87
Kroonstad	A. C. Mason	5·20	1·93	+ 3·27	17·09	17·93	− 0·84	6·92	3·62	+ 3·30
Ladybrand	The Forester	4·07	2·44	+ 1·63	21·69	20·62	+ 1·07	7·57	5·34	+ 2·23
Lindley	—	—	2·29	—	—	17·60	—	—	4·06	—
Natal—										
Dundee	W. Thorrold	2·78	3·05	− 0·27	24·65	23·04	+ 1·61	5·95	5·38	+ 0·57
Durban (Point)	The Port Captain	3·48	4·87	− 1·39	29·08	31·58	− 2·50	8·88	10·79	− 1·91
Empangeni	The Forester	3·19	5·88	− 2·69	31·32	36·61	− 5·29	12·05	12·44	− 0·39

RAINFALL, OCTOBER, 1924—(*continued*).

Place.	Observer.	Month. Oct., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Natal—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Estcourt	The Town Clerk	3·64	2·42	+ 1·22	—	20·93	—	—	4·36	—
Hlabisa	E. E. Redgrove	2·97	5·16	− 2·19	—	32·37	—	8·54	9·55	− 1·01
Howick	The Gaoler	2·63	3·29	− 0·66	21·60	24·52	− 2·92	6·10	6·21	− 0·11
Ladysmith	D. A. R. Leathern	4·20	2·75	+ 1·45	22·82	21·04	+ 1·78	7·06	4·82	+ 2·24
Maritzburg (Mental Hospital)	The Staff	1·54	3·58	− 2·04	20·42	27·25	− 6·83	5·02	7·24	− 2·22
Stanger	C. C. Foss	2·51	5·51	− 3·00	23·64	31·27	− 7·63	7·49	11·11	− 3·62
Vryheid	The Gaoler	1·44	3·84	− 2·40	20·30	24·67	− 4·37	4·04	6·43	− 2·39
Weenen	The Gaoler	3·72	2·48	+ 1·24	16·10	19·78	− 3·68	6·36	4·54	+ 1·82
Cape Province—										
Aliwal North	A. Alcock	0·93	1·47	− 0·54	16·91	16·09	+ 0·82	2·95	3·49	− 0·54
Beaufort West	The Gaoler	0·00	0·70	− 0·70	4·93	8·02	− 3·09	0·55	1·94	− 1·39
Bedford	T. C. Hall	0·40	2·31	− 1·91	12·34	21·46	− 9·12	2·68	5·89	− 3·21
Britstown	The Gaoler	0·13	0·57	− 0·44	7·66	9·81	− 2·15	0·69	1·60	− 0·91
Calvinia	The Gaoler	0·29	0·50	− 0·21	5·30	7·63	− 2·33	2·43	2·89	− 0·46
Capetown (Royal Observatory)	The Staff	1·80	1·66	+ 0·14	17·27	23·49	− 6·22	8·69	11·01	− 2·32
Ceres	The Gaoler	2·85	3·60	− 0·75	32·62	38·40	− 5·78	16·59	19·72	− 3·13
Carnarvon	A. P. Malherbe	0·00	0·44	− 0·44	8·26	6·90	+ 1·36	1·75	1·25	+ 0·50
Clanwilliam	The Gaoler	0·28	0·56	− 0·28	5·05	8·18	− 3·13	2·98	3·85	− 0·87
Concordia	F. R. Carstens	0·13	0·37	− 0·24	1·83	5·98	− 4·15	1·14	2·28	− 1·14
Driefontein (French Hoek)	The Forester	5·41	3·05	+ 2·36	60·71	70·36	− 9·65	33·08	32·29	+ 0·79
East London	A. Downie	1·00	3·63	− 2·63	15·35	26·39	−11·04	3·65	9·90	− 6·25
Fraserburg	The Gaoler	0·00	0·32	− 0·32	3·67	5·93	− 2·26	0·95	1·22	− 0·27
Grahamstown	The Vet. Res. Officer.	1·20	3·07	− 1·87	12·32	22·43	−10·11	4·36	8·20	− 3·84
Garies	The Gaoler	0·11	0·31	− 0·20	2·55	4·67	− 2·12	1·75	2·20	− 0·45
Graaff-Reinet (Convent)	The Mother Superior.	0·07	1·18	− 1·11	7·95	11·35	− 3·40	1·91	3·17	− 1·26
Groot Drakenstein	A. L. Franceys	2·35	2·68	− 0·33	31·88	33·06	− 1·18	15·44	16·05	− 0·61
Griquatown	The Gaoler	0·65	0·77	− 0·12	—	10·81	—	1·11	1·60	− 0·49
George	Rev. Canon B. Price.	2·92	3·27	− 0·35	20·53	28·18	− 7·65	10·43	10·52	− 0·09
Hanover	The Gaoler	0·00	0·70	− 0·70	7·53	11·20	− 3·67	0·70	2·07	− 1·37
Hope Town	The Gaoler	—	0·73	—	—	10·47	—	—	1·67	—
Kenhardt	R. Seydell	0·00	0·35	− 0·35	2·41	5·12	− 2·71	0·35	0·89	− 0·54
Kimberley	C. H. Dowler	0·82	1·12	− 0·30	10·05	12·60	− 2·55	1·04	2·28	− 1·24
Knysna	The Gaoler	2·55	2·72	− 0·17	20·53	23·88	− 3·35	9·83	10·22	− 0·39
Kokstad	H. D. Coyte	2·88	2·03	+ 0·85	20·74	19·62	+ 1·12	6·42	4·23	+ 2·19
Kingwilliamstown	W. Kindness	0·30	2·53	− 2·23	13·32	19·86	− 6·54	2·89	6·43	− 3·54
Kuruman	The Magistrate	1·33	0·43	+ 0·90	—	13·21	—	—	1·27	—
Mafeking (Convent)	The Mother Superior.	1·31	1·62	− 0·31	13·16	16·41	− 3·25	3·17	3·07	+ 0·10
Mossel Bay (Cape St. Blaize)	The Lightkeeper	1·02	1·62	− 0·60	10·56	14·71	− 4·15	4·35	6·00	− 1·65
Murraysburg	W. Rose-Innes	—	0·65	—	—	9·21	—	—	1·89	—
Olokiep	J. Burrows	0·07	0·44	− 0·37	1·64	6·58	− 4·94	0·69	2·91	− 2·22
Philipstown	The Gaoler	0·00	0·71	− 0·71	13·29	11·26	+ 2·03	0·78	1·97	− 1·19

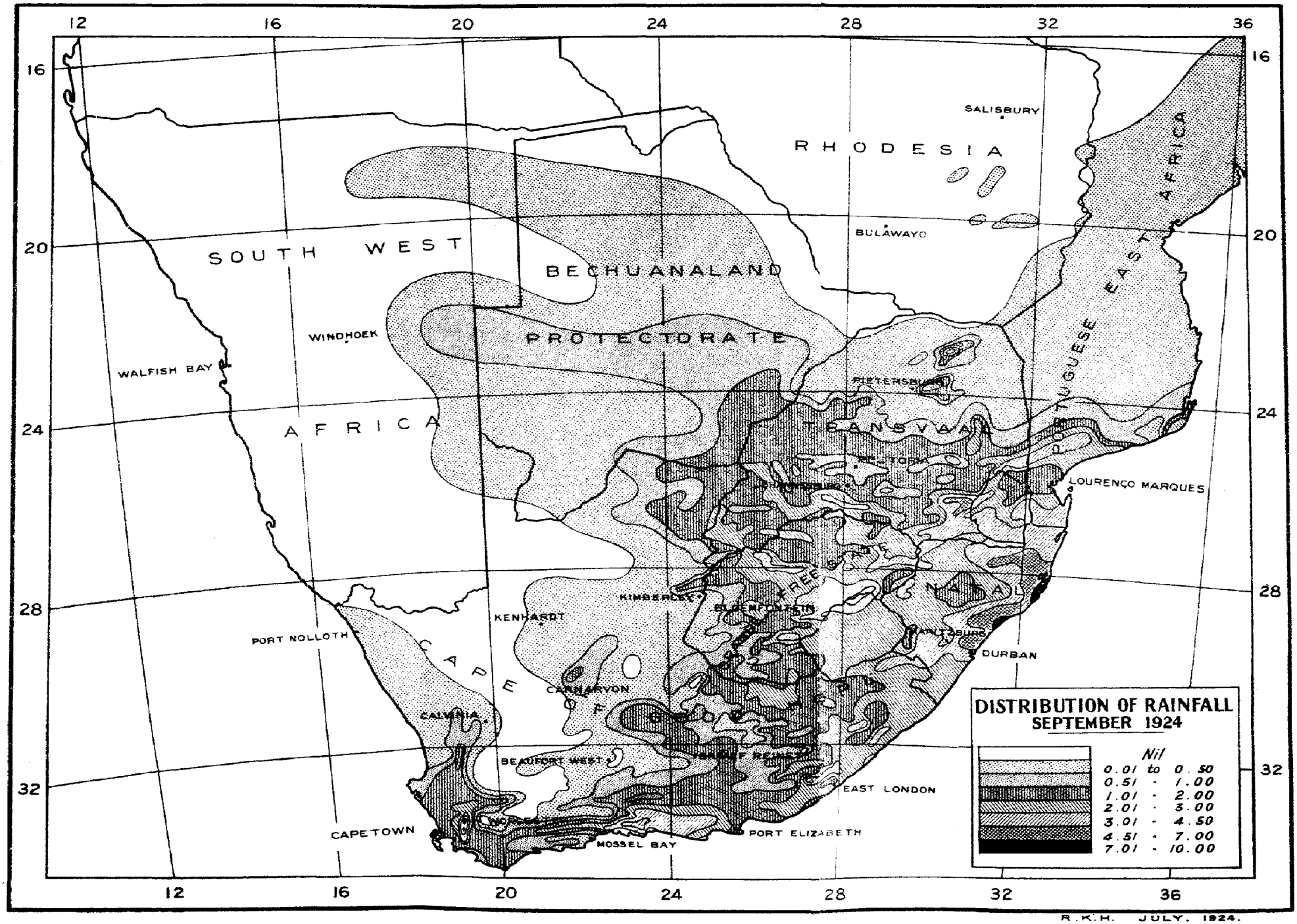
RAINFALL, OCTOBER, 1924—(*continued*).

Place.	Observer.	Month. Oct., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Cape Province—(**continued**).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Piquetberg	The Gaoler	1·18	1·76	− 0·58	14·83	19·17	− 4·34	8·82	9·76	− 0·94
Port Elizabeth	The Lightkeeper	0·31	2·21	− 1·90	13·67	18·72	− 5·05	4·88	8·47	− 3·59
Port St. Johns	The Lightkeeper	2·90	6·69	− 3·79	30·46	39·07	− 8·61	8·59	14·03	− 5·44
Port Nolloth	The Lightkeeper	0·01	0·12	− 0·11	1·16	2·23	− 1·07	0·58	0·95	− 0·37
Prieska	The Gaoler	0·02	0·44	− 0·42	4·71	8·30	− 3·59	0·80	1·07	− 0·27
Queenstown	H. Holley	0·43	1·59	− 1·16	11·59	17·74	− 6·15	1·86	3·77	− 1·91
Steytlerville	The Gaoler	0·00	0·78	− 0·78	4·26	7·72	− 3·46	1·33	2·13	− 0·80
Sutherland	The Gaoler	—	0·63	—	—	8·55	—	—	3·14	—
Swellendam	The Gaoler	1·93	3·02	− 1·09	20·99	26·52	− 5·53	10·45	10·27	+ 0·18
Sydney's Hope	Rev. S. Rippon	0·31	2·45	− 2·14	14·01	18·15	− 4·14	4·61	6·50	− 1·89
Somerset East	C. Harris	0·22	2·27	− 2·05	11·86	20·23	− 8·37	2·14	5·97	− 3·83
Stutterheim	F. C. Bousfield	0·59	3·07	− 2·48	18·35	23·14	− 4·79	3·57	6·52	− 2·95
Uitenhage	H. Inggs	0·48	1·65	− 1·17	9·56	14·27	− 4·71	3·78	5·47	− 1·69
Umtata	B. J. Hackett	1·34	2·43	− 1·09	13·39	19·93	− 6·54	4·14	5·47	− 1·33
Uniondale	The Gaoler	0·46	1·16	− 0·70	8·51	11·67	− 3·16	5·06	4·74	+ 0·32
Upington	The Gaoler	0·00	0·44	− 0·44	4·87	6·01	− 1·14	0·09	0·80	− 0·71
Victoria West	The Gaoler	0·00	0·61	− 0·61	6·65	8·92	− 2·27	1·83	1·69	+ 0·14
Vryburg	Chas. Butler	1·15	1·00	+ 0·15	14·04	15·15	− 1·11	2·60	1·92	+ 0·68
Worcester	The Gaoler	0·75	1·12	− 0·37	—	11·65	—	—	5·78	—
Wynberg (Convent)	The Mother Superior	3·58	3·42	+ 0·16	30·86	43·20	−12·34	17·60	22·88	− 5·28
Basutoland—										
Mafeteng	F. Hodgson	1·96	2·00	− 0·04	23·71	24·27	− 0·56	5·14	4·91	+ 0·23
South-West Africa—										
Aroab	S.W.A. Police	0·01	0·13	− 0·12	6·48	6·43	+ 0·05	0·01	0·21	− 0·20
Aus	E. Martins	0·47	0·27	+ 0·20	1·03	3·84	− 2·81	0·63	1·08	− 0·45
Bethanie	Rev. Peter	0·63	0·20	+ 0·43	1·40	2·92	− 1·52	0·63	0·29	+ 0·34
Duestenbrock	R. Matthiessen	1·31	0·25	+ 1·06	7·52	11·43	− 3·91	1·31	0·40	+ 0·91
Gabis	Rev. P. Rehor	0·00	0·46	− 0·46	0·92	3·77	− 2·85	0·02	0·28	− 0·76
Garinais	F. Bentling	0·23	0·26	− 0·03	3·90	4·82	− 0·92	0·31	0·38	− 0·07
Gibeon	The Postmaster	0·00	0·21	− 0·21	2·43	5·34	− 2·91	0·00	0·39	− 0·39
Gobabis	Rev. Irle	0·83	0·47	+ 0·36	10·95	12·65	− 1·70	1·86	0·68	+ 1·18
Grootfontein	Pitkowski	1·03	0·76	+ 0·27	11·34	18·03	− 6·69	1·03	0·84	+ 0·19
Gr. Witvley	G. Maas	1·18	0·45	+ 0·73	5·42	11·72	− 6·30	1·28	0·60	+ 0·68
Haribes	G. Freund	0·03	0·42	− 0·29	3·02	7·17	− 4·15	0·03	0·75	− 0·72
Heirachabis	Rev. P. Stroka	0·06	0·11	− 0·05	1·36	3·21	− 1·85	0·18	0·18	± 0·00
Kalkfontein S.	S.W.A. Police	0·21	0·18	+ 0·03	2·18	3·83	− 1·65	0·45	0·20	+ 0·25
Franzfontein	H. Janson	0·67	0·25	+ 0·42	6·52	8·21	− 1·69	0·00	0·34	− 0·34
Luderitz Bay	E. Stoeber	0·00	0·02	− 0·02	—	0·65	—	0·01	0·24	− 0·23



October, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for October.

SOUTH AFRICA



R.K.H. JULY. 1924.

RAINFALL, OCTOBER, 1924.

Place.	Observer.	Month. Oct., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
South-West Africa—(contd.)		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Maltahoehe	E. Just	0·00	0·15	− 0·15	3·18	5·55	− 2·37	0·00	0·22	− 0·22
Neu Heusis	Liebig's Extract Co.	0·37	0·34	+ 0·03	4·76	11·52	− 6·76	0·37	0·56	− 0·19
Okahandja	B. Templin	2·37	0·40	− 1·97	8·56	11·66	− 3·10	2·37	0·61	+ 1·76
Okasangumingo	R. H. A. Schneider	0·56	1·00	− 0·44	9·92	13·74	− 3·82	0·56	1·31	− 0·75
Omaruru	The Postmaster	0·69	0·30	+ 0·39	6·79	13·27	− 6·48	0·69	0·41	+ 0·28
Otjiwarongo	The Magistrate	1·39	0·63	+ 0·76	9·88	12·95	− 3·02	1·39	0·73	+ 0·66
Outjo	The Magistrate	0·39	0·42	− 0·03	4·25	12·16	− 7·91	0·39	0·49	− 0·10
Rehoboth	The Postmaster	0·01	0·42	− 0·41	1·71	10·15	− 9·44	0·01	0·74	− 0·73
Rietfontein	B. Leist	0·83	1·03	− 0·20	8·15	15·40	− 7·25	0·83	1·09	− 0·26
Swakopmund	The Goaler	0·10	0·06	+ 0·04	0·10	0·53	− 0·43	0·10	0·16	− 0·06
Tsumeb	Ing. Schetter	1·31	0·83	+ 0·48	12·52	17·77	− 5·25	1·33	1·01	+ 0·32
Usakos	Rev. Dicht	0·12	0·21	− 0·09	2·54	4·53	− 1·99	0·12	0·29	− 0·17
Voigtsgrund	A. Voigts	0·06	0·23	− 0·17	10·19	6·46	+ 3·73	0·06	0·36	− 0·30
Warmbad	E. Luchtenstein	0·00	0·18	− 0·18	0·41	3·30	− 2·89	0·01	0·52	− 0·51
Waterberg	D. Hahn	0·65	0·50	+ 0·15	10·09	15·36	− 5·27	0·65	0·62	+ 0·03
Wilhelmstal	W. Boehmker	0·89	0·40	+ 0·49	4·40	10·33	− 5·93	0·89	0·51	+ 0·38
Windhoek	Observatory	1·72	0·41	+ 1·31	8·63	12·13	− 3·50	1·72	0·61	+ 1·11

Blank page retained for pagination

4612—27/6/25—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. NOVEMBER, 1924. No. 59.

Pressure.—Mean atmospheric pressure during November was one-tenth of an inch in excess of the average over the west and south of the Cape Province, and half a tenth higher than usual in the Transvaal, Free State, and Natal.

On the 1st of the month the interior had moved from the extreme west to a position of the centre extending to the south-west, with high pressure on the east and west; by the next morning pressure had fallen still further, by about half a tenth over the interior, the low-pressure tongue having its axis in a north-west to south-east direction extending to the south-east and east coasts; pressure had fallen in the east by about two-tenths, and a fragment of the eastern "high" lay over Lourenco Marques; meantime, pressure had increased slightly in the west; on the 3rd, pressure had diminished still further over the interior, but had increased on the south and east coasts, whilst the low-pressure tongue had retreated some distance to northwards; on the 4th, it continued "low" over the interior, but pressure had increased in the east and decreased in the west; on the 5th, the eastern "high" had pushed more on to the land from the south-west, increasing pressure in Rhodesia and the eastern parts of the Union, and contracting the tongue of low pressure in the west; pressure had fallen slightly in the south-west; on the 6th, pressure had increased in the west and decreased in the east, whilst the "low" had intensified and now occupied a central position with a complementary "low" on the south, having a minimum isobar of 29·75 inches; on the 7th, the western "high" had advanced westwards well on to the land, whilst the interior "low" had retreated farther north and the coastal depression centred over Lourenco Marques; on the 8th, the northern portion of the anticyclone occupied the greater part of the Union, and pressure decreased continuously to Northern Rhodesia; on the 9th, conditions were practically the same, except for a further decrease in pressure in the north and the straightening of the isobars from in an east and west direction over the Union, whilst those in the north sloped from north-east to south-west; on the 10th, pressure had fallen one-tenth of an inch along the coast and risen by a similar amount in the north, while a definite V-depression had formed over South-West Africa and Bechuanaland;

on the 11th, the isobars of the anticyclonic had a north-east to south-west trend over the eastern half of the Union, and pressure had fallen slightly there, but to a much greater extent in the south-west; and the interior "low" remained in practically the same position, whilst the head of a complementary "low" had appeared on the west coast; on the 12th the west coast "low" had passed on to the south coast and the centre of the Cape Province, whilst the western "high" had advanced very little, and that on the east had weakened slightly with the highest pressure just north of Lourenco Marques; on the 13th, practically the whole of the Union was covered by the "low," with the outer front isobars of an anticyclone in the west and a similar isobar over Beira in the east; on the 14th, conditions were the same, except that pressure had fallen slightly all over; on the 15th, the western anticyclone had advanced over a considerable portion of the west and south, causing a rise of about half an inch, while the isobars sloped from north-west to south-east; the south coast "low" had disappeared, and pressure had increased slightly over the interior and on the Portuguese East African coast; on the 16th, the "high" had passed round to the east, causing a rise of pressure of about 0·30 inch there, the isobars lying practically parallel with the coast; the gradient had increased considerably, pressure over the interior remaining practically the same as on the previous day; on the 17th, pressure had fallen generally in the west and risen slightly over the interior; on the 18th, 19th, and 20th, conditions continued practically the same as on the 17th, except for slight variations in pressure; on the 21st, the interior "low" in the west, which was also present on the previous days, had pushed further into the Union, the outskirts of a "low" had appeared in the east at Durban, and pressure had fallen slightly in the south; on the 22nd, the "low" in the east had passed off, and as a result of the interior "low" pushing southwards, pressure had fallen about one-tenth of an inch over the Cape Peninsula and had risen about the same amount on the Natal coast; on the 23rd, pressure had fallen in the south and east, so that practically the whole of the country was under the influence of the "low"; on the 24th, pressure had fallen still further on the south coast, but conditions were otherwise unchanged; on the 25th, there was an increase of pressure of about one-tenth of an inch, and in the south of about two-tenths, but practically no change over the interior; on the 26th, a slight increase of pressure in the south and east was the only noticeable alteration; on the 27th, a decrease of about one-tenth of an inch in the south-west and interior, of two-tenths in the south, and three-tenths in the east with the formation of a "low" in the east, caused the Union to be generally under low pressure; on the 28th, the eastern "low" having moved northwards centred over Lourenco Marques, while a small decrease took place in the east and a similar increase in the west; on the 29th, a considerable increase in pressure took place in the south and east, resulting in the equatorial tongue retreating to the north and west and contracting in extent; on the 30th, the western side of a large anticyclone, having its maximum pressure in about latitude 40° S. and longitude 29° E., and apparently moving to the north-east, caused a further general increase in pressure and a further retreat of the "low" to the north-west, over South-West Africa, the isobars having mostly a north-east to south-west trend.

Temperature.—The mean temperature during November was 66·3 degrees, or 1·3 degree lower than usual. This deficit was entirely due to the mean day temperature (77·4 degrees) being 2·7 degrees less than the average, whilst the mean night temperature (55·3 degrees) was a tenth of a degree in excess of the normal. Sub-normal mean temperatures for this month were common to all the Provinces. Thus over the Transvaal, the mean temperature (68·4 degrees) was 0·6 degree under the average; this shortage was brought about by the mean maximum temperature (79·5 degrees) being 2·2 degrees less

than usual, whereas the mean minimum (57·3 degrees) was 0·9 degree higher than the average. Again, in the Orange Free State, a shortage of 4·4 degrees in the mean maximum and of 1·1 degree in the mean minimum caused a deficit of 2·8 degrees in the mean temperature of the month (65·9 degrees). In Natal, a deficit of 6·1 degrees in the mean maximum (77·9 degrees) and a surplus of 0·5 degree in the mean minimum (59·2 degrees) resulted in the mean monthly temperature (68·6 degrees) being 2·7 degrees less than the average. In the Cape Province, the mean maximum (76·6 degrees) and the mean minimum (53·8 degrees) were both sub-normal, by 1·4 degree and 0·2 degree respectively; consequently, the mean for the month (65·2 degrees) was 0·8 degree cooler than usual. On examining the mean temperature at the individual stations, it is found that an excess of less than half a degree occurred in parts of the eastern low veld, also an excess of 0·7 degree at Pietersburg in the north. In the Cape Province, a surplus in mean temperature was also experienced in parts of Kaffraria, the south-east, the central, and northern border, and at Wynberg, in the Cape Peninsula. At O'okiep the temperature of the month was normal, but elsewhere it was sub-normal. The excesses in the Cape Province ranged from 1·8 degree at Bedford to 0·1 degree at Kenhardt and Port St. Johns. The deficits were mostly between 1½ degree and 2½ degrees, varying, however, from 0·3 degree at Stutterheim to 3·4 degrees at Kimberley. In Natal, the sub-normal amounts were between 3½ and 4½ degrees in the west, and generally between 1 degree and 2 degrees in the east. The greatest shortage was 4·6 degrees at Dundee, and the least 0·6 degree at Stanger. In Basutoland the mean monthly temperature at Mafeteng was 4·7 degrees lower than usual. In the Free State, the departures from normal lay between *minus* 4·2 degrees at Harrismith and *minus* 1·6 degree at Kroonstad and Ladybrand. In the Transvaal the deficits were mostly smaller than in the other Provinces, being mostly less than 1 degree, but ranging from 0·2 degree at Louis Trichardt to 3·4 degrees at Strathmore (Klerksdorp). In this same Province the mean maxima was lower than usual, except at Barberton and Pietersburg, where small excesses of under half a degree occurred. The shortages in these mean day temperatures varied from 5·9 degrees at Strathmore to 0·3 degree at Komatipoort. On the other hand, the mean minima were mostly in excess of the normal, except at Klerksdorp, where a shortage of 0·9 degree occurred. The excesses in the night temperatures varied between 0·1 degree at Zeerust to 2·1 degrees at Potchefstroom. In the Free State, both days and nights were cooler than usual, the mean temperatures of the former varying from 2·8 degrees at Ladybrand to 6·9 degrees at Harrismith, and of the latter from 0·2 degree at Lindley to 2·6 degrees at Bethulie, but at Kroonstad the mean minima was the same as the normal. In Natal, the days were everywhere colder than usual, the deficits in the mean maxima varying from 3·3 degrees at Hlabisa to 10·8 degrees at Ladysmith. The nights were warmer than usual, except at Estcourt, Dundee, and Hlabisa, which showed deficits of 0·8 degree, 0·5 degree, and 2·0 degrees respectively; the excesses in mean minima ranged from 0·8 degree at Durban and Maritzburg to 2·4 degrees at Stanger. In the Cape Province, an excess in mean maxima was confined to a few stations in the south-east and the central Karroo, varying from 0·8 degree at Stutterheim to 3·0 degrees at East London; the deficits elsewhere varied considerably, being least (0·5 degree) at Port Nolloth, and greatest (7·1 degrees) at Kimberley. The nights were cooler than usual at about half the stations, and warmer at the other half, whilst at Kokstad and Sydney's Hope they were normal. The mean warmest station was Komatipoort (temperature 77·4 degrees) and the mean coolest Port Nolloth (temperature 56·6 degrees), showing a difference of 20·8 degrees. The highest mean maximum was 88·3 degrees at Komatipoort, and the lowest mean minimum (48·7 degrees) at Aliwal North. The warmest

period of the month was from the 22nd to 25th, most widely on the 24th, although the highest readings were recorded also on the 10th, 14th, 27th, 28th, and 30th. The lowest readings occurred most widely on the 16th, but also at a large number of stations between the 8th and 10th ; these extremes were also registered at a few stations on the 2nd, 7th, 11th, 18th, 21st, and 29th. Temperatures of 100 degrees or over were confined to Kenhardt and Komatipoort, where the respective highest readings for the month were 100 degrees on the 22nd and 106 degrees on the 14th and 25th. Extreme minima lower than 40 degrees were reported from the Transvaal high veld, the north-east and south of the Orange Free State, the north-east and south-east directions of the Cape Province, as well as parts of the central and northern Karroos ; the lowest temperature noted was 32·2 degrees on the 16th at Grahamstown. There was thus an extreme range over the Union of 73·8 degrees. Taking into consideration the unusually low shade minimum in parts of the country, it is not surprising to find that a number of *ground frosts* were reported from a fairly wide area, comprising of parts of the Free State and of the Cape Province, causing damage in some places to pumpkins, maize, beans, garden produce, and even fruit, as at Sutherland (Cape Province). The following list of stations at which, together with the dates on which this phenomenon occurred, will afford an idea of the extent of country affected :—In the Orange Free State : Koude Kraal (District Edenburg), on the 18th (? 16th) ; Parys (District Fauresmith), 15th ; Swartlaagte (District Ficksburg), 15th, 16th, and 17th ; Helvetia (District Smithfield), 15th, 16th, and 17th ; Karreeboom, 16th ; Paardekraal, 15th and 16th ; and Mon Repos, 15th and 16th, all in the District of Wepener. In the Cape Province : Amoed Vlakte (Division Vryburg), 15th and 16th ; Carnarvon, 16th ; Sutherland, 14th, 15th, and 16th ; Andriesfontein (Division Hanover), 16th. Basutoland : Mafeking, 15th, 16th, and 17th.

Precipitation.—The total rainfall for the month of November was above the average in the Transvaal, Orange Free State, Basutoland, and Natal ; also over a narrow strip in the Cape Province fringing the boundaries of Basutoland, Orange Free State, and Transvaal ; also in portion of the south coast, over the Cape Peninsula, the south-west, and the southern half of the west coastal area, including part of the western section of the northern Karroo. In the Transvaal, the surplus amounts exceeded 3 inches in the eastern low veld and at Louis Trichardt in the north ; also at Mbabane, in Swaziland. Elsewhere the excesses were mostly in the neighbourhood of 2 inches, but decreased to less than 1½ inch at Zeerust and less than half an inch in parts of the north-west, west, and south-west. In the Witwatersrand, however, precipitation was sub-normal, being 0·96 inch less than usual at Johannesburg (Observatory). The excesses varied from 0·15 inch or 4 per cent. at Rooiberg to 3·83 inches or 85 per cent. at Pilgrims Rest. In the Orange Free State, the *plus* amounts lay between 1 inch and 3 inches, ranging from 1·12 inch or 53 per cent. at Boshof to 3·74 inches or 109 per cent. at Ladybrand. Bloemfontein, however, had a small shortage of 0·12 inch or 6 per cent. In Natal, the surplus quantities were generally between 2 and 5 inches, varying, however, from 1·10 inch or 22 per cent. at Durban to 4·70 inches or 165 per cent. at Ladysmith. In the Cape Province, the surplus quantities were mostly under an inch, but rose to between 1 inch and 2 inches in parts of Kaffraria, the northern Karroo, and northern border, and of the south-west. The excesses lay between 0·05 inch at Clanwilliam and Worcester, representing 16 and 10 per cent. respectively of the corresponding normals, and 1·75 inch or 101 per cent. at Wynberg, in the Cape Peninsula. Similarly the deficits were generally less than an inch, but exceeded this amount slightly in various parts of the east of the Province. These *minus* quantities varied from 0·01 inch or 17 per cent. at Port Nolloth to 1·73 inch or 56 per cent. at Grahamstown. In South-West Africa, excesses were confined to

the neighbourhood of Bethany in the south and the extreme north and north-east, that is to say, in the neighbourhood of Tsumeb, Grootfontein, Rietfontein, Outjo, and Otjiwawugo. These excesses varied from 0·07 inch at Rietfontein (4 per cent.) and at Bethanie (41 per cent.). Seeing that only a few stations, and these confined to the more northerly parts of the territory, have averages over 1 inch, the actual deficits were mostly small, varying from 0·02 inch at Swakopmund to 0·79 inch at Aroab, in the south-east. Absolute drought prevailed at a number of stations in the south, whilst at a number of other stations in both the northern and southern portions the amounts that fell were negligible.

Thunderstorms, mostly of the cyclonic type, were a frequent accompaniment of the rains, and caused some damage at a few places. Thus during a severe shower on the afternoon of the 25th the lightning struck the telephone wires of several houses in the west end of Pretoria, and killed a native riding a bicycle at Daspoort. On the same day two natives were reported to have been killed and several injured by lightning at Impendhle, in Natal. Again, in Basutoland, lightning was unusually severe, killing many cattle, goats, and sheep, and setting fire to a number of huts. *Hailstones*, mostly light, but of considerable severity in some instances, were frequent during the month over parts of the Transvaal, Free State, and Natal, and the north and west of the Cape Province. A number of areas usually visited by these storms were remarkably free from such occurrences this month. In the majority of cases the damage caused was slight, being mainly confined to fruit trees, but occasionally other crops, such as cotton, tobacco, etc., were badly knocked about or destroyed. These storms were reported from Waterberg, Barberton, Piet Retief, and Rustenburg Districts of the Transvaal; from the Boshof, Ficksburg, Harrismith, Ladybrand, Thaba 'Nchu, and Wepener Districts of the Free State; from parts of the northern border and the east of the Cape Province; and from Mid-Illovo, Newcastle, Dundee, and Glückstadt, in Natal. They were noted on the 2nd, 3rd, 4th, 6th, 9th, 11th, 15th, 19th, 25th, and 27th days of the month. Among the most destructive of these storms may be noted that at Woodstock (District Rustenburg) on the 6th, when hail, accompanied by a storm of wind, knocked fruit and tobacco plants to pieces; at Carmichael Farm (District Barberton) on the 11th, when seven acres of cotton were destroyed; on the same day at Smithskraal (District Boshof) hail the size of tennis balls fell, and on the same date a severe wind and hail storm occurred, lasting a few minutes, struck the south-west end of Dundee, in Natal, and pursuing a narrow path from south to north uprooted many trees, demolished the police barracks and roof of the railway goods shed, leaving a narrow belt of hail several inches deep along the outskirts of the town. Again, on the 25th, a similar combination of wind and hail caused a great amount of damage at Waterval and Sterkstroom, both in the District of Boshof; at the latter place the track was about 800 yards wide, and the length, so far as ascertained, about 40 miles, roofs being blown off, pumps blown over, and trees uprooted or twisted off. On this same day occurred a severe wind-squall at Kimberley, accompanied by a slight fall of hail in the town, but more severe at the West End about two miles away, breaking down several large trees with damage to fences, etc. In Basutoland, a severe hailstorm on the 2nd destroyed wheat fields and killed a number of sheep. *Snow* was reported on the 9th at Newleeds (District Harrismith), also on the mountains in the neighbourhood of other stations. A heavy fall of snow on the 16th on the Drakensberg was reported from Nottingham Road (District Weenen). Some heavy falls of rain in short periods were noted during the month, mainly on the 4th in the Free State and about the 25th to 26th in the Transvaal and Natal. On the 4th, 0·86 inch fell in ten minutes at Richmond North (District Kroonstad), a rate of 5·16 inches per hour; at Fairfield (District Senekal),

0·87 inch fell in thirty minutes; at Kismet Estate (District Lindley), 1·68 inch fell in forty minutes, breaking dams, destroying fences, and badly rutting the lands; at Van Dyk's Kraal (District Lindley), 1·54 inch in sixty-five minutes, eroded the soil, damaging the lands; at Magdalena (also in Lindley District), 0·90 inch fell in forty-five minutes, burst dams, and caused much damage to young crops. At Lavoni (Lower Umfolozi), on the 15th, 0·51 inch fell in eight minutes, a rate of 3·82 inches per hour. At Thornlea (Lower Umfolozi), on the 26th, during a violent storm with rain in torrents, 1·84 inch were registered in half an hour.

The accumulated rainfall since the 1st January was above normal in the Transvaal over the greater part of the north, and centre, the east and south-east of the high veld, and portions of the west and south-west; in the north, east, and south of the Free State; portion of the west of Natal; also in parts of Kaffraria, of the north-east, of the northern Karroo, and of the south-west. In the Transvaal, the surplus amounts were mostly between 2 and 4 inches, but varied between 0·95 inch or 5 per cent. at Zeerust in the west and 11·17 inches or 28 per cent. at Pigeonhole, in the Zoutpansberg. The deficits over the rest of the Province also varied considerably in amount, from 0·88 inch or 4 per cent. at Strathmore (Klerksdorp) to 8·64 inches or 14 per cent. at Woodbush I. In the Free State, the *plus* quantities ranged from 1·23 inch or 6 per cent. at Kroonstad to 4·81 inches or 20 per cent. at Ladybrand. The shortage amounted to 0·68 inch or 4 per cent. at Bloemfontein and 2·57 inches or 15 per cent. at Boshof. In Natal, the supra-normal amounts were large, varying from between 3·80 inches or 12 per cent. at Estcourt to 6·48 inches or 27 per cent. at Ladysmith. The shortages were mostly between 2 and 4 inches, but lay between 0·49 inch or 2 per cent. at Weenen to 4·04 inches or 13 per cent. at Maritzburg. In the Cape Province, the *plus* quantities were less than in the other Provinces, lying between 0·24 inch or 1 per cent. at Philipstown. The *minus* quantities in the Cape Province showed considerable variation, being principally between 6 and 12 inches in the east, falling mostly to 2–4 inches over the rest of the country, except in the south-west, where they increased once more to 5–10 inches. They ranged from 0·75 inch or 5 per cent. at Vryburg to 12·02 inches or 41 per cent. at East London. In South-West Africa, Voigtsgrund was the only station showing an excess, amounting to 3·66 inches or 54 per cent. The deficits in the southern half were generally between 1 inch and 3 inches, but decreased to 0·65 inch or 100 per cent. at Luderitzbucht and increased to 4·35 inches or 56 per cent. at Haribes. Over the northern half precipitation was in defect generally by 4–7 inches, but by 2 inches or less in the more westerly and the extreme easterly sections. The negative departure here varied from 0·45 inch or 82 per cent. to 8·77 inches or 81 per cent. at Rehoboth. The gross totals for the five months, from the 1st July, showed a marked improvement over the eleven months in their relation to the normal in both the Transvaal and Natal. Thus deficits were confined to a portion of the south-east of the high veld and of the south and west of the Province, the *minus* amounts lying between 0·12 inch or 1 per cent. at Ermelo and 1·65 inch or 17 per cent. at Johannesburg Observatory. The surplus amounts were greatest, mostly 3–6 inches, in the north and east, decreasing commonly to less than 1 inch in the centre and west, ranging from 0·05 inch or 1 per cent. at Rustenburg to 6·83 inches or 61 per cent. at Pigeonhole. In the Free State, small deficits continued in the centre and west, and excesses in the north, east, and south. These latter varied from *plus* 0·88 inch or 22 per cent. at Bethulie to 5·37 inches or 80 per cent. at Kroonstad. In Natal, shortages occurred only in the north at Vryheid and on the coast at Durban itself, amounting to 215 per cent. respectively. The excesses were greatest, 5–7 inches, in the west, decreasing generally to between 1 inch and 3 inches and occasionally to

less than 1 inch. These positive departures lay between 0·57 inch or 5 per cent. at Maritzburg and 7·17 inches or 93 per cent. at Estcourt. In the Cape Province, excesses were limited to the east of Kaffraria, the middle of the south coastal area, parts of the south-west, as well as of the northern Karroo, northern border, and Bechuanaland. These surplus amounts were mostly under 1 inch, but varied from 0·07 inch or 4 per cent. at Carnarvon to 3·46 inches or 45 per cent. at Kokstad. The shortages continued largest, 3–7 inches, over portions of the east, were commonly less than 2 inches or even 1 inch in the west and over the interior, but increasing to over 2 inches on the Namaqualand plateau, and parts of the south-west, and the Peninsula. They varied between 0·01 inch or less than 1 per cent. at Uniondale and 7·23 inches or 54 per cent. at East London. In South-West Africa *plus* and *minus* areas were curiously intermingled in both the northern and southern halves, rendering a departure map extremely patchy. In the south the excesses varied from 0·04 inch or 9 per cent. at Kalkfontein to 0·92 inch or 72 per cent. at Haribis, and the deficits from 0·23 inch or 96 per cent. at Luderitz Bay to 1·04 inch or 98 per cent. at Gabis. In the north the surplus quantities ranged between 0·23 inch or 25 per cent. at Omaruru and to 1·78 inch or 63 per cent. at Tsumeb, whilst the deficits lay between 0·08 inch or 44 per cent. and 1·53 inch or 49 per cent. at Okasangamingo.

State of Country.—Transvaal : Weather conditions during November were on the whole much more favourable to agriculture than for several years past. Steady penetrating rains mostly in excess of the normal, together with cool, cloudy weather, enabled a considerable amount of ploughing, sowing, and planting to be carried out, improved the veld, and brought on the earlier ploughed crops, rendering the prospects for the coming season bright and promising. In the Rustenburg District conditions were generally ideal for cotton, and a considerably increased average was being planted. From Groeneboom No. 444 (District Rustenburg) it was reported that many young cotton and maize crops had been destroyed by locusts in the hopper stage, while many head of cattle were said to have been poisoned by the locust spray. In the Barberton District the amount of rainfall was considered to be rather in excess of that required for cotton and a certain amount of replanting had to be carried out ; a similar state of affairs prevailed in the Carolina District, where it was feared that the mealie crops would be spoiled owing to a superfluity of rain, which was also stated to be bad for sheep and cattle. It was not until the last week of the month that rain fell in sufficient quantity in the Waterberg District to dispel what had been up to that time a rather gloomy outlook. At Mooigelegen in this Division cotton was slow in coming on and was being troubled by beetles. At Mosdene in the same district portions of the lands planted in the early part of the month had to be replanted owing to drought, whilst grass was still very short. In parts of the Standerton District the month opened well, but hot, dry weather prevailed during the latter part of the month. The crops on several farms in the Piet Retief District were damaged by heavy rains and hail. On the other hand, the mealie crops in the Bloemhof District were suffering severely from heat and drought, whilst in the Lichtenburg District the ground was too dry for ploughing after the 21st and the grass was nearly all withered up owing to the heat. Generally speaking, however, all crops were doing well in the Middelburg, Witwatersrand, Pretoria, Rustenburg, Potchefstroom, Pietersburg, and Zoutpansberg Districts ; cattle were improving and grass plentiful. Comparatively little damage was caused by hailstorms, the most damage reported being that on the 11th at Carmichael Farm (District Barberton), where seven acres of cotton were destroyed ; and that on the 6th at Woodstock (Rustenburg Division), where a wind and hail storm destroyed the fruit and knocked the tobacco plants to pieces. Early fruit was on the whole plentiful, and there seemed every prospect of a good season. The wheat and other crops in the

Rustenburg Division were being harvested, but, with the exception of corn, were smaller than last year. The greatest danger feared by most was that of an invasion of locusts which were, however, being energetically dealt with. In *Swaziland* hopes were generally entertained of a good season, the crops planted being generally well forward and in excellent condition. Ploughing was being actively carried on in the low veld, and East Coast fever seemed to be a thing of the past.

Orange Free State: Farmers and others were practically unanimous in expressing satisfaction with the weather conditions that prevailed during November. Good soaking rains during the first six days of the month followed in some districts, particularly in the north and east, by almost daily precipitation till the 14th, with showers at intervals during the remainder of the month; cool and cloudy weather during the first fortnight, with a number of warm and occasionally hot days with some wind during the second half of the month. were conditions almost ideal for agricultural pursuits, and gave good grounds for optimism in regard to the crops anticipated at the end of the season. Ploughing and the planting of maize were being carried on particularly in the Bethlehem and Heilbron Districts, where a considerably increased extent of land was being planted with mealies. Crops, more particularly late crops, were progressing favourably, and the veld was everywhere in excellent condition, whilst stock had improved considerably in condition. At Groenvlei (District Frankfort), Molopposdraai (District Ficksburg), and Airlie (District Harrismith), the cutworm was playing havoc with young mealies and other crops, necessitating a considerable amount of replanting. In the Ladybrand District sufficient rain was considered to have fallen, and more sunshine would be beneficial in ripening wheat, etc. In the Heilbron District, on the other hand, the hot weather towards the end of the month had dried out the soil to a considerable extent, so that additional rain would have been of material benefit to the veld. Light hailstorms were of frequent occurrence, but caused practically no damage; some heavy storms on the 2nd, in the District of Ladybrand; on the 3rd, in Thaba 'Nchu; on the 4th, in Lindley; on the 11th, in Boshof, caused a considerable amount of damage, more especially to fruit. A windstorm at Molopposdraai (District Ficksburg) broke off trees 8 inches in diameter; and a similar storm at Sterkstroom (District Boshof) lifted roofs, blew over pumps, uprooted small and twisted off big trees; this storm (possibly of the tornado type) had a width of about 800 yards, and a length, as far as known, of about 40 miles. Some showers of considerable intensity on the 4th broke dams, destroyed fences, eroded lands, etc., on a number of farms in the Lindley District. On the same date a fall of 0·86 inch in ten minutes occurred at Richmond North, in the District of Kroonstad.

Natal: Good soaking rains during the first week, with showers at intervals during the rest of the month and some very heavy downpours in the last week, were conditions favourable to agriculture, although a spell of oppressively warm days after the 20th dried up the ground quickly and put a stop to ploughing operations in some parts. In Umvoti county unusually large areas were put under mealies. The wattle plantations there were beginning to recover from drought and an infestation of bag-worm. At Ntambanana (Lower Umfolozi) established cotton had made good growth and, generally speaking, the state of the country had improved considerably, whilst stock were fat and healthy. Light hailstorms were experienced at Newcastle, but no damage done. On the 2nd, large hail at Draycott (Estcourt) damaged the fruit crop. At Glückstadt (Vryheid) a severe hailstorm passed within a few hundred yards of the station, the stones penetrating good iron roofs. A similar storm at Dundee on the 11th left a narrow belt of hail several inches deep along the outskirts

of the town. At Mid-Illovo a heavy downpour of rain accompanied by a little hail on the 27th totalled 1·45 inch in three-quarters of an hour, and caused a considerable amount of soil erosion and damage to young crops. Sunless days at Nottingham Road and several cold snaps at Glückstadt retarded the growth of plants, whilst the cutworm was troublesome at the former station. Some severe windstorms occurred during the month, e.g. at Dundee on the 11th, at Mid-Illovo on the night of the 24th, and at Hillary on the 25th; the most destructive of these storms was that at Dundee, when trees were uprooted, the police barracks demolished, and the roof of the railway goods shed removed.

Cape Province: More or less droughty conditions continued over the greater part of the Cape Province, the exceptional areas consisting of a belt of moderate width extending from Kokstad, in Kaffraria, westwards to the neighbourhood of Britstown and Prieska, thence northwards along the western border of the Free State and Transvaal into the Bechuanaland Protectorate; also the western portion of the south coastal area, the south-west and the southern half of the west coast division. A state of absolute drought prevailed throughout the month over parts of the central and northern Karroo and of the northern border, particularly in the west. In other parts the light rains that fell were in too small quantities to produce any effect on the veld, lands, or water supply, except to produce in places young growth of grass that was immediately scorched by the sun. No ploughing was carried out in some parts. Stock were succumbing to thirst and starvation in parts of the Bedford, Stutterheim, Victoria East, and Kenhardt Divisions. At Sutherland the lower portions of the district were very dry, and all sheep had been removed; but on the Roggeveld proper, that is, on the mountains, the veld was good, and the only crops were to be seen there. In the Mount Currie District, on the contrary, it was stated that the veld was good on the flats, but wilting on the high ground about the 20th and at the end of the month. The drought continued unbroken in Namaqualand, where the total rainfall to date (1·84 inch) was the lowest recorded during the the last fifty years, the next lowest being 2·45 inches in 1882; similarly, in Stutterheim District this was declared to be the driest season known. The drought was unrelieved in the Bathurst, Queenstown, Elliot, Somerset East, Beaufort West, and Uitenhage Districts, whilst Riversdale was very dry. The good rains in the Mount Fletcher, Tsolo, Aliwal North, Mafeking, and Kokstad Districts enabled ploughing to be carried on, saved the crops, and improved veld and cattle; in the Barkly East and Albert Divisions the crops were coming on splendidly, and farmers were trekking back to their homes. The veld was in good condition in the neighbourhood of Danger Point. Along the Orange River, in the Kenhardt Division, the wheat harvest was good, fruit excellent, and the lucerne farmers prospering, but outside the veld was parched. In the Mount Currie District maize and wheat crops were in a fairly satisfactory condition, but other crops were badly attacked by the cutworm; young trees were making good headway, although some of the older trees were dead. In the Barkly West good grazing was general, and cattle and small stock had consequently improved in condition. In the Bathurst Division the hopes raised by the rains in the early part of the month were not realized owing to a succession of strong drying winds, which dried up the veld, damaged the mealie crops, orchards, and gardens. At Queenstown strong north-westerly winds blew down much of the fruit, whilst in the south-west there was an unusual prevalance of "south-easters." At Kimberley wind and dust storms were frequent during the day, and a gale on the 25th, lasting only five minutes, blew down some large trees, damaging fences, etc. Some hailstorms were reported from the Mount Currie, Tsolo, and Barkly West Districts, the most destructive occurring near Tsolo and at Kimberley. Frosts about the middle of the month caused some damage to gardens, etc., in the Vryburg, Hanover,

Sutherland, and Carnarvon Districts. In Bechuanaland good early rains fell, rendering the country unusually beautifully green, and prospects would have been good but for the presence of locusts. In Basutoland crops and stock were doing well as the result of splendid rains, although a severe hailstorm on the 2nd destroyed wheat fields and killed a number of sheep over a narrow strip near Mafeking, whilst severe lightning killed a number of cattle, sheep, and goats, and burnt down huts near Maseru.

State of Rivers and Water Supply.—The steady nature of the rainfall during November was generally more favourable to agriculture than useful for storage purposes; few floods were reported in the Transvaal and the Free State, but the Valsch River, at Kroonstad, was stated to have risen on the 4th to a higher point than on any previous occasion since 1892. Some of the intensities on the 4th may prove interesting: At Richmond North (District Kroonstad), 0·86 inch fell in ten minutes (i.e. at the rate of 5·16 inches per hour); at Kismet Estate (District Lindley), 1·68 inch in forty minutes (rate 2·52 inches per hour), broke dams, destroyed fences, and badly rutted lands; at Magdalena in the same district, 0·90 inch in forty-five minutes (rate 1·20 inch per hour), caused much damage to crops and burst dams; at Van Dijk's Kraal, also in the Lindley District, 1·54 inch in sixty-five minutes (rate 1·52 inch per hour), caused much damage to lands by erosion; at Fairfield (District Senekal), 0·87 inch fell in half an hour, or at the rate of 1·74 inch per hour; at Hillcrest (Natal), the rivers and wells were not affected to any great extent, notwithstanding a rainfall of 7·71 inches on nineteen days, with a heavy fall of 2·15 inches on the night of the 25th. In Queenstown, the drought was causing much anxiety to both town and country. At Liwandi (District Uitenhage), the only benefit derived from the small quantities of rain (0·43 inch on six days) was a slight addition to the domestic water supply. At Nelspoort (Division Beaufort West), the water for irrigation from the Salt River was decreasing. At Sydney-on-Vaal (Division Barkly West), the Vaal River was in high flood on the 8th, and the Orange River continued high throughout the month at Prieska. In the Bedford Division, the water supply had failed to such an extent that cattle were dying of thirst. In the Sutherland Division all dams were dry, boreholes and wells were sinking rapidly, and many properties were without water. At Somerset East there was no water for irrigation, and there was a shortage for household purposes. From Maseru, in Basutoland it was reported that the Caledon River had not been so full for the last twenty-five years.

OBSERVERS' NOTES FOR NOVEMBER, 1924.

TRANSVAAL.

Pretoria (*West End Plantation*).—Rain was registered on fourteen days during the month, total being 7·02 inches, this being very good for one month compared with the last few years: November, 1920, 2·03 inches; November, 1921, 3·73 inches; November, 1922, 3·98 inches; November, 1923, 3·76 inches. This good rainfall will give our young plantations a good start for the season. On the 26th we had a shower about 8.30 a.m., 0·02 inch; at 4 p.m. we had a very heavy storm, 1·02 inch; and in the evening the storm was very severe, with heavy rain, 1·65 inch. The lightning was very severe about this part; it struck my phone wires just outside the house, damaging the phone; it also struck about 1½ mile to the south-west, damaging a phone there. With this storm a native was killed by lightning at Daspoort. The veld on the western town lands is looking first class. Weeds are coming along very fast since the rains.—W. H. Foster.

Nylstroom.—Rainfall : 4·63 inches on fourteen days, the heaviest recorded during November for the past four years. Everything looks nice and promising. Some hailstorms in the neighbourhood, but not much damage.—G. Bakker.

Parktown North (*Johannesburg*).—Nice steady rains fell in the early part of the month. Veld and gardens looking well, and quite a lot of ploughing is being done. Rainfall : 4·03 inches on fourteen days.—George S. Garnett.

Nooitgedacht No. 777 (*Warmbaths*).—Splendid rains, 7·48 inches on seventeen days, totalling 4½ times the fall of last November ; the temperature has been much cooler, nearly 5 degrees below the mean of last year. Cattle and veld in first-rate condition, and all crops planted showing well. Innumerable swarms of voetgangers have come over from the Sandbult to the south, travelling north and north-west, and have been dealt with by a considerable force of sprayers, mainly enlisted outside the district. Only towards the close of the month could it be said that the situation was well in hand. No fliers have been seen here, but are reported in small swarms farther west.—G. Gordon Brown.

Krugersdorp.—The month of November has been one of the finest experienced here for many years. Climatic conditions have been uniform and the rainfall evenly distributed. Agricultural prospects are very bright at present in this district. Rainfall : 5·58 inches on twenty days, against an average of 4·45 inches during the past twenty-one years.—H. Sharp.

Rustenburg.—Splendid rains have fallen throughout this district. Farmers are very busy ploughing. First crops of cotton, mealies, etc., are up, and looking splendid. Very large areas are being sown with cotton this year. Early fruit is plentiful and fine this year ; all prospects of a good season. Cutting of wheat, etc., now in full swing, but smaller crop than last year, although corn is good. Locusts plentiful in the bushveld. Plenty of grass. Cattle recovering from poverty. Absence of hailstorms this season in the district. Rainfall : 5·77 inches on thirteen days.—A. Streatfield.

Lemana (*Zoutpansberg*).—All crops doing well. Rainfall : 8·34 inches on thirteen days.—H. Thomas.

Gemboksfontein (*Middelburg*).—Small hail marked fruit on the 15th. Rainfall : 8·82 inches on eighteen days.—L. C. Skead.

Mosdene (*Waterberg*).—Following a very low rainfall in October, it continued very dry till the last week of this month, when beautiful steady rains set in a month later than usual. 4·40 inches fell on the night of the 26th, in soft, steady rain, and a total of 5·83 inches was registered for the week. This has completely changed what previously seemed a very disheartening outlook, and provided the locust menace can be overcome, prospects for the coming season are excellent. As a result of the drought, grass is still very short, and portions of land planted in the early part of the month require to be replanted. Numerous swarms of locusts have hatched out in the neighbourhood, but they have been energetically dealt with and all destroyed. Rainfall : 7·19 inches on twelve days.—Ernest E. Galpin.

Pretoria (*Transvaal University College Experiment Farm*).—The feature of the excellent rains during the month was in each case the steady continuous manner in which it came down, practically all being absorbed by the soil. Only once, i.e. during the night of the 25th (1·24 inch), did we receive a sufficiently heavy downpour to cause slight washing on newly ploughed ground. Most of the grain crops have been planted, also some hay crops have been sown, and these are now receiving the full benefit of the rains. Up to now we have had no visitation from locusts, and the veld is excellent. Rainfall : 6·46 inches on fourteen days.—The Manager.

Pietersburg.—Steady, soaking rains. Crops and veld in fine state. Rainfall: 4·05 inches on twelve days.—W. J. Frankleyne.

Rietvlei No. 102 (*Ermelo*).—Much rain, but also much sunshine and wind. Cattle in good condition and grass plentiful. Rainfall: 6·50 inches on eighteen days.—P. J. Steenkamp.

Barberton.—The rains during the month have been considerably in excess of the normal. Occasional local hailstorms have occurred. Generally speaking, the rain has been rather in excess of that required for the cotton crop, and a certain amount of replanting has to be done. Rainfall: 8·44 inches on eighteen days.—Walter Grubb.

Bloemhof.—District getting very dry; veld and young mealie crops suffering very severely. Voetganger locusts appearing everywhere. Weather promising, yet no rain. Air sultry. Lightning very severe during every little shower. Rainfall: 2·24 inches on nine days.—Sergt. P. J. Jordaan.

Carolina.—Raining practically daily; nice soft rains, but too much for mealies, and crops will most likely be spoilt by too much rain. Farmers complain that it is also bad for sheep and cattle. Rainfall: 7·79 inches on twenty-one days.—G. F. Mynhardt.

Myrthley (*Standerton*).—The month opened up well, and later on developed into hot, dry weather. Rainfall: 4·29 inches on fifteen days.—J. L. Ellis.

Groeneboom No. 444 (*Rustenburg*).—Throughout the month rain fell in nice showers. During the first half the weather was very changeable, days and nights being cool. The latter half marked itself with hot, sultry days. There were many cloudy days, allowing the rain, which was rather local, to soak into the ground. The rainfall was sufficient to keep the grass growing and minimizing the damage the hordes of locust hoppers did to the veld. Cattle in fair condition. Many young cotton and maize crops destroyed by the locust hoppers. Many head of cattle poisoned by the locust spray, mostly through carelessness. Rainfall: 4·24 inches on eleven days.—F. N. van Noulings.

Berlin Plantation (*Barberton*).—The hailstorm on the 19th (rainfall, 4·04 inches) did some damage to small trees. Harrowing continued the whole month. Nearly three times as much rain as last November. Rainfall: 12·06 inches on sixteen days.—E. Edwards.

Carmichael Farm (*Barberton*).—11th November, severe hail at 3.15 p.m. Seven acres of cotton destroyed. Rainfall: 9·11 inches on seventeen days.—W. Walsh.

Blaauwwildebeestput (*Lichtenburg*).—19th November, grass nearly all withered again. No decent rains on this farm. 23rd November, very bad ploughing done. 25th November, heat terrific, large stock suffering. Rainfall: 3·53 inches on fourteen days.—C. Hull.

Klippan (*Lichtenburg*).—Ground too dry for ploughing since the 21st. Rainfall: 4·28 inches on ten days.—P. H. Fischer.

Kopje Alleen (*Piet Retief*).—Heavy hails and rain damaged crops on several farms. Rainfall: 8·30 inches on seventeen days.—P. van den Berge.

Vlieger Farm (*Potchefstroom*).—The rains this month have been ideal for agriculture. Rainfall: 3·87 inches on thirteen days.—W. Haggett.

Elandsfontein (*Potchefstroom*).—Ploughing conditions are better than has been the case for the past few years. All locusts in this district have been destroyed. Farmers are very hopeful, though some complain that caterpillars are attacking the young mealies. Rainfall: 4·72 inches on thirteen days.—P. J. Davidtz.

Woodstock (*Rustenburg*).—6th (?) November, I had a terrible hail and wind storm, which knocked the fruit and tobacco plants to pieces. This station has had a little over an inch of rainfall in excess of last November. I have been farming here for forty-four years and am quite satisfied on this point—this district is drying up. Rainfall: 4·12 inches on nine days.—C. H. Mullett.

Doomkloof (*Zoutpansberg*).—Crops of cotton and peanuts excellent, and the veld in good condition. No voetgangers. Rainfall: 5·95 inches on ten days.—S. M. Ralston.

Mooigelegen (*Waterberg*).—Cotton slow, troubled by beetles. Nuts looking well. No mealies planted. Rainfall: 6·99 inches on seventeen days.—A. V. Maddocks.

Altydmooi (*Zoutpansberg*).—Veld and cattle improving daily. Locusts still bad in some of these parts. Rainfall: 3·50 inches on eight days.—(Mrs.) A. S. Gettliffe.

SWAZILAND.

Hlatikulu.—For the month of November we have had fairly good rains. There have been no heavy storms; all steady downpours and misty rains, beating last year's November average by 1·54 inch. Ploughing is in full swing, and cotton farmers expect good crops. East Coast fever is a thing of the past, as things are very quiet in that respect just now. Country in general looking very well. Rainfall: 6·03 inches on twenty-two days.—J Pullen.

Matopa (*Bremersdorp*).—A dull, cloudy month; sunshine badly wanted. Rainfall: 4·84 inches on fifteen days.

Transvaalia (*Mbabane*).—Crops in excellent condition. Rainfall: 4·94 inches on fourteen days.—J. H. Coates.

Matendela.—A most excellent month for agriculture. Crops well forward. Rainfall: 4·34 inches on twelve days.—H. S. Parry.

ORANGE FREE STATE.

Holfontein (*Kroonstad*).—A good month: everything is looking well. The stock have picked up wonderfully since the beginning of the month. Farmers are very busy getting their mealie crop in, and if we get these good rains during the next two months, a bumper crop can be expected. So far the locusts have left us alone. Rainfall: 5·60 inches on ten days.—L. C. McInerney.

Wepener.—Nice rains have fallen during the month, mingled with hail, which did a little damage to gardens. The country round about is looking well, and every prospect of a good season is evident. We have had a few fairly warm days, which have been succeeded by cooling showers. Rainfall: 4·43 inches on twelve days.—W. D. Roche.

Modderpoort (*Ladybrand*).—Very favourable rains during the month. The general opinion among farmers in the district is that we have had enough rain and that much more sun is now needed to ripen the wheat, etc. Rainfall: 6·18 inches on fifteen days.—H. Wilson.

Groenvlei (*Frankfort*).—Incessant rains during the first fourteen days of the month; since then dry conditions have prevailed, with wind on most days. The weather was cool to cold during the first half of the month; since then the days have been very hot. The state of crops to date is very satisfactory. Cutworm was very severe in maize planted until the end of October. Very little rain has fallen since the 12th, and it is becoming dry again. Rainfall: 4·66 inches on fifteen days.—B. Stollreither.

Kroonstad.—Rains of a beneficial nature, especially at the beginning of the month. Country looking very well, and farming operations, as regards ploughing and planting, well advanced. River rose to a higher point on the 4th than any previous flood since 1892. Rainfall: 5·20 inches on fourteen days.—A. C. Mason.

Rugby (*Bethlehem*).—An excellent month for both agriculture and stock. Nice gentle rains and plenty of hot sunshine in between. Fully twice as much seed maize planted as was put in last season. Cattle and sheep are in good condition. Rainfall: 5·11 inches on fourteen days.—A. C. Glynn Baker.

Mimosa (*Fauresmith*).—Crops are very good and veld beautiful. Rainfall: 2·11 inches on four days.—B. F. Watermeyer.

Molopposdraai (*Ficksburg*).—Cattle in good condition. Late crops promise well, but mealies eaten off by worms as soon as they come up. Half of the lands have been planted a second time. Rainfall: 7·49 inches on fourteen days.—J. P. le Roux.

Airlie (*Harrismith*).—Cutworm destroying everything. Rainfall: 5·22 inches on fifteen days.—L. A. Adkins.

Heilbron.—Crops: Farmers all over the district have taken advantage of the rains, and a very large area has been turned over. Many are still ploughing, and crops, although young in many cases, are looking very good and giving great promise. Stock: All stock in fine condition. Shearing in full swing. No diseases reported. Grazing: Grazing is good, and although the hot weather towards the close of the month has somewhat dried out the soil, there should be plenty of natural feed shortly. Rainfall: 3·65 inches on fourteen days.—P. A. du P. Naude.

De Rots (*Hoopstad*).—Veld and crops lovely. Rainfall: 3·87 inches on seven days.—J. G. Greyling.

Overwinning (*Kroonstad*).—Grass coming into seed looking well. Young mealies growing nicely. No diseases in stock. Rainfall: 4·18 inches on nine days.—J. J. Furlong.

Magdalena (*Lindley*).—Crops are progressing very favourably. Rainfall: 6·16 inches on eleven days.—C. E. Nel.

NATAL.

Greytown.—Splendid rains; total, August to November inclusive, 19·34 inches. Very large areas for Umvoti county ploughed up and planted with mealies. Wattle plantations beginning to recover after drought and bag-worm infestations of late years. Many small bag-worm on wattles now, but will probably die off before reaching maturity if wet weather continues. Rainfall: 9·33 inches on eighteen days.—J. M. Handley.

Mid-Illovo.—The much-needed rain, totalling 6·85 inches on twenty days, fell mostly towards the end of the month, including 1·58 inch on the night of the 25th, attended by thunder and almost incessant lightning, and 1·45 inch on the evening of the 27th, accompanied by a little hail. This rain was in the nature of a cloud-burst, as it fell in three-quarters of an hour, causing a lot of soil erosion and damage to young crops. Strong gale on the night of the 24th.—Lt.-Col. J. W. V. Montgomery, C.M.G., D.S.O.

Impendhle.—The weather during the month was generally very wet and misty, the highest rainfall for one day being 2·50 inches on the 25th, and the total rainfall for the month 7·98 inches on sixteen days. Two natives were reported to have been killed by lightning on the 25th, and several injured. The state of the country is very good. Cattle thriving. General satisfaction seems to prevail among the farmers.—The Gaoler.

Newcastle (*The Convent*).—Favourable rains, light hail a few times, no damage reported. Rainfall: 7·26 inches on sixteen days.—The Mother Superior.

Hillcrest.—Month characterized by wet, dull days, varied by hot sun. Winds moderate, except on the night of the 25th, high wind in evening between 9 p.m. and 10 p.m., direction variable, mostly south-west. Generally trying

on account of variability. Good growing weather for vegetation, still somewhat short of moisture in soil. Rained fairly heavy on the night of the 25th to 26th (2·15 inches), accompanied by thunder and lightning. Rivers and wells not showing much effect. Rainfall: 7·71 inches on nineteen days.—T. Dawson Clothier.

Ladysmith.—Very heavy soaking rains during early part of the month, and light rains evenly distributed during remainder of month. Country generally is looking greatly improved, and stock are in good condition. Rainfall: 7·55 inches on seventeen days.—D. A. R. Leathern.

Maritzburg (*Mental Hospital*).—The month has been good for growing crops. Rainfall: 7·28 inches on seventeen days.—The Staff.

Dundee.—Several strong windstorms during the month, and a very severe cyclone and hailstorm during the evening of the 11th, lasting only a few minutes, and taking a narrow road from south to north, striking the south-west end of Dundee and uprooting many trees, demolishing police barracks, and roof of railway goods shed; a narrow belt of hail, several inches deep, lay along the outskirts of town, looking like a fall of snow. Rainfall: 6·62 inches on nineteen days.—West Thorrold.

Nottingham Road (*Weenen*).—Heavy fall of snow on the Drakensberg on the 16th. Cold, sunless days kept plants from growing. Cutworm troublesome. Stock of all kinds fat and healthy. Rainfall: 6·98 inches on twenty-two days.—Miss E. Smythe.

Gluckstadt (*Vryheid*).—Rainfall for month: 8·93 inches on nineteen days. Of this, over 5 inches fell during the first week, but ploughing operations were interfered with only on two or three occasions, most of the rain falling during the night. Several cold snaps retarded growth. A severe hailstorm passed within a few hundred yards from here; there was no wind, yet the hailstones penetrated good iron roofs.—F. W. J. Schumann.

Ntambanana (*Lower Umfolozi*).—Alternate steady rains and hot days. Good growth, with established cotton crops. Rainfall: 7·69 inches on sixteen days.—S. W. Rutherford.

Rongpoort (*Weenen*).—Very fine month. Every rain soaked in; none so heavy as to wash away soil or run to waste. Grass very good. Rainfall: 6·49 inches on thirteen days.—J. H. Bartholomew.

Loskop (*Newcastle*).—Weather suddenly changed after the 20th of the month. Warm, oppressive days followed, and it became dry quickly, so that ploughing was stopped in some places. Rainfall: 5·99 inches on fourteen days.—J. E. de Wet.

Cape.

Queenstown.—Rainfall: 1·26 inch on seven days; heaviest fall, 0·47 inch on 6th. Temperature varied considerably, the extremes of maxima fluctuating from 58·7 degrees on the 8th to 96·0 degrees on the 24th, and of minima from 37·0 degrees on the 16th to 62·5 degrees on the 25th. Strong north-west winds prevailed, shaking off much fruit. The rainfall being insufficient, the drought is still continuing, which is causing much anxiety both to town and country.—J. F. C. Rein.

Sandflats (*Mount Currie*).—22nd November, getting very dry again; more rain wanted. 25th, light hail. 30th, rain on the 25th and 26th dried out by end of month. Temperatures: Highest maximum, 91·5 degrees on 24th; lowest minimum, 38·6 degrees on 9th; lowest minimum on grass, 34·0 degrees on 9th. Rainfall: 3·93 inches on thirteen days. Live stock: Sheep doing well, but blowfly very active. Cattle still improving, dry ones fat. Veld: Good on flats, but wilting on higher ground on 20th and again towards end of month. Crops: Maize standing well and looking healthy. Other

crops badly attacked by cutworm. Some teff already sown. Wheat crops rather thin, but healthy. Old trees in some instances recovering, in other cases dead. Year and two-year old trees making good headway.—Hewson B. Corderoy.

Liwandi–Addo (*Uitenhage*).—A very dry month, with much promise of rain, but very little realization thereof. In November, 1923, nearly 2 inches of rain fell. This year we have only had 0·43 inch on six days. Besides putting a few more rings into drinking tanks, this rain did no good on the lands.—Major J. Kreft.

O'okiep.—Continued drought and no harvest. 1924 rainfall to date is the lowest recorded for fifty years, aggregating 1·84 inch. Previous worst for same period equalled 2·45 inches in 1882. Distress is acute throughout the district. Rainfall: 0·20 inch on three days.—J. Burrows.

Mount Fletcher.—Good rains have fallen during the month. Rainfall: 3·99 inches on sixteen days.—The Gaoler.

Tsolo.—Nice rains have fallen. Cattle and veld generally have improved. No disease amongst cattle. Natives busy ploughing all over the district. Heavy hailstorms passed about two miles from village, doing damage. Rainfall, 3·81 inches on thirteen days.—H. P. Tillard.

Stutterheim.—Drought. Stock dying. Season getting late for mealies. Rainfall: 1·25 inch on eleven days.—F. C. Bousfield.

Nelspoort (*Beaufort West*).—Drought continues, although on several occasions weather conditions appeared promising for rain. Veld becoming very dry, and irrigation supply from the Salt River diminishing. Rainfall: 0·05 inch on two days.—Dr. P. Allen.

Lovedale (*Victoria East*).—A little rain (1·24 inch on nine days), but in such small quantities and on such hard, dry ground as to be of very little benefit even to grass. Ploughing has been out of the question, and cattle are dying. Rainfall: 1·24 inch on nine days.—Charles A. Pilson.

Riversdale.—On the 7th we had a thunderstorm with a heavy downpour, and again on the evening of the 12th we had lightning and heavy thunder, only a slight drizzle. The district is very dry. Rainfall: 1·49 inch on five days.—R. W. Martin Johnson.

Sydney-on-Vaal (*Barkly West*).—The rainfall for the month (1·23 inch on eight days) as recorded at this station is not a fair average for the immediate district, as several very heavy local storms passed over limited areas in the near vicinity: if anything may be ventured as an estimate, I would state that this record would represent the minimum. Only a short spell of one week's high temperatures was experienced. Cattle and small live stock improved in general condition, and good veld grazing is general. Vaal River in high flood on the 8th inst. Very few locusts hatched out. Rainfall: 1·23 inch on eight days.—J. J. Richards.

Bedford.—The dire effects of the protracted drought become more and more apparent daily. The ground is so parched that the little rain which fell during the month scarcely laid the dust. A green tinge showed after the heavier showers, to disappear two days later. Stock (cattle) are not merely poor, but dying of thirst and starvation in portions of the division. Rainfall: 1·64 inch on eleven days.—Thos. C. Hall.

Armoedsvlakte (*Vryburg*).—Veld most of the time grey-green. On some parts of the farm, on the 15th and 16th, plants killed by frost were found. Rainfall: 2·02 inches on thirteen days.—The Research Officer.

Klaver (*Van Rhynsdorp*).—Rainfall, though slight locally, was evidently heavier up the catchment, and resulted in several small floods in the river. Rainfall: 0·32 inch on five days.—W. M. Cameron.

Port Alfred.—After two rains early in the month it was hoped that the drought had broken and conditions would improve, but a succession of high dry winds have parched the veld and did considerable damage to mealie crops, orchards, and gardens. Unless rain falls soon, the prospects for early mealie and fruit crops are poor. Rainfall: 1·80 inch on five days.—W. H. Pascoe.

Kimberley.—Nice showers during first half of month. Hailstorms reported in district, with considerable damage; no details available here. Wind and dust storms frequent during daytime. Gale, which lasted for five minutes, did some damage on the 25th, several large trees being broken down with damage to fences, etc. Slight hailstorm in town; severe one at West End, about two miles away. Rainfall: 2·83 inches on eight days.—C. H. Dowler.

Elsenburg (*Stellenbosch*).—Rainfall: 3·42 inches on nine days, the average for the last thirty-two years being 1·33 inch. Rainfall since beginning of year 25·84 inches, the average being 27·68 inches.—A. S. Kibbe.

Louisvale (*Kenhardt*).—No rain this month. The veld is parched, and there are many casualties amongst stock in this district. Along the river the wheat harvest is good, fruit excellent, and the lucerne farmers prospering.—Stuart N. Smith.

Graaff-Reinet (*The Convent*).—A comparative dry month, though there were a few light showers. Winds moderate and variable. Rainfall: 0·57 inch on seven days, being 2·72 inches less than last year's amount during this month. —The Mother Superior.

Kraaipan (*Mafeking*).—We have had beautiful rains, and farmers are busy ploughing. Locusts that have hatched out so far were all destroyed before any damage could be done. The veld is looking well, feed for stock is plentiful, and there is every indication of a good harvest. Rainfall: 3·41 inches on eleven days.—P. J. Hart.

Cathcart.—A dry, windy month, the light rains that fell doing little good. All stock in poor condition. Rainfall: 1·89 inch on eight days.—C. E. Whibley.

Rietfontein (*Aliwal North*).—Seasonable rains have saved the wheat crops. Cold snaps put the veld back. Rainfall: 3·40 inches on ten days.—A. G. Smith.

Kokstad.—Stock fat and well. No severe hailstorms reported. Rainfall: 4·66 inches on sixteen days.—H. D. Coyte.

Kenhardt.—Continued drought. Rainfall: 0·02 inch on one day.—R. Seydell.

Andriesfontein (*Hanover*).—Weather very unsettled, with sharp frost (31·0 degrees) on 16th, scorching vegetables. Rainfall: 1·02 inch on five days, but the amounts were so small that the sun scorched the young growth.—H. van der Merwe.

Queenstown.—Drought continues. No veld. Water scarce. Rainfall: 1·25 inch on nine days.—H. Holley.

Darling.—Very much greater prevalence of south-easters than in November for some years past. Rainfall: 1·55 inch on six days.—P. H. Drake.

Kakamas (*Kenhardt*).—Many cool spells during the month. Crops promising well. Rainfall: 0·05 inch on one day.—M. J. Oosthuizen.

Keerweder (*French Hoek*).—A cool month, with a rainfall of 2·77 inches on eleven days.—P. Eglington.

Danger Point.—Veld looking well in vicinity. Rainfall: 2·20 inches on eleven days.—H. H. Hews.

Carnarvon.—Cold winds, wintry weather at times, and frost on the 16th in the lower lying parts of the town destroying gardens, were the chief weather features of the month. Rainfall: 0·11 inch on one day.—A. P. Malherbe.

Prieska.—Rainfall: 1·40 inch on seven days, very unusual for this time of year. On at least two other days rain fell in immediate district. No general rain. The violent gale with dust which usually precedes rain has been noticeably absent this month, nor has there been hail. Orange River high all month. Old residents consider the rising of the river a good sign for rain (rain in Transvaal and Orange Free State). Serious hatchings of locusts in Griqualand, slight near Prieska.—E. G. Bryant.

Sutherland.—No locusts here. Roggeveld proper (the mountains), veld good. Lower portions of district very dry; sheep all removed. Few sharp frosts (14th, 15th, and 16th) destroyed all the fruit. No crops except on the Roggeveld range. Boreholes and wells sinking fast; many properties without water, dams all dry. Rainfall: 1·20 inch on four days.—Dr. D. A. Stegman.

Hazelmere (*Stutterheim*).—This has been a very dry month. Small stock are in good condition, but cattle suffering badly. The oldest residents declare that this is the driest season they know. Rainfall: 1·10 inch on seven days. —Sinclair Arnold.

Kilcullen (*Barkly East*).—Good soaking rains during November; crops are coming on splendidly. Farmers are trekking back from Maclear. Stock in good condition. Rainfall: 4·02 inches on ten days.—O. A. S. Vorster, J.P.

Sassum (*Elliot*).—Intense heat and drought conditions still continue. Unable to plough. Rainfall: 1·39 inch on five days.—C. S. McGregor.

Vineyard (*Albert*).—District looking very nice; crops splendid; stock in good condition. Rainfall: 2·89 inches on seven days.—C. J. Hoar.

Somerset East.—Severe drought conditions, water shortage for household purposes, none for irrigation. Rainfall: 1·14 inch on five days.—W. Lacey.

Kei View (*Stutterheim*).—Drought conditions; no ploughing done, stock in low condition. Rainfall: 0·77 inch on five days.—M. E. Acton.

BECHUANALAND.

Dikgatlong Ranch (*Tuli Block*).—The rainfall (2·87 inches on nine days), consisting of fine drizzle, has been very satisfactory. Prospects would be very good but for the voetgangers which are roaming over the country in great numbers. This station has been overrun the entire month by swarms that have hatched in the native reserve, where very little actual destruction has been achieved. The pest is now *moulting* for the last time before flying, and unless Providence intervenes the position as regards veld and crops will be serious.—Paul Jousse.

Mochudi Village.—Country beautifully green. Natives say they do not remember when last early rains came so nicely. Chief claims that his native reserve is clear of locusts. He had thirty-three wagons out spraying. Locusts said to be coming over the border from Rustenburg District into the Protectorate. Rainfall: 4·15 inches on ten days.—R. W. J. Reyneke.

BASUTOLAND.

Maseru.—Crops and stock are looking fine. Some very cold nights. Severe lightning, killing many cattle, goats, and sheep in the mountains. Many huts struck and burnt down. For the last twenty-five years the Caledon River has not been so full. Rainfall: 3·18 inches on eleven days.—J. G. Green.

Mafeteng.—Glorious rains fell throughout the month, totalling 5·26 inches on twelve days. Severe hailstorm on the 2nd, which destroyed wheat field and killed a number of sheep. Fortunately, the hail ran in a narrow strip. Several severe thunderstorms during the month, with severe lightning. Wheat crops looking splendid. Mealies and kaffir corn looking better than for some years. Ground frosts on the 15th, 16th, and 17th; garden produce scorched, but little damage done. Veld splendid and stock fat.—F. Hodgson.

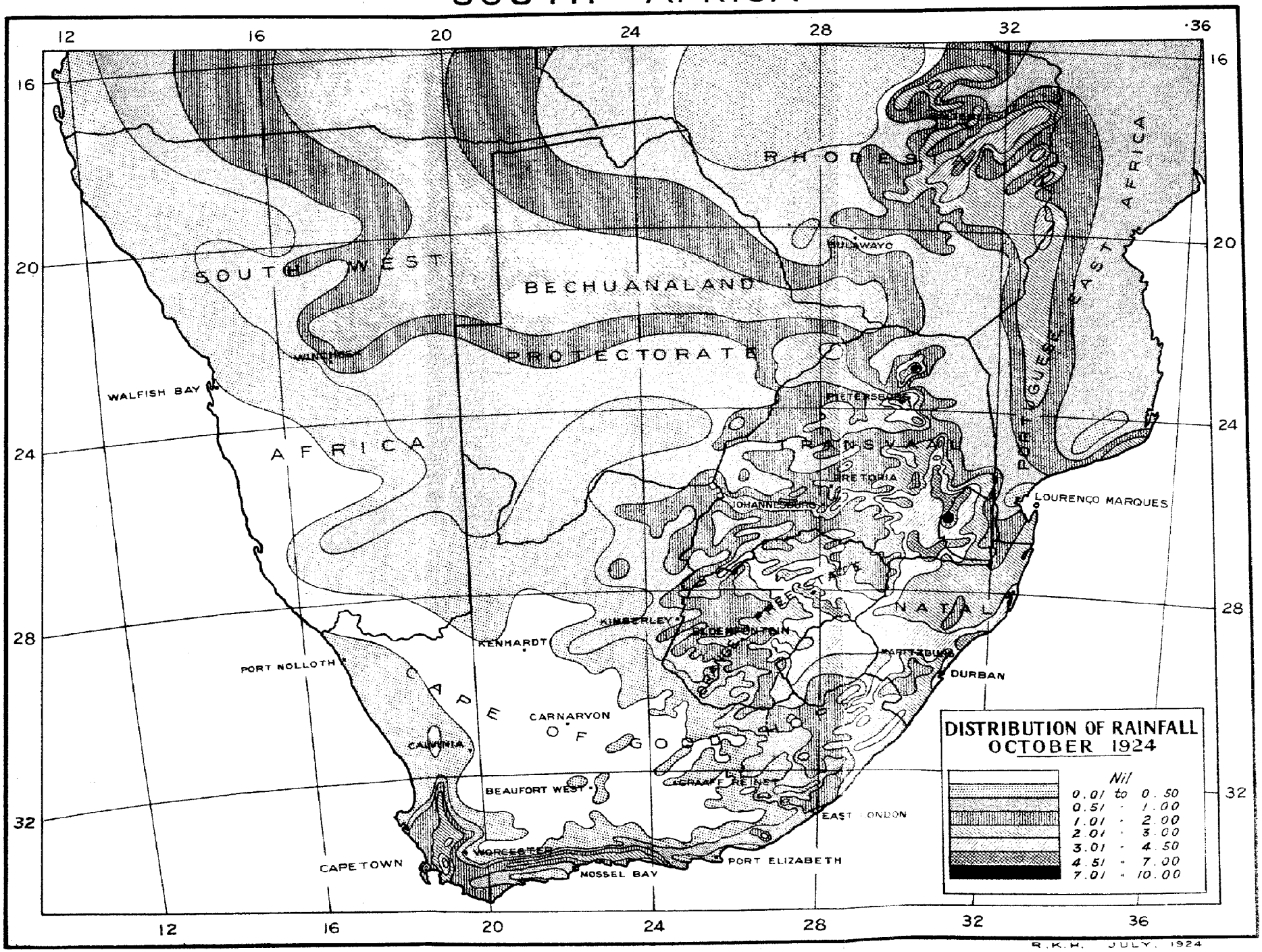
AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), NOVEMBER, 1924.

Place.	Observer.	Month—Nov., 1924. Mean Max.	Month—Nov., 1924. Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Extremes. Date.	Extremes. Lowest.	Extremes. Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Transvaal—										
Barberton	Walter Grubb	79·3	61·1	70·2	69·8	− 0·4	96·0	25th	50·0	9th.
Belfast	The Forester	71·3	47·9	59·6	60·2	− 0·6	83·0	24th	39·0	8th and 21st.
Bloemhof	Sergt. P. J. Jordaan	82·0	56·4	69·2	70·4	− 1·2	96·0	23rd	43·0	16th.
Ermelo	J. Dean	71·9	51·3	61·6	62·2	− 0·6	82·3	24th and 25th	40·9	9th.
Johannesburg (Observatory)	The Staff	72·0	53·1	62·6	63·0	− 0·4	81·9	24th	43·2	10th.
Klerksdorp (Strathmore)	Chas. Scott	79·3	55·4	67·4	70·8	− 3·4	92·0	23rd	42·0	16th.
Komatipoort	H. J. Evans	88·3	66·4	77·4	77·0	+ 0·4	106·0	14th and 25th	57·0	9th, 10th, and 11th.
Louis Trichardt	C. L. Cope	78·1	59·6	68·8	69·0	− 0·2	92·0	24th	49·0	9th.
Middelburg	Dr. H. A. Spencer	—	—	—	65·8	—	—	—	—	—
Nylstroom	G. Bakker	81·0	57·9	69·4	69·9	− 0·5	93·0	24th	48·0	21st.
Pietersburg	W. J. Frankleyne	80·7	57·8	69·2	68·5	+ 0·7	94·0	24th	48·0	9th and 11th.
Piet Retief	J. Werner	73·0	55·6	64·3	64·1	+ 0·2	88·0	24th	45·0	9th.
Pigeonhole (New Agatha)	Jno. McCallum	73·6	58·2	65·9	—	—	88·0	24th	46·0	9th.
Pilgrims Rest	E. M. Skea	75·7	55·3	65·5	65·9	− 0·4	89·0	23rd and 24th	46·5	9th.
Potchefstroom (Exp. Farm)	The Manager	78·0	54·4	66·2	67·4	− 1·2	89·8	23rd	40·0	16th.
Pretoria (Meteorological Office)	The Staff	78·6	57·9	68·2	69·2	− 1·0	90·2	24th	48·6	8th.
Rustenburg	A. Streatfield	83·3	56·9	70·1	71·3	− 1·2	97·0	28th	45·0	16th.
Standerton	—	—	—	—	64·2	—	—	—	—	—
Zeerust	H. Dietrich	84·2	58·3	71·2	72·0	− 0·8	97·0	23rd	46·3	7th.
Swaziland—										
Mbabane	Swaziland Police	73·6	56·3	65·0	64·6	+ 0·4	91·0	23rd	43·0	9th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	78·3	50·5	64·4	68·1	− 3·7	89·3	24th	39·8	16th.
Bloemfontein	G. A. Schepers	78·2	52·4	65·3	67·8	− 2·5	92·6	23rd	40·2	16th.
Harrismith	The Forester	69·6	47·7	58·6	62·8	− 4·2	82·0	23rd and 25th	35·0	9th.
Kroonstad	A. C. Mason	78·4	53·8	66·1	67·7	− 1·6	92·0	24th	40·0	16th.
Ladybrand	The Forester	72·4	50·7	61·6	63·2	− 1·6	86·0	24th	40·0	8th and 10th.
Lindley	W. Murphy	74·0	51·7	62·8	65·9	− 3·1	87·0	23rd and 24th	42·0	8th, 9th, and 16th.
Natal—										
Dundee	West Thorrold	75·8	52·9	64·4	69·0	− 4·6	93·0	24th	42·0	10th.
Durban (Point)	The Port Captain	76·6	65·1	70·8	72·8	− 2·0	89·0	24th	56·4	8th.
Empangeni	The Forester	78·9	64·0	71·4	73·2	− 1·8	94·0	27th	54·0	10th.
Estcourt	The Town Clerk	79·1	54·8	67·0	70·4	− 3·4	92·0	24th	43·0	10th and 11th.
Hlabisa	E. E. Redgrove	75·9	59·6	67·8	69·6	− 1·8	91·0	14th	49·0	9th.
Ladysmith	D. A. R. Leathern	79·8	57·7	68·8	73·4	− 4·6	95·0	23rd	47·0	9th.
Maritzburg (Mental Hospital)	The Staff	77·0	57·7	67·4	79·1	− 1·7	93·5	24th	48·2	9th.
Stanger	Cecil C. Foss	78·4	63·3	70·8	71·4	− 0·6	91·5	27th	55·0	16th.
Weenen	The Gaoler	79·9	57·5	68·7	73·1	− 4·4	95·2	25th	48·3	10th.

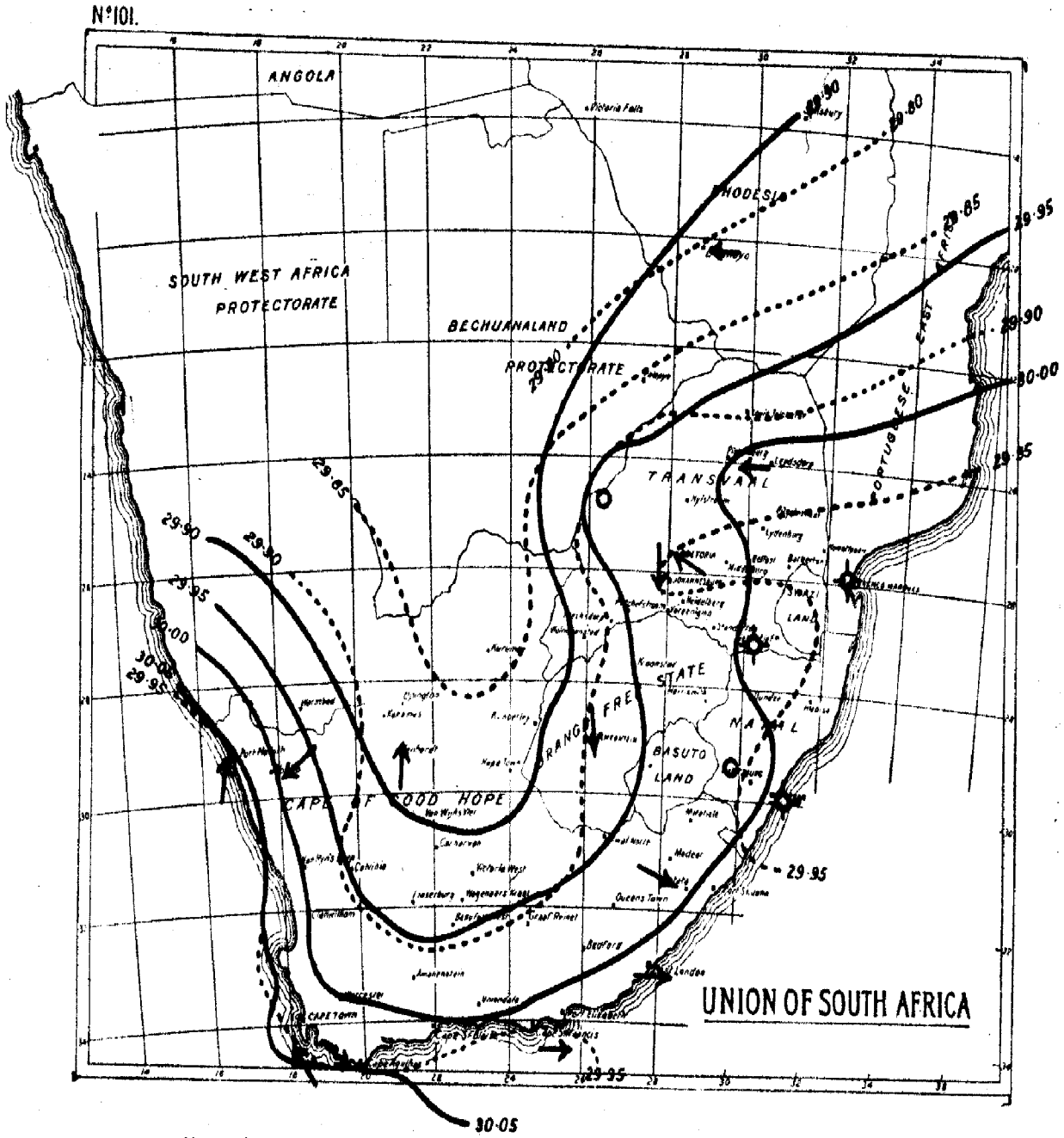
AIR TEMPERATURES, NOVEMBER, 1924—(*continued*).

Place.	Observer.	Month—Nov., 1924. Mean Max.	Month—Nov., 1924. Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Extremes. Date.	Extremes. Lowest.	Extremes. Date.
		° F.	° F.	° F.	° F.	° F.	° F.		° F.	
Cape Province—										
Aliwal North	Alex. Alcock	78·6	48·7	63·6	65·4	− 1·8	90·0	24th	35·0	16th.
Bedford	Thos. C. Hall	78·6	51·0	64·8	63·0	+ 1·8	98·0	24th	37·8	16th.
Capetown (Royal Observatory)	The Staff	70·9	54·7	62·8	64·2	− 1·4	88·0	30th	42·4	14th.
Carnarvon	A. P. Malherbe	79·8	49·9	64·8	67·6	− 2·8	92·0	22nd	35·0	16th.
Clanwilliam	C. B. van Zijl	—	—	—	69·4	—	—	—	—	—
East London	The Port Captain	74·5	60·0	67·2	65·8	+ 1·4	82·0	14th	49·0	16th.
Graaff-Reinet (Convent)	The Mother Superior	84·3	53·4	68·8	67·1	+ 1·7	97·0	24th	41·0	16th.
Grahamstown	The Vet. Res. Officer	73·7	50·0	61·8	64·1	− 2·3	93·6	24th	32·2	16th.
Groot Drakenstein	V. Hopking	72·4	52·8	62·6	64·4	− 1·8	96·2	30th	42·2	16th.
Kenhardt	R. Seydell	87·4	55·6	71·5	71·4	+ 0·1	100·0	22nd	42·0	16th.
Kimberley	C. H. Dowler	83·1	56·6	69·8	73·2	− 3·4	96·0	23rd	46·0	8th.
Kingwilliamstown	W. A. Kindness	78·0	54·6	66·3	67·8	− 1·5	95·0	24th	41·0	16th.
Kokstad	H. D. Coyte	72·4	51·2	61·8	63·5	− 1·7	92·0	24th	41·0	8th.
Mafeking (Convent)	The Mother Superior	82·4	58·0	70·2	72·6	− 2·4	94·0	23rd	47·0	16th.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	69·9	57·6	63·8	64·8	− 1·0	77·0	27th	49·0	15th.
Murraysburg	W. H. Rose-Innes	—	—	—	65·1	—	—	—	—	—
O'okiep	J. Burrows	76·4	51·9	64·2	64·2	± 0·0	95·8	30th	41·0	2nd.
Port Elizabeth	The Lightkeeper	70·4	58·9	64·6	65·1	− 0·5	78·0	24th	51·0	16th.
Port Nolloth	The Lightkeeper	64·1	49·1	56·6	58·0	− 1·4	88·0	10th	41·5	29th.
Port St. John's (Cape Hermes)	The Lightkeeper	74·9	62·8	68·8	68·7	+ 0·1	88·0	14th	55·0	8th and 9th.
Queenstown	H. Holley	79·0	51·6	65·3	66·8	− 1·5	95·0	24th	38·0	16th.
Somerset East	C. Harris	78·2	51·5	64·8	66·4	− 1·6	94·0	24th	37·8	16th.
Stutterheim	F. C. Bousfield	75·7	51·3	63·5	63·8	− 0·3	96·7	24th	36·1	16th.
Sydney's Hope	Rev. S. Rippon	73·2	52·2	62·7	62·2	+ 0·5	91·2	24th	43·5	16th.
Uitenhage	H. Inggs	76·2	55·1	65·6	66·0	− 0·4	85·5	24th	41·0	16th.
Umtata	P. Hackett	76·5	54·8	65·6	66·5	− 0·9	95·0	24th	42·1	16th.
Vryburg	Chas. Butler	83·4	56·3	69·8	71·2	− 1·4	95·0	23rd	42·0	16th.
Wynberg (Convent)	The Mother Superior	71·4	54·4	62·9	62·2	+ 0·7	85·5	30th	43·0	15th.
Basutoland—										
Mafeteng	F. Hodgson	71·8	49·5	60·6	65·3	− 4·7	86·0	24th	38·0	8th.

SOUTH AFRICA



R.K.H. JULY, 1924



November, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for November.

RAINFALL, NOVEMBER, 1924.

Place.	Observer.	Month. Nov., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	8·44	4·91	+ 3·53	26·03	27·05	− 1·02	13·17	9·28	+ 3·89
Belfast	The Forester	8·16	5·15	+ 3·01	32·25	26·62	+ 5·63	12·24	10·10	+ 2·14
Bethal	H. F. Joubert	7·32	5·32	+ 2·00	27·64	24·27	+ 3·37	11·64	10·27	+ 1·37
Bloemhof	B. J. Jordaan	2·24	1·79	+ 0·45	—	16·24	—	6·03	4·42	+ 1·61
Clatemont	S.A. Police	3·27	2·83	+ 0·44	19·36	15·46	+ 3·90	5·23	4·71	+ 0·52
Ermelo	The Forester	6·66	4·85	+ 1·81	28·95	26·08	+ 2·87	11·41	11·53	− 0·12
Haenertsburg	S.A. Police	6·28	3·83	+ 2·45	34·65	32·58	+ 2·07	14·30	8·20	+ 6·10
Johannesburg (Observatory)	The Staff	4·09	5·05	− 0·96	23·22	25·91	− 2·69	7·91	9·56	− 1·65
Klerksdorp (Strathmore)	C. Scott	4·04	2·84	+ 1·20	18·74	19·62	− 0·88	7·87	6·14	+ 1·73
Komatipoort	H. J. Evans	6·52	2·70	+ 3·82	21·63	23·73	− 2·10	11·27	5·99	+ 5·28
Louis Trichardt	C. L. Cope	6·29	3·25	+ 3·04	28·73	24·75	+ 3·98	10·75	6·56	+ 4·19
Middelburg	Dr. Spencer	6·47	5·48	+ 0·99	33·11	24·35	+ 8·76	10·94	9·49	+ 1·45
Nylstroom	G. Bakker	4·63	3·68	+ 0·95	24·56	20·93	+ 3·63	7·64	6·82	+ 0·82
Pietersburg	W. Franklyne	4·05	2·93	+ 1·12	20·11	16·89	+ 3·22	6·92	5·51	+ 1·41
Pigeonhole	J. McCallum	7·90	6·13	+ 1·77	51·17	40·00	+ 11·17	17·98	11·15	+ 6·83
Pilgrims Rest	E. M. Skea	8·36	4·53	+ 3·83	27·96	34·30	− 6·34	12·33	8·55	+ 3·78
Potchefstroom	The Manager	5·99	3·14	+ 2·85	24·16	19·41	+ 4·75	10·85	6·75	+ 4·10
Pretoria (Meteorological Office)	The Staff	7·19	4·97	+ 2·22	21·36	24·77	− 3·41	9·49	8·85	+ 0·64
Roolberg	N. H. Monro	4·26	4·11	+ 0·15	16·68	21·20	− 4·52	6·38	7·03	− 0·65
Rustenburg	A. Streatfield	5·77	3·47	+ 2·30	25·29	22·04	+ 3·25	7·60	7·55	+ 0·05
Woodbush 1	The Forester	9·25	7·05	+ 2·20	51·52	60·16	− 8·64	21·37	14·93	+ 6·44
Zeerust	H. Dietrich	4·95	3·56	+ 1·39	21·32	20·37	+ 0·95	6·96	6·20	+ 0·76
Swaziland—										
Mbabane	Swaziland Police	10·15	7·10	+ 3·05	56·64	45·02	+ 11·62	25·68	15·49	+ 10·19
Orange Free State—										
Bethulie	J. J. Wardhaugh	2·83	1·27	+ 1·56	20·19	15·41	+ 4·78	4·88	4·00	+ 0·88
Bloemfontein	G. A. Schepers	1·97	2·09	− 0·12	18·73	19·41	− 0·68	5·50	5·52	− 0·02
Boshof	The Postmaster	3·22	2·10	+ 1·12	14·86	17·43	− 2·57	4·36	5·34	− 0·98
Harrismith	The Forester	5·34	4·13	+ 1·21	27·31	25·20	+ 2·11	12·76	9·68	+ 3·08
Kroonstad	A. C. Mason	5·20	3·13	+ 2·07	22·29	21·06	+ 1·23	12·12	6·75	+ 5·37
Ladybrand	The Forester	7·16	3·42	+ 3·74	28·85	24·04	+ 4·81	14·73	8·76	+ 5·97
Lindley	The Gaoler	6·65	2·91	+ 3·74	—	20·51	—	—	6·97	—
Natal—										
Dundee	W. Thorrold	6·62	3·88	+ 2·74	31·27	26·92	+ 4·35	12·57	9·26	+ 3·31
Durban (Point)	The Port Captain	6·11	5·01	+ 1·10	35·19	36·59	− 1·40	14·99	15·80	− 0·81
Empangeni	The Forester	8·22	4·95	+ 3·27	39·54	41·56	− 2·02	20·27	17·39	+ 2·88
Hlabisa	E. E. Redgrove	7·59	5·38	+ 2·21	—	37·75	—	16·13	14·93	+ 1·20
Howick	The Gaoler	6·65	4·27	+ 2·38	28·25	28·79	− 0·54	12·75	10·48	+ 2·27
Ladysmith	D. A. R. Leathern	7·55	2·85	+ 4·70	30·37	23·89	+ 6·48	14·61	7·67	+ 6·94

RAINFALL, NOVEMBER, 1924—(*continued*).

Place.	Observer.	Month. Nov., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Natal—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Stanger	C. C. Foss	9·53	5·28	+ 4·25	33·17	36·55	− 3·38	17·02	16·39	+ 0·63
Vryheid	The Gaoler	6·58	4·39	+ 2·19	26·88	29·06	− 2·18	10·62	10·82	− 0·20
Weenen	The Gaoler	6·82	3·63	+ 3·19	22·92	23·41	− 0·49	13·18	8·17	+ 5·01
Estcourt	The Town Clerk	7·79	3·31	+ 4·48	28·04	24·24	+ 3·80	14·84	7·67	+ 7·17
Cape Province—										
Aliwal North	A. Alcock	1·84	1·78	+ 0·06	18·75	17·87	+ 0·88	4·79	5·27	− 0·48
Beaufort West	The Gaoler	0·33	0·71	− 0·38	5·26	8·73	− 3·47	0·88	2·65	− 1·77
Bedford	T. C. Hall	1·64	2·31	− 0·67	13·98	23·77	− 9·79	4·32	8·20	− 3·88
Britstown	The Gaoler	1·86	0·77	+ 1·09	9·52	10·58	− 1·06	2·55	2·37	+ 0·18
Calvinia	The Gaoler	0·57	0·38	+ 0·19	5·87	8·01	− 2·14	3·00	3·27	− 0·27
Capetown (Royal Observatory)	The Staff	1·51	1·06	+ 0·45	18·78	24·55	− 5·77	10·20	12·07	− 1·87
Ceres	The Gaoler	2·27	1·75	+ 0·52	34·89	40·15	− 5·26	18·86	21·47	− 2·61
Carnarvon	A. P. Malherbe	0·11	0·54	− 0·43	8·37	7·44	+ 0·93	1·86	1·79	+ 0·07
Clanwilliam	The Gaoler	0·36	0·31	+ 0·05	5·41	8·49	− 3·08	3·34	4·16	− 0·82
Concordia	—	—	0·21	—	—	6·19	—	—	2·49	—
Driefontein (French Hoek)	The Forester	5·58	4·77	+ 0·81	66·29	75·13	− 8·84	38·66	37·06	+ 1·60
East London	A. Downie	2·13	3·11	− 0·98	17·48	29·50	− 12·02	5·78	13·01	− 7·23
Fraserburg	The Gaoler	0·00	0·41	− 0·41	3·67	6·34	− 2·67	0·95	1·63	− 0·68
Grahamstown	The Vet. Res. Officer	1·35	3·08	− 1·73	13·67	25·51	− 11·84	5·71	11·28	− 5·57
Garies	The Gaoler	0·41	0·19	+ 0·22	2·96	4·86	− 1·90	2·16	2·39	− 0·23
Graaf-Reinet (Convent)	The Mother Superior	0·57	1·20	− 0·63	8·52	12·55	− 4·03	2·48	4·37	− 1·89
Groot Drakenstein	A. L. Franceys	2·98	1·56	+ 1·42	34·86	34·62	+ 0·24	18·42	17·61	+ 0·81
Griquatown	The Gaoler	0·79	0·84	− 0·05	—	11·65	—	—	2·44	—
George (Rectory)	Rev. Cannon B. Price	3·89	2·89	+ 1·00	24·42	31·07	− 6·65	14·32	13·41	+ 0·91
Hanover	The Gaoler	1·55	1·01	+ 0·54	9·08	12·21	− 3·13	2·25	3·08	− 0·83
Hopetown	The Gaoler	1·25	1·07	+ 0·18	—	11·54	—	—	2·74	—
Kenhardt	R. Seydell	0·02	0·25	− 0·23	2·43	5·37	− 2·94	0·37	1·14	− 0·77
Kimberley	H. D. Dowler	2·83	1·48	+ 1·35	12·88	14·08	− 1·20	3·87	3·76	+ 0·11
Knysna	The Gaoler	2·76	2·29	+ 0·47	23·29	26·17	− 2·88	12·59	12·51	+ 0·08
Kokstad	H. D. Coyte	4·66	3·39	+ 1·27	25·40	23·01	+ 2·39	11·08	7·62	+ 3·46
Kingwilliamstown	W. Kindness	1·21	2·50	− 1·29	14·53	22·36	− 7·83	4·10	8·93	− 4·83
Kuruman	Resident Magistrate	0·53	1·42	− 0·89	—	14·68	—	—	2·69	—
Mafeking (Convent)	The Mother Superior	3·41	2·59	+ 0·82	16·57	19·00	− 2·43	6·58	5·66	+ 0·92
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·93	1·13	− 0·20	11·49	15·84	− 4·35	5·28	7·13	− 1·85
Murraysburg	W. Rose-Innes	—	0·76	—	—	9·97	—	—	2·65	—
O'okiep	J. Burrows	0·20	0·20	± 0·00	1·84	6·78	− 4·94	0·89	3·11	− 2·22
Phillipstown	The Gaoler	1·58	0·96	+ 0·62	14·87	12·22	+ 2·65	2·36	2·93	− 0·57
Piquetberg	The Gaoler	1·91	0·99	+ 0·92	16·74	20·16	− 3·42	10·73	10·75	− 0·02
Port Elizabeth	The Lightkeeper	—	2·03	—	—	20·75	—	—	10·50	—
Maritzburg (Mental Hospital)	The Staff	7·28	4·49	+ 2·79	27·70	31·74	− 4·04	12·30	11·73	+ 0·57

RAINFALL, NOVEMBER, 1924—(*continued*).

Place.	Observer.	Month. Nov., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Cape Province—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Port St. Johns	The Lightkeeper	4·97	5·13	− 0·16	35·43	44·20	− 8·77	13·56	19·16	− 5·60
Port Nolloth	The Lightkeeper	0·05	0·06	− 0·01	1·21	2·29	− 1·08	0·63	1·01	− 0·38
Prieska	The Gaoler	1·67	0·60	+ 1·07	6·38	8·90	− 2·52	2·47	1·67	+ 0·80
Queenstown	H. Holley	1·25	2·12	− 0·87	12·84	19·86	− 7·02	3·11	5·89	− 2·78
Steytlerville	The Gaoler	0·00	0·80	− 0·80	4·26	8·52	− 4·26	1·33	2·93	− 1·60
Sutherland	The Gaoler	—	0·44	—	—	8·99	—	—	3·58	—
Swellendam	The Gaoler	2·23	2·45	− 0·22	23·22	28·97	− 5·75	12·68	12·72	− 0·04
Sydney's Hope	Rev. S. Rippon	1·68	2·35	− 0·67	15·09	20·50	− 4·81	6·29	8·85	− 2·56
Somerset East	C. Harris	1·08	2·41	− 1·33	12·94	22·64	− 9·70	3·22	8·38	− 5·16
Stutterheim	F. C. Bousfield	1·25	2·95	− 1·70	19·60	26·09	− 6·49	4·82	9·47	− 4·65
Uitenhage	H. Inggs	0·60	1·68	− 1·08	10·16	15·95	− 5·79	4·38	7·15	− 2·77
Umtata	B. J. Hackitt	1·45	2·50	− 1·05	14·84	22·43	− 7·59	5·59	7·97	− 2·38
Uniondale	The Gaoler	0·67	1·00	− 0·33	9·18	12·67	− 3·49	5·73	5·74	− 0·01
Upington	The Gaoler	0·14	0·45	− 0·31	5·01	6·46	− 1·45	0·23	1·25	− 1·02
Victoria West	The Gaoler	0·24	0·60	− 0·36	6·89	9·52	− 2·63	2·07	2·29	− 0·22
Vryburg	Chas. Butler	1·81	1·45	+ 0·36	15·85	16·60	− 0·75	4·41	3·37	+ 1·04
Worcester	The Gaoler	0·54	0·49	+ 0·05	—	12·14	—	—	6·27	—
Wynberg (Convent)	The Mother Superior	3·49	1·74	+ 1·75	24·35	44·94	− 10·59	21·09	24·62	− 3·53
Basutoland—										
Mafeteng	F. Hodgson	5·26	2·74	+ 2·52	28·97	27·01	+ 1·96	10·40	7·65	+ 2·75
South-West Africa—										
Aroab	S.W.A. Police	0·00	0·79	− 0·79	6·48	72·2	− 0·74	0·01	1·00	− 0·99
Aus	E. Martins	0·00	0·09	− 0·09	1·03	3·93	− 2·90	0·63	1·17	− 0·54
Bethanie	Rev. Peter	0·24	0·17	+ 0·07	1·64	3·09	− 1·45	0·87	0·46	+ 0·41
Duestenbrock	R. Matthiessen	0·01	0·66	− 0·65	7·53	12·09	− 4·56	1·32	1·06	+ 0·26
Gabis	Rev. P. Rehor	0·00	0·28	− 0·28	0·92	4·05	− 3·13	0·02	1·06	− 1·04
Garinais	F. Bentling	0·01	0·78	− 0·77	3·91	5·60	− 1·69	0·32	1·16	− 0·84
Gibeon	The Postmaster	0·35	0·48	− 0·13	2·78	5·82	− 3·04	0·35	0·87	− 0·52
Gobabis	Rev. Irle	0·50	1·13	− 0·63	11·45	13·78	− 2·33	2·36	1·81	+ 0·55
Grootfontein	Pitkowski	2·42	1·79	+ 0·63	13·76	19·82	− 6·06	3·45	2·63	+ 0·82
Gr. Witvley	G. Maas	0·65	0·90	− 0·25	6·07	12·62	− 6·55	1·93	1·50	− 0·43
Haribes	G. Freund	0·33	0·53	− 0·20	3·35	7·70	− 4·35	0·36	1·28	+ 0·92
Hierachabis	Rev. P. Stroka	0·10	0·36	− 0·26	1·46	3·57	− 2·11	0·28	0·54	− 0·26
Kalkfontein S.	S.W.A. Police	0·04	0·25	− 0·21	2·22	4·08	− 1·86	0·49	0·45	+ 0·04
Franzfontein	H. Janson	0·31	0·44	− 0·13	6·83	8·65	− 1·82	0·31	0·78	− 0·47
Luderitz Bay	E. Stoeber	0·00	0·00	± 0·00	0·00	0·65	− 0·65	0·01	0·24	− 0·23

RAINFALL, NOVEMBER, 1924—(*continued*).

Place.	Observer.	Month. Nov., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
South-West Africa—(contd).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Maltahoehe	E. Just	0·14	0·29	− 0·18	3·29	5·54	− 2·25	0·11	0·51	− 0·40
Neu-Heuais	Liebig's Extract Co.	0·14	0·63	− 0·49	4·90	12·15	− 7·25	0·51	1·19	− 0·68
Okahandja	B. Templin	0·15	0·51	− 0·36	9·71	12·17	− 2·46	2·52	1·12	+ 1·40
Okasangumingo	R. H. A. Schneider	1·06	1·84	− 0·78	10·98	15·58	− 4·60	1·62	3·15	− 1·53
Omaruru	The Postmaster	0·46	0·51	− 0·05	7·25	13·78	− 6·53	1·15	0·92	+ 0·23
Otjiwarongo	The Magistrate	1·24	0·77	+ 0·47	11·12	13·72	− 2·60	2·63	1·50	+ 1·13
Outjo	The Magistrate	1·75	0·83	+ 0·92	6·00	12·99	− 6·99	2·14	1·32	+ 0·82
Rehoboth	The Postmaster	0·28	0·61	− 0·33	1·99	10·76	− 8·77	0·29	1·35	− 1·06
Rietfontein	B. Leist	1·90	1·83	+ 0·07	10·05	17·23	− 7·18	2·73	2·92	− 0·19
Swakopmund	The Gaoler	0·00	0·02	− 0·02	0·10	0·55	− 0·45	0·10	0·18	− 0·08
Tsumeb	Ing. Schatter	3·28	1·82	+ 1·46	15·80	19·59	− 3·79	4·61	2·83	+ 1·78
Usakos	Rev. Diehl	0·04	0·15	− 0·11	2·58	4·68	− 2·10	0·16	0·44	− 0·28
Voigtsgrund	A. Voigts	0·25	0·32	− 0·07	10·44	6·78	+ 3·66	0·31	0·68	− 0·37
Warmbad	E. Luchtenstein	0·00	0·09	− 0·09	0·41	3·39	− 2·98	0·01	0·61	− 0·60
Waterburg	D. Hahn	1·01	1·43	− 0·42	11·10	16·79	− 5·69	1·66	2·05	− 0·39
Wilhelmstal	W. Boehmaker	0·01	0·51	− 0·50	4·41	10·84	− 6·43	0·90	1·02	− 0·12
Windhoek	Observatory	0·16	0·83	− 0·67	8·79	12·96	− 4·17	1·88	1·44	+ 0·44

C. STEWART,
Chief Meteorologist.

6633—31/8/25—800

UNION OF SOUTH AFRICA.

DEPARTMENT OF IRRIGATION.

MONTHLY WEATHER REPORT

OF THE

METEOROLOGICAL OFFICE.

Vol. V. DECEMBER, 1924. No. 60

MEAN pressure slightly higher than usual in the east, lower over the centre of the Cape Province, and practically normal on the south and west coasts; mean temperature about 1 degree less than the average, with days about 2½ degrees cooler and nights almost 1 degree warmer than usual; persistent cloudy weather, with a consequent comparative absence of sunshine; frequent well-distributed rains at short intervals throughout the month; frequent thunderstorms, mostly light, but occasionally of considerable severity; numerous hailstorms, usually light, but with a fair proportion of destruction, violence; frequent rains of considerable intensity, causing washaways, floods in rivers, etc.; precipitation mostly in excess of normal over the summer rainfall area, but slightly subnormal over a considerable portion of the Transvaal, at a few stations in Natal; in Basutoland, the major portion of the winter rainfall area, and parts of the southern Karroo, and the western portion of the south coastal area; a total absence of rain confined to parts of the south-west of the Cape Province, of the west coast, and west-central Karroo; these were the most noteworthy features of the weather of the concluding month of the year 1924.

Pressure.—Mean atmospheric pressure during December was almost normal, but was slightly higher than usual over the eastern half of the Union. The equatorial low pressure was persistent throughout the month, extending at times beyond the south coast, whilst high pressure was fairly frequent along the coasts. On the morning of the 1st, pressure was highest in the neighbourhood of Durban and Lourenco Marques, while a portion of a "low" lay over the west and south-west of the Cape Province, with an indication of the equatorial "low" over Bechuanaland and South-West Africa; on the 2nd, the northern tongue of low pressure had pushed southwards, and the western "low" had moved on to the south-east coast, causing a decrease in pressure, amounting to 0·15 inch, in the east; on the 3rd, the "low" over the south-east had disappeared, while the equatorial tongue had pushed farther south beyond the coast, affecting the greater portion of the country, with a further slight fall in the east; on the 4th, the pressure had decreased still further over the western interior, and a fragment of the advance portion of an anticyclone lay

on the west coast, causing an increase in the gradients in the west; in the east pressure was highest over Madagascar; on the 5th, pressure had risen generally over the Union, but had fallen slightly in Portuguese East Africa and continued practically steady over Madagascar; the "high" on the west coast had extended to the south coast, forcing the "low" farther north; on the 6th, the pressure had increased considerably, about two-tenths of an inch over the south and south-east, and but slightly in the more northerly portions of Portuguese East Africa; on the other hand, in Madagascar and over the west and south-west of the Union it had decreased slightly; on the 7th, conditions were much the same as on the previous morning, except for a small decrease in pressure in the south and east, over the interior, and in Madagascar; on the 8th, pressure had fallen generally, particularly over the interior and in the south and east, with the result that a well-developed "low" with moderate gradients covered practically the whole Union, while a slight rise had taken place in Madagascar; on the 9th, a very material change had taken place, pressure having risen considerably in the south-west, south, and east, but to a less extent in the northern interior; on the 10th, a further increase in pressure occurred all over, an isobar of 30·15 inches lying along the south coast with gradients from south to north; on the 11th, the only change was a decrease in the south, with diminished gradients; on the 12th, a slight fall in the barometer had occurred over the west and south-west, with this exception conditions were unaltered; on the 13th, a further fall over the same area, resulting in the formation of a "low" on the west coast with a protrusion southwards of the equatorial tongue, while the highest pressure lay over the north-eastern portion of the Union; by the morning of the 14th, the western "low" had moved eastwards, the lowest isobars lying over Port Elizabeth, pressure having risen in the south-west and fallen slightly in the east; on the 15th, the "low" on the south coast had passed off, and pressure had risen considerably in the south and south-east, while the "low" persisted over South-West Africa and Bechuanaland; on the 16th, there was a further increase in pressure in the south and east, while the minimum pressure lay over Northern Rhodesia; at the same time pressure had fallen in the west and south-west, while the equatorial low pressure had sent a protrusion southwards on to the west coast; by the 17th, the position of highest pressure (30·15 inches) had moved from the south on to the Natal coast, and a definite "low" had made its appearance in the west, the lowest isobar there being 29·85 inches; on the 18th, it was seen that the eastern high-pressure area had moved some distance to the north-east, so that the highest isobar (30·00 inches) lay in the neighbourhood of Lourenco Marques, with the northern portion extending eastwards and practically bisecting Madagascar; pressure had fallen slightly over the interior and to a considerable extent in the south, the western "low" having moved eastwards, so that the lowest pressure (29·65 inches) lay in the vicinity of Port Elizabeth; on the 19th, pressure had risen in the west, south, and south-east, but had fallen by a similar small amount in the east and over the interior; a fragment of coast "low," with an isobar of 29·80 inches, lay between Durban and Lourenco Marques, and the 30-inch isobar lay over Madagascar; the position was practically the same on the 20th, except for a small decrease of pressure in the east and a similar increase in the west and south; on the 21st, a retreat northwards of the equatorial tongue of low pressure, a further increase in pressure in the west and south, and a rise over the east were the most striking changes since the previous morning; on the 22nd, an increase in pressure occurred in the south and east, owing to the presence of an anticyclone of moderate intensity off the south coast, whilst the barometer remained practically steady in the west, over the western interior, and in Madagascar; on the 23rd, the "high" that had been off the south coast had

moved on to the eastern part of the Union, the highest isobar (30·10 inches) being situated between Durban and Lourenco Marques; pressure had fallen in the south and west, owing to the protrusion southwards of the equatorial low pressure; on the 24th, a rise of about one-tenth of an inch had taken place in the south and west; the "low" over the interior had retreated and the top of a complementary "low" had appeared on the south-east and east coast; on the 25th, a further rise had taken place in the south, and the south-eastern "low" had passed, leaving the isobars symmetrically disposed around the interior "low" with gradients from the coast inwards; on the 26th, a fall of about one-tenth of an inch had occurred in the south and over Madagascar, with a fall of about half this amount in the east and west; otherwise conditions were unchanged; on the 27th, a further almost general decrease in pressure had brought practically the whole country under low-pressure conditions; on the 28th, pressure had risen in the south and south-east and fallen slightly in the east, but remained steady in the west; on the 29th, the equatorial "low" had extended beyond the south-east coast, causing a fall of pressure there as well as on the south; on the 30th, pressure had increased generally and the interior "low" had withdrawn to a position over Bechuanaland and South-West Africa; on the 31st, the western portion of an anticyclone lay over Natal and Portuguese East Africa, and pressure had fallen in the south-west owing to the advance southwards of the equatorial tongue of low pressure.

Temperature.—The mean temperature over the Union during December was 69·4 degrees, or 1 degree lower than the average. This deficit was entirely due to the mean day temperature (79·7 degrees) being 2·8 degrees less than the normal, whereas the mean night temperature (59·2 degrees) showed an excess of 0·8 degree. A deficiency in the mean temperature for this month was common to the Transvaal, Free State, Natal, an excess being confined to the Cape Province. The Transvaal, with a mean temperature of 68·0 degrees, was 2·6 degrees cooler than usual; this deficit was unequally divided between the days and the nights, the temperature of the former (78·3 degrees) being 4·3 degrees and of the latter (57·8 degrees) being only 0·8 degree under the corresponding averages. Similarly the Orange Free State had a mean for the month (66·2 degrees) lower than usual by 3·4 degrees, the mean day temperature (77·3 degrees) being 5·8 degrees and the mean night temperature (55·2 degrees) being only 0·9 degree less than their respective averages. In Natal, the mean for December (71·4 degrees) was 3·0 degrees lower than the normal; this shortage was entirely due to the mean maximum or day temperature (80·3 degrees) being 6·2 degrees less than the normal, whereas the mean minimum or night temperature (62·4 degrees) was 0·2 degree in excess of the average. In the Cape Province, conditions were almost the reverse of what obtained in the other three Provinces, this month's mean temperature (70·4 degrees) being 1 degree warmer than usual. This surplus was due to the mean minimum (60·0 degrees) being 2·3 degrees in excess of the average value, while the mean maximum (80·9 degrees) was 0·2 degree short of the normal. An examination of the individual stations shows that the mean temperature during December was below normal in the Transvaal, Orange Free State, and Natal, in those portions of Bechuanaland and the northern border close to the western border of the Transvaal and Orange Free State, also at one or two other stations in the Cape Province, where, however, an excess was practically general. In the Transvaal, the deficits were mostly between 2 and 3½ degrees, but ranged from 0·9 degree at Barberton to 6·3 degrees at Louis Trichardt. In Swaziland, Mbabane showed a small excess of 0·1 degree. In the Orange Free State, the negative departures from normal varied between 1·4 degree at Lindley and 4·9 degrees at Harrismith. In Natal, the subnormal amounts were

small on the coast and increased westwards, being least (0·4 degree) at Durban and greatest (6·3 degrees) at Weenen. In the Cape Province, the month's temperature was under the average by close on 4 degrees in Bechuanaland and the northern border, but decreasing to 1·1 degree at Carnarvon and 0·1 degree at Somerset East. At Port St. Johns the mean for the month was normal. The excesses prevailing elsewhere were greatest (3–4 degrees) in the south-west, including the Peninsula and parts of the south-east, but were commonly between 1 degree and 2 degrees; they ranged between 0·1 degree at Grahamstown and 4·3 degrees at Wynberg. Except at a few stations, both days and nights were cooler than usual in the Transvaal, Orange Free State, and Natal, whereas in the Cape Province the reverse held, the days and nights being commonly warmer than the average. In the Transvaal, the day temperatures were everywhere lower than usual, usually by large amounts (3–6 degrees), but varying from 0·6 degree at Belfast to 7·3 degrees at Pretoria. The night temperatures were also less than the average, but usually by much smaller amounts of less than 2 degrees, but varying between 0·1 degree at Bloemhof and 6·1 degrees at Louis Trichardt. A few exceptional stations had an excess in the night temperatures, such as Nylstroom, Pretoria, Piet Retief, and Potchefstroom, the *plus* amount ranging from 0·2 degree at the first to 2·4 degrees at the last of these. In the Orange Free State, conditions were similar, the day temperatures being considerably below normal, as also were the night temperatures, but to a much less extent, except at Lindley and Ladybrand, where they were higher than usual by 0·1 degree and 0·7 degree respectively. The deficits in the day temperatures varied from 2·9 degrees at Ladybrand to 8·6 degrees at Harrismith, while the nights were subnormal by amounts lying between 0·6 degree at Kroonstad and 2·8 degrees at Bethulie. In Natal, excesses in the mean minima occurred at stations on or near the coast, but elsewhere both days and nights were warmer than usual. The shortages in the day temperatures showed very wide variations, being 2·6 degrees at Hlabisa and 12·1 degrees at Ladysmith; the deficits in the night temperatures were much smaller, generally less than 1 degree, but ranging from 0·2 degree at Ladysmith to 3·0 degrees at Dundee. The excesses in the latter (i.e. the mean minima) lay between 0·6 degree at Empangeni and 2·7 degrees at Durban. In the Cape Province, both days and nights were mostly higher than usual, except at a few stations in the east, the northern Karroo, northern border, and Bechuanaland, where the mean maxima were under the average. Vryburg was the only station where the mean maxima and minima were lower than the average, in this respect resembling the conditions in the adjoining Provinces of the Transvaal and Free State. The excesses in the day temperatures were mostly small, but varied between 0·1 degree at Uitenhage and 4·7 degrees at Capetown. The surplus amounts in the night temperatures were generally larger, ranging from 0·5 degree at Port Nolloth to 5·5 degrees at Sydney's Hope. At East London and Grahamstown the mean night temperatures were exceptional, being lower than the average by 0·2 degree and 1·0 degree respectively. The few stations with subnormal mean maxima showed considerable variation in the amounts, which lay between 0·6 degree at Kingwilliamstown and 9·4 degrees at Mafeking. The mean warmest station in the Union was Kenhardt, with a temperature of 80·1 degrees for the month, and the coolest, Port Nolloth, with 59·4 degrees, a difference of 20·7 degrees, both situated in the Cape Province. In the Transvaal, the highest mean temperature for the month was 76·7 degrees at Komatipoort, and the lowest, 60·0 degrees at Belfast, a difference of 16·7 degrees. In the Free State, the warmest station was Bethulie, with a temperature of 69·1 degrees, and the coolest, Harrismith, with 60·5 degrees, a difference of 8·6 degrees. In Natal, the corresponding values were 74·4 degrees at Durban and 66·9 degrees

at Dundee, a difference of 7·5 degrees. The highest mean maximum at any station was 94·6 degrees at Kenhardt, in the Cape Province, and the lowest mean minimum, 48·8 degrees at Belfast, in the Transvaal, a difference of 45·8 degrees. The highest mean maxima over the other Provinces were 86·9 degrees at Komatipoort, in the Transvaal; 81·8 degrees at Bethulie, in the Orange Free State; 82·2 degrees at Ladysmith, in Natal. The other lowest mean minima were 50·7 degrees at Harrismith, in the Orange Free State; 55·7 degrees at Dundee, in Natal; 52·9 degrees at Port Nolloth, in the Cape Province. There was therefore a difference over the various Provinces between the mean highest day temperature and the mean lowest night temperature of 38·1 degrees in the Transvaal, 31·1 degrees in the Free State, 26·5 degrees in Natal, and 41·7 degrees in the Cape Province. During December there was a marked absence of any general warm spell, although stations in all the Provinces recorded extreme maxima between the 1st and 4th and between the 29th and 31st. Some of the highest readings were also registered at one or two stations on each of the following days: 12th to 14th, 16th to 21st, 24th, and 27th. The extremes over the Union were 107·0 degrees on the 31st at Kenhardt and 38·0 degrees on the 14th at Belfast, an extreme range for December of 69·0 degrees. Temperatures of 100·0 degrees or over were also noted at a number of stations in the south-east and south-west of the Cape Province, also at Graaff-Reinet, while a somewhat doubtful reading of 101·0 degrees was noted at Rustenburg (Transvaal Province) on the 12th. The extremes over the different Provinces were as follows: Transvaal, 101·0 degrees on the 12th at Rustenburg and 38·0 degrees at Belfast on the 14th, range 63·0 degrees; Orange Free State, 92·7 degrees at Bethulie on the 31st and 43·0 degrees at Harrismith on the 6th and 11th, range 49·7 degrees; Natal, 95·0 degrees at Ladysmith and Empangeni on the 2nd and 4th respectively, and 49·0 degrees at Dundee on the 6th, range 46·0 degrees; Cape Province, 107·0 degrees at Kenhardt on the 31st and 42·2 degrees at Grahamstown on the 6th, range 64·8 degrees. No instance of occurrence of *frost* was reported this month.

Precipitation.—The rainfall during December was mostly in excess of normal over the summer rainfall area and also in Namaqualand. In the Transvaal, however, the distribution in relation to the average was very erratic, *plus* and *minus* quantities being intermingled in a somewhat erratic manner, Thus precipitation was mainly subnormal in the north, also in parts of the east, south-east, and south-west, whilst in the south, centre, and the west the totals were uniformly in excess. In Natal, the shortages were confined to the more southerly portion. In the Cape Province, the subnormal area lay almost entirely to the south and west of a line drawn from Calvinia through Uniondale to the south coast, although one or two stations in the south-east had also less than usual. The excesses in the Transvaal were frequently less than an inch, but varied between 0·07 inch or 1 per cent. at Bethal and 4·26 inches or 121 per cent. at Zeerust. The deficits also showed a considerable amount of variation, being 0·08 inch or 2 per cent. at Nylstroom and 2·77 inches or 57 per cent. at Wakkerstroom. In the Orange Free State, where the rainfall was generally in excess, the surplus amounts were mostly over 2 inches, but ranged from 0·26 inch or 6 per cent. at Harrismith to 3·43 inches or 170 per cent. at Boshof. In Natal, the surplus amounts lay between 1 inch and 3 inches, and ranged from 1·07 inch or 18 per cent. at Ladysmith to 2·77 inches or 50 per cent. at Maritzburg. At Durban there was a deficit of 0·22 inch or 4 per cent., while at Howick the month's total of 3·87 inches was 0·68 inch or 15 per cent. less than normal. In the Cape Province, the excesses were small, less than half an inch at many places, but rose to between 1 inch and 4 inches

at some stations in the more northerly and easterly portions. They ranged from 0·2 inch or about 2 per cent. at Graaff-Reinet to 4·56 inches or 365 per cent. at Griquatown. The *minus* quantities were also mostly small, a few tenths of an inch, but varied between 0·08 inch or 22 per cent. at Calvinia to 1·32 inch or 100 per cent. at Ceres. A total absence of rain also occurred at some stations in the Cape Peninsula, the south-west and the west coasts, and the west-central Karroo. In South-West Africa the month's totals were generally above the average by a few tenths of an inch in the more southerly and northerly parts, and subnormal elsewhere by similar amounts, except in the central portion of the northern half of the territory, where the deficits commonly exceeded 1 inch. The *plus* amounts varied from 0·3 inch or 23 per cent. at Aus in the south-west to 0·53 inch or 13 per cent. at Tsumeb in almost the extreme north. The *minus* quantities lay between 0·02 inch or 6 per cent. at Haribes and 1·31 inch at Rietfontein and New Hensis, representing 45 per cent. and 89 per cent. of the respective normals. No rain fell during the month at the coast stations or at Rehoboth in the centre. Thunder and lightning were much less frequent than usual, except at a few stations such as Edenburg, Aliwal North, Graaff-Reinet, etc.; these thunderstorms were mostly of the cyclonic type and less severe than usual. Among the most violent may be mentioned that at Matendela (Swaziland) on the 20th, when 1·81 inch fell in about three hours, accompanied by a hurricane of wind and severe thunder and lightning. A striking feature of the weather of December was the total absence of hailstorms in some areas where such visitations are usually looked for at this period, as at Pietersburg and Rietfontein (Pretoria District). Over the Transvaal these storms seem to have been infrequent and of no great severity in the majority of cases. Occasional hailstorms in the Barberton District caused some damage to individual farms, and at Wakkerstroom the hail of previous months had destroyed all fruit. On the 5th December, at Irenedale (Division Standerton), a hailstorm, lasting fifteen minutes, flattened out crops and destroyed vegetable gardens; on the same date a similar storm at Beginsel (also in the Standerton Division) damaged crops to a considerable extent. On the 30th a heavy hailstorm passed over portion of Johannesburg, causing washaways in various parts of the suburbs. In the Orange Free State, hailstorms were frequent, but mostly light. Among the more severe may be mentioned the following: On the 6th, at Abraham's Kraal (District Thaba 'Nchu), hailstones, the size of golf balls, were reported to have killed two head of cattle. On the 7th, severe hailstorms were reported to have passed over Ferreira and Kromspruit, both in the Bloemfontein Division. At Grenfell (District Vrede) a heavy downpour accompanied by large hail on the neighbouring farm yielded 2·07 inches of precipitation, causing a considerable amount of damage. On the 26th, hail fell at Bloemspruit (District Smithfield) to a depth of about 2 inches, destroying gardens. In Natal, a number of hailstorms of considerable severity occurred in the neighbourhood of Ladysmith, Weenen, and Vryheid, causing damage to fruit, etc. A heavy rainstorm, accompanied by a few exceptionally large pieces of hail, occurred at Glückstadt on the 19th. At Roseleigh (Klip River District) much damage was caused by a hailstorm on the 20th, when 1·06 inch was registered in half an hour; at Bluebank, in the same district, on the same day a lot of damage was caused by hail to all crops, cotton being completely wiped out; on this occasion 0·50 inch was recorded in half an hour. A heavy hailstorm at Impendhle on the 21st completely ruined the fruit crops. With these exceptions, the storms reported were mostly light. In the Cape Province, hailstorms had done some damage to fruit in the Division of Kimberley, while very little hail was reported from the Hanover Division. In the Beaufort West District a severe hailstorm occurred at Snydersfontein on the 17th, lasting fifteen minutes; during this

time a total of 1·07 inch was registered, damage caused to gardens, and window-panes broken. At Mount Fletcher two storms, one on the 19th and one on the 29th, did considerable damage to fruit trees and crops. At Sandflats (Mount Currie) hailstones of the average size of marbles damaged the maize crop; on the 27th, washouts occurred and all lands were waterlogged as the result of a thunderstorm with hail, when 0·65 inch fell in eighteen minutes. Notwithstanding the almost general absence of connexional thunderstorms, a number of heavy showers in short periods were noted during the month, in addition to those mentioned under hailstorms. Among these may be mentioned the following: At Palmford (Division Wakkerstroom) there was a fall of 6·01 inches on the 23rd, most of which fell in three hours. At Innerleithen (Zoutpansberg Division) there was a fall of 2·33 inches in half an hour on the 4th and of 1·73 inch in one and a half hour on the 24th. At Kappa (District Bethlehem) 2·44 inches fell on the 5th, between 5 p.m. and 7.30 p.m., fences being washed away. At Ferreira (District Bloemfontein), on the 7th, 0·46 inch fell between 1.15 p.m. and 1.20 p.m., a rate of 5·52 inches per hour. At Middelfontein (Fauresmith), large washaways resulted from a fall of 2·30 inches on the 8th. At Nelsdrift (Hoopstad District), 1·20 inch fell in thirty minutes on the 15th; at Kismet Estate (Lindley), 1·15 inch in twenty minutes; at Korte, in the same district, 3·32 inches fell between 5.30 p.m. and 10 p.m.; there was very heavy rain and hail for one hour, with only slight rain afterwards; at Grenfell (District Vrede), 2·02 inches in three hours; all on the 15th. At Paardekraal (Winburg), 1·75 inch in one and a half hour on the 17th. At Whinburn (District Bethlehem), a total of 2·91 inches on the 28th is described as the "heaviest fall on record, all dams washed away, fences carried away on all spruits, and cattle washed down and drowned." No details are given as to duration. In Natal also some heavy falls occurred, e.g., on the 15th at Pinetown, 1·68 inch fell in about one hour; at Roseleigh (Klip River), 1·06 inch in half an hour on the 20th; at Matawaanskloof (Klip River), 3·61 inches in five hours on the 28th; at Enyali (Vryheid), 1·62 inch in twenty-one minutes, a rate of 4·63 inches per hour; at Nkwaleni (Entonjaneni) on the 29th, 2·55 inches fell in two hours; and on the same date, 1·09 inch in twelve minutes at Glückstadt (Vryheid), a rate of 5·45 inches per hour.

The accumulated rainfall for the twelve months was in excess of the average in the east, south-east, south-west, and west of the high and middle velds of the Transvaal, part of the eastern low veld, and of the Pietersburg, Zoutpansberg, and Waterberg Divisions, Swaziland, the Free State, Basutoland, the west and north-west of Natal, and those portions of the Transkei, the Cape, and Bechuanaland bordering the south and west of the other Provinces. In all other parts of the Union the totals for the year were less than normal. In the Transvaal, the excesses in the gross totals for the twelve months were mostly between 2 and 5 inches, but varied from 0·07 inch or less than 1 per cent. at Klerksdorp (Strathmore) to 11·07 inches or 23 per cent. at Pigeonhole (New Agatha). The deficits in the same Province ranged from 0·74 inch or 2 per cent. at Barberton to 7·84 inches or 11 per cent. at Woodbush I. At Mbabane, in Swaziland, the surplus rose to 17·69 inches, or 33 per cent. of normal. The *plus* quantities in the Free State varied between 0·86 inch or 4 per cent. at Boshof and 7·25 inches or 27 per cent. at Ladybrand. In Natal, the excesses lay between 0·35 inch or 1 per cent. at Vryheid and 7·59 inches or 27 per cent. at Ladysmith; and the deficits between 0·24 inch or less than 1 per cent. at Empangeni and 2·31 inches or 5 per cent. at Stanger. In the Cape Province, the *plus* amounts varied from 0·84 inch or 4 per cent. at Vryburg to 6·22 inches or 23 per cent. at Kokstad. The deficits in this Province were generally comparatively small (3 inches and under) over the innermost plateau, but increased towards the south, south-west, and south-east, where they rose to

between 4 and 8 inches, and even exceeded 10 inches at a few places. These *minus* quantities varied from 0·27 inch or 4 per cent. at Upington to 12·19 inches or 43 per cent. at Grahamstown. At O'okiep, in Namaqualand, the total for the year was only 31 per cent. of the normal. In South-West Africa, Voigtsgrund in the southern portion was the only station where the rainfall for the year was in excess, the surplus being 3·35 inches, or 46 per cent. In the southern half of the territory the shortages were generally between 2 and 3 inches, but varied from 0·67 inch or 100 per cent. at Luderitz Bay to 4·37 inches or 54 per cent. at Haribes. In the northern half the deficits lay mostly between 5 and 8 inches, but fell to only 0·56 inch or 85 per cent. at Swakopmund and rose to 13·26 inches or 52 per cent. at Tsumeb. The totals for the six months beginning 1st July, when compared with the normals, show a more general excess over the Transvaal, Natal, the innermost plateau of the Cape Province, as well as continued excess in Swaziland, the Orange Free State, and Basutoland. In the Transvaal, an excess of precipitation was common to the greater part of the country, the exceptional areas being portions of the centre and east of the high veld. The excesses varied considerably in amount, being 0·23 inch or 2 per cent. at Rooiberg and 8·59 inches or 86 per cent. at Komatipoort ; but generally they were between 4 and 7 inches in the east, north-east, and south-east, with similar amounts at a few places in the west and south-west, decreasing to less than 2 inches over the greater portion of the rest of the country. In the Free State, excesses ranged between 1·34 inch or 22 per cent. at Bethulie and 8·41 inches or 70 per cent. at Ladybrand. In Natal, the surplus amounts were mostly between 1½ inch and 4 inches, but varied between 1·59 inches or 11 per cent. at Howick and 6·39 inches or 53 per cent. at Weenen. At Durban there was a shortage of 1·03 inch, or 5 per cent. In the Cape Province, the excesses were frequently under 1 inch over the innermost plateau, but rose to 2–3 inches in Bechuanaland and the northern border ; they varied from 0·16 inch or 8 per cent. at Upington to 7·29 inches or 63 per cent. at Kokstad. The shortages were under an inch in the south of the northern Karroo, parts of the north-east, Kaffraria, and the southern Karroo, but increased to between 2–5 inches in the south-east, the Kaffrarian and south coasts, part of the east-central Karroo, and Namaqualand. They ranged from 0·15 inch or 2 per cent. at Aliwal North to 5·92 inches or 43 per cent. at Grahamstown. In the South-West Africa, the totals for the second half of the year were above normal at a few stations in the south and north, but generally less than usual in the central parts and on the coast. The *plus* quantities were mostly less than an inch, varying from 0·04 inch or 6 per cent. at Warmbad to 2·31 inches or 33 per cent. at Tsumeb. The *minus* amounts were also generally small, lying between 0·09 inch or 9 per cent. at Usako and 2·35 inches or 45 per cent. at Okasangumingo.

State of Country.— Transvaal : Practically continuously cloudy, relatively cool weather, with steady soaking rains well distributed in point of time, brought about a luxuriant growth of crops and veld over practically the whole of the Transvaal. In some districts, however, the rains were too copious and continuous, e.g. Carolina and other of the eastern divisions, where a large proportion of the crops were drowned out or growth retarded ; in the Zoutpansberg the operations of cultivation and weeding the lands were considerably impeded by an excess of moisture. These weather conditions appear to have been favourable to various diseases and pests. Thus in parts of the Rustenburg District wildfire was prevalent in the tobacco crop ; cutworm was stated to be very bad in the early planted maize in the Ermelo District ; the stalk-borer had appeared in the neighbourhood of Pretoria in large numbers, and was destroying maize, kaffir corn, etc. ; in parts of the Zoutpansberg Division the early mealies were being heavily attacked by the mealie grub. Although the rains were practically general, they varied considerably in amount

and intensity. Thus in part of the Rustenburg District the rains, falling in small showers, were sufficient for growing crops, but were insufficient to soften hard soils to such an extent as to admit of their being broken up by the plough. In portions of the Waterberg Division the bulk of the month's rain fell between the 4th and 10th, with comparatively little during the remainder of the month ; consequently fears were entertained that extensive replanting would be necessary before the middle of January unless rain fell in the interval. Hail caused some damage to crops in the Barberton, Standerton, and Witwatersrand areas, but its total absence this month in parts of the Pietersberg and Pretoria Districts was a noteworthy occurrence. Some heavy showers caused a great deal of damage to crops, as at Inverleithen, in the Zoutpansberg Division. Notwithstanding these drawbacks, the prospects were highly favourable for good and in some cases " bumper " harvests, while stock were everywhere in excellent condition.

Orange Free State : As in the Transvaal, the precipitation during December was generally of a steady, continuous nature, with the result that both veld and crops made considerable growth. In the Kroonstad District large areas were being put under maize, but the absence of sunshine and warmth retarded the growth of the early planted mealies. In parts of the north and north-east complaints were made of too much moisture, as difficulty was being experienced in the weeding and cultivation of the lands. In the south, however, the rain fell only in showers, so that further soaking rains were required to saturate the soil. In the Winburg Division it was getting somewhat dry once more towards the end of the month. Except for some damage due to hail, mentioned elsewhere, crops were mostly promising well, and there was every prospect of a good harvest. Grass was everywhere abundant, large stock in good condition and free from disease, and sheep in fine condition.

Natal : In Natal abundant rains brought on all vegetation apace to such an extent that it was described as " rank " at Nottingham Road. Weeds were getting the upper hand at Mid-Illovo and Port Shepstone, while in the neighbourhood of Ladysmith crops were rotting in places. In the Vryheid District, where the area put under the plough was double that in the previous year, dry weather was required for the cultivation of growing crops, but in the Umzinto District the rainfall was still insufficient, although crops and stock were doing exceedingly well. Some damage was caused to fruit and other crops in the Klip River, Polela, Impendhle, Weenen, and Vryheid Districts. The country generally was looking better than for several years past, and stock were healthy and in good condition.

Cape Province : In the Cape Province the weather during December was exceptionally warm and dry over the south-west and south. In the French Hoek area, however, the fruit was about ten days later than usual in ripening, in consequence of the cool weather earlier in the season. In the Ladismith Division the drought was described as the worst since that of 1865 ; all classes of stock were dying in large numbers and the harvest was a failure. In marked contrast to this, it was reported from Rooi River (Division Uniondale) that the tobacco and fruit crops were much better than last year. In the eastern portion of the Province, including Kaffraria, as well as over a considerable portion of the Karroos, both temperature and rainfall were in excess of normal and conditions generally had improved to a considerable extent. Good soaking rains, with occasional intense showers, occurred in the east, bringing about a marked improvement in crops and veld, so that there was every promise of a good harvest in almost all parts of the Transkei, notwithstanding some damage to crops and fruit by hail and the occasional washing away of soil. In Victoria East the drought was broken after lasting about a year and a half. At Bedford

frequent light showers improved the veld and relieved the drought, which could not, however, be regarded as having been broken, seeing that the rains were more or less partial and there was still a shortage of water for stock owing to the absence of run-off to fill the dams. In Queenstown grass was growing well and ploughing and the sowing of mealies being widely carried out; considerably more moisture was required, however, to revive the springs and restore the country to its normal condition. In Stutterheim the rains came in time to save the live stock, but too late to enable mealies to be planted in any quantity. The somewhat partial nature of the rains is shown in portion of the Division of Aliwal North, where, although frequent and usually accompanied by thunder and lightning, they were lighter and much less in quantity than in the surrounding neighbourhood. Somewhat similar conditions prevailed in the Graaff-Reinet Division. A spell of high temperature, during which the thermometer at Port Alfred rose to 104·0 degrees on the 18th, caused considerable damage to crops and orchards. At Nelspoort (Division Beaufort West) the drought was broken by a fall of 3·65 inches during the month, the greater part falling in the first week. In Kenhardt the drought was relieved to a certain extent, but by no means broken, the heat being excessive and the rains only partial. The farmers on the Orange River, however, were experiencing a period of prosperity, the lucerne, grain, and fruit harvests being excellent. Unusual weather in the form of frequent rains, cloudy days, and low temperature occurred over the Barkly West, Hay, Kimberley, and Prieska Divisions, and natives were preparing the ground for mealies at Sydney-on-Vaal, and cotton farmers were endeavouring to cope with weeds. In Basutoland, British Bechuanaland, and the Protectorate both crops and veld were in splendid condition; cattle were looking well and free from disease. The blowfly was very active in Mount Currie. At Bedford the fruit was being attacked by insects, and at Stutterheim beans were being affected by the tiger beetle.

Rivers and Water Supply.—In the Piet Retief, Rustenburg, and Carolina Districts of the Transvaal the rivers were full or running high and springs were flowing strongly. In Natal small streams were running once more at Mid-Illovo, whilst at Paulpietersburg the rivers were fuller than for some years at Christmas. In Weenen all streams were running strong and springs were all over the veld. In Umzinto, however, there was still an insufficiency of rain, and the Umzambi had not been full up to the present time. In the Cape Province the rivers in the Divisions of Mount Currie and Mount Fletcher were in flood during the greater part of the month; several natives were drowned. At Nelspoort (Beaufort West) the Salt River rose suddenly at 2 a.m. on the 4th to a height of 25 feet, causing considerable loss of stock and damage to weirs. This flood is stated to have resulted from a fall of 4 inches about twenty miles higher up the river. Such a flood is stated to have been previously unknown in December. The water is reported to have reached about the same level as the disastrous flood of March, 1909. Within twenty-four hours the water had subsided sufficiently to admit of the river being crossed. The Orange River, at Prieska, was somewhat high and the water very muddy all the month.

OBSERVERS' NOTES FOR DECEMBER, 1924.

TRANSVAAL.

Pigeonhole (*New Agatha*).—Rather too continuous rain; clearing of crops being held up. Crops promising well, only mealie worm is appearing. Rainfall: 7·56 inches on twenty-two days.—Jno. McCallum.

Rustenburg.—Splendid rains fell throughout the district during the month. Crops looking splendid. Fine weather is required for cotton farmers. Owing to dull, cloudy days during the month, wildfire is now prevalent in tobacco; otherwise splendid reports are received from farmers. A bumper harvest is expected. Rivers and springs running strong. Cattle everywhere in the pink of condition. Rainfall: 5·94 inches on fifteen days.—A. Streatfield.

Louis Trichardt.—Misty rains have greatly improved crops such as cotton and mealies. Rainfall: 5·12 inches on fifteen days.—R. J. Potgieter.

Pietersburg.—Soft soaking rains. Total absence of hail remarkable. Veld and crops luxuriant. Rainfall: 3·97 inches on ten days.—W. J. Franklyne.

Piet Retief.—Very rainy month. Throughout the month all rivers running very high. Rainfall: 10·06 inches on eighteen days.—J. Werner.

Potchefstroom (Experiment Farm).—This month has been characterized by an increase in temperature and less precipitation than in the previous month. The rainfall was well distributed over the month. Rainfall: 3·10 inches on twelve days.—D. Moses.

Barberton.—The rainfall appears to have been general throughout the district. Occasional hailstorms were responsible for some damage to individual farmers. The cotton crop is looking well. Rainfall: 5·02 inches on fourteen days.—Walter Grubb.

Pretoria (West End Plantation).—Rainfall on seventeen days during the month, giving total of 6·09 inches. Everything is growing well. Hard work will have to be put in to keep weeds down; at this centre we have got our work cut out to do it. This should be a good year for the farmer. Rainfall: 6·09 inches on fourteen days.—W. H. Foster.

Lichtenburg.—Rainfall very good. District improving generally. Rainfall: 5·75 inches on sixteen days.—H. J. Swart.

Rietvlei No. 102 (*Ermelo*).—Much misty weather and eastern winds. Dull month on the whole. Rainfall: 6·82 inches on eighteen days.—P. J. Steenkamp.

Gemboksfontein (Middelburg).—Nice showers fell during the month; these were, however, very local, as in many instances heavier falls were reported only two miles away. Rainfall: 6·52 inches on eighteen days.—L. C. Skead.

Lemana (Zoutpansberg).—Early mealies heavily attacked by mealie grub. Rainfall: 9·20 inches on fourteen days.—H. Thomas.

Nooitgedacht No. 777 (*Warmbaths*).—Fine rains have again fallen, crops are looking well, and cattle are in good condition. The temperature has again been noticeably lower than that of last season; the mean maximum is over 5 degrees down and the mean minimum remains the same, more or less, as last December. Three or four small swarms of flying locusts appeared from the south during the first week, but did no harm and were promptly destroyed by the numerous locust birds. The presence of the locust fly was also reported. Rainfall: 4·78 inches on eleven days.—G. Gordon Brown.

Mosdene (Naboomspruit).—An excellent month, with cool, cloudy days and a rainfall of 0·66 inch above the average for the previous seven years. Farmers have ploughed and planted a considerably increased acreage and the young crops are making good growth, whilst the veld is beautifully green with bush grass. Rainfall: 3·63 inches on thirteen days. Total since 1st July last, 12·94 inches.—Ernest E. Galpin.

Christiana.—Welcome rains fell during month. The country is looking bright and everything is promising. Rainfall: 5·28 inches on ten days.—W. J. Meintjes.

Bralbin (*Rustenburg*).—The temperature for this month has been slightly lower than in former years, but the rainfall has been excellent. Lightning storms fewer and not so severe as usual. The cotton and other crops show splendid growth and devolopment. Most of the cotton is thinner, and weeding and cultivation are in full swing. Mean maximum temperature, 83·6 degrees; mean minimum temperature, 62·1 degrees. Highest maximum temperature, 93·0 degrees on the 30th; lowest minimum temperature, 59·0 degrees on the 18th. Rainfall: 6·29 inches on thirteen days.—R. C. S. McPherson.

Rietfontein–Pomona Estate (*Pretoria*).—No very heavy storms or gales. No hail fell during the month. Rainfall: 7·11 inches on fifteen days.—E. A. Clark.

Carolina.—A month of rain, and when it did not rain the sky was overcast. In most parts crops have been drowned. Cattle are doing well. Rainfall: 6·14 inches on twelve days.—G. F. Mijnhardt.

Groeneboom No. 444 (*Rustenburg*).—Quite sufficient rain fell in small showers for the growing crops, which were put in rather late on account of locusts, and which are progressing favourably. Cattle in good condition. Insufficient rain for hard soils not yet broken up—retarding ploughing. Up to now summer heat quite comfortable, owing to cloudy skies. Maximum temperature kept low. Veld growing nicely, though checked by locusts. Situation always causing anxiety—flying swarms often seen in vicinity, and this does not encourage extension of agriculture. No damage to growing crops yet, after the voetganger period. Rainfall: 4·25 inches on thirteen days.—F. N. van Nouhuys.

Pretoria (*Transvaal University College Experimental Farm*).—The rainfall, 4·27 inches on sixteen days, was well distributed, the longest period without any rain being four days, and the crops did not suffer from lack of rain and are looking splendid. The stalk-borer has, however, during the last ten days or so appeared in rather large numbers, and are very active destroying maize, kaffir corn, etc. The veld is in the pink of condition and stock are doing well. Up to now we have had no locusts this season.—The Manager.

Wakkerstroom.—There was little summer weather during the month; the highest temperature recorded being but 78·7 degrees, while several of the nights and mornings were quite cool, even cold. All vegetation in luxuriant state, but, owing to the hailstorms of the previous month, there is no fruit. Sheep are in excellent condition. So are other animals. Rainfall: 2·10 inches on nine days.—J. Celliers.

Amatava (*Potgietersrust*).—Excellent rains for veld and crops during month. Rainfall: 4·37 inches on fifteen days.—A. R. Troye.

Parktown North (*Johannesburg*).—Weather very warm, sultry and threatening first few days. Rain fell on the 4th; weather then became cool, overcast, and cloudy. Rain of the soaking type continued to fall almost every day until the 11th. Later heavy rains of the "run-off" type fell, doing considerable damage to crops, etc. On the 30th heavy storm in central area and Rosebank; heavy hail fell in these parts, but passed over Parktown, Forest Town, and Parkview, causing considerable washaways in various parts of these suburbs. Rainfall: 8·69 inches on eighteen days.—George S. Garnett.

Myrthley (*Standerton*).—Cool and overcast, with frequent showers. Rainfall: 4·85 inches on seventeen days.—J. L. Ellis.

Kopje Alleen No. 1052 (*Waterberg*).—Mealies planted at the end of last month and the beginning of this are showing well, as they had the benefit of 2·09 inches of rain, which fell between the 4th and 10th. Since then only

0·52 inch has fallen, of which 0·40 inch fell on the 23rd, and the promising beginning was somewhat marred. On this and on most of the neighbouring farms replanting has been done, and if rain does not come soon, very extensive replanting will have to be undertaken before the middle of January. The rainfall was exactly half of last December's record. Since July last 10·57 inches have fallen on forty-two days, as against a mean of 11·44 inches on thirty-two days. Temperatures of over 85 degrees have only been recorded on six occasions, each time for two days together. Only one swarm of locusts was observed, flying from north-east on the 8th.—J. Lyall Soutter.

Mimosa Park (*Potchefstroom*).—Splendid growing month. Things look well for the future. Rainfall: 4·14 inches on twelve days.—J. G. Dixon.

Grootvallei (*Standerton*).—Crops suffering from too much rain. Rainfall: 5·48 inches on fourteen days.—W. Garnett.

Palmford (*Wakkerstroom*).—On the 23rd a fall of 6·01 inches, most of which fell in three hours. Rainfall: 8·78 inches on twelve days.—Station Master.

Luipaardsvlei No. 10 (*Witwatersrand*).—Much damage to crops in the neighbourhood by hail. Rainfall: 3·68 inches on five days.—J. du Toit.

Doornkloof No. 507 (*Zoutpansberg*).—Cattle in good condition, and cotton and monkey-nut crops doing well. Rainfall: 4·87 inches on nine days.—S. M. Ralston.

Innerleithen (*Zoutpansberg*).—Heavy rains on the 4th (2·33 inches in half an hour) and on the 24th (1·73 inch in one and a half hour) did great damage to crops. Rainfall: 7·22 inches on eleven days.—A. Halse.

Driekoppies (*Zoutpansberg*). Crops looking much better than they did last season. Rainfall: 5·79 inches on fourteen days.—N. R. Musgrave.

Elandsfontein (*Potchefstroom*).—Mealie crop is good. Wool is fetching fair prices. Farmers are very hopeful. Rainfall: 4·26 inches on ten days.—P. Davidtz.

Rietvlei No. 126 (*Witwatersrand*).—Mealies in some parts not doing well owing to lack of sunshine. Rainfall: 4·48 inches on fifteen days.—H. Vrugt.

Morgenster (*Ermelo*).—Cutworm very bad in maize which was planted in October. Rainfall: 3·06 inches on twelve days.—Martin E. Jooste.

Irenedale (*Standerton*).—On the 5th hailstorm lasting fifteen minutes. The stones were of medium size. Breadth of hail belt, three-quarters of a mile. Crops flattened out. Vegetable gardens completely destroyed. 1·43 inch of rain in half an hour. Rainfall: 7·44 inches on sixteen days.—E. von Musschenbroek.

Beginsel (*Standerton*).—On the 5th December a hailstorm occurred, which damaged the crops considerably. Rainfall: 8·03 inches on fourteen days.—The Superintendent.

SWAZILAND.

Hlatikulu.—For the month of December we have had very few days of sunshine. Farmers complain that they are unable to do any ploughing owing to the ground being too wet. Cotton reports are good, also mealies and kaffir corn. I have nothing to report in the way of stock diseases. On the 21st we had 3·10 inches during twelve hours. Rainfall: 16·81 inches on nineteen days.—J. Pullen.

Balegane Ranch (*Stegi*).—Cotton crops doing well generally. On some farms suffering from too much rain. Cattle looking and doing well. No locusts in this vicinity. Rainfall: 8·96 inches on eleven days.—Ray Cross.

Matendela.—Too much heavy rain for agriculture. I never remember so violent a storm as that of the 20th (1·81 inch in about three hours, with hurricane of wind and bad thunder and lightning). Rainfall: 10·98 inches on twelve days.—H. S. Parry.

Wissellrode.—Cotton crops very promising. Rainfall: 3·08 inches on twelve days.—L. C. van Wissell.

ORANGE FREE STATE.

Rugby (*Bethlehem*).—Maize crops have suffered considerably from the continuous wet weather, there having been fifteen days on which rain fell during the month, and also many dull days with little or no sunshine. Cultivation of maize lands has also been impossible on account of the continuous rains, and in quite a few cases the successful weeding of the lands is out of the question. Small grain crops, on the other hand, are looking well. Cattle are in excellent condition, and sheep fair. Rainfall: 6·36 inches on fifteen days.—A. C. Glynn Baker.

Middelfontein (*Bethulie*).—The rain fell mostly in showers, and we need a good soaking rain. The veld is looking excellent, and a fairly good wheat crop is expected in the district. Rainfall: 3·24 inches on six days.—H. J. Joubert.

Shannon (*Bloemfontein*).—The finest soaking rains; practically no run-off—all soaked in. Result: A splendid grass crop and all other vegetation doing A1. Rainfall: 5·82 inches on thirteen days.—J. G. Hatchard, M.I.Mech.E.

Stanleyvale (*Harrismith*).—A very nice month; missed the heavy rains. Crops and stock good. Rainfall: 3·15 inches on seventeen days.—G. C. Atkins.

Waterford (*Lindley*).—Crops looking extremely promising, and if nothing unforeseen happens I think a record mealie crop may be expected in these parts. The veld is in excellent condition, as also are both large and small stock. Rainfall: 6·85 inches on ten days.—A. B. Oates.

Quaggafontein (*Rouxville*).—Crops very promising at present. Rainfall: 4·97 inches on twelve days.—J. P. van Rooyen.

Roadside (*Vrede*).—On the 4th an earth tremor was felt about 5.40 a.m., lasting a couple of seconds. No damage was done. Crops looking well, plenty of grass, and stock good. Rainfall: 7·02 inches on eighteen days.—W. B. Fry.

Paardekraal (*Winburg*).—Getting a bit dry towards end of month. No bluetongue yet. Tremendous growth on veld. All stock in excellent condition. Rainfall: 7·08 inches on twelve days.—G. S. Lowe.

Kroonstad.—Genial soaking rains experienced during the month, enabling farmers to put in large areas of lands of mealies. Growth of early planted mealies very slow, owing to cloudy days and absence of warm nights. Rainfall: 5·19 inches on fifteen days.—A. C. Mason.

Lindley.—Crops and veld are looking excellent. Farmers in some parts of district complain of too much rain. Mealies are not getting enough sunshine to make them grow. Stock in splendid condition. Rainfall: 5·33 inches on twenty-one days, very evenly distributed.—W. Murphy.

Wepener.—The weather during the month has been moderately cool as compared with last year. Nice rains have fallen. The crops are looking well, and there is every indication of a good harvest. Rainfall: 4·21 inches on sixteen days.—W. D. Roche.

Bethany (*Edenburg*).—Every rain shower was accompanied by a more or less severe thunderstorm. The veld, gardens, and grain lands are green and promising. Live stock in good condition. Rainfall: 4·59 inches on thirteen days. Rainfall for 1924: 20·69 inches on sixty-one days.—Rev. Carl Prozesky.

Holfontein (*Kroonstad*).—A good month. Crops are looking very well, and if nothing unforeseen happens, a " bumper " crop can be expected. Stock in general are in good condition. Rainfall: 4·51 inches on ten days.—L. C. McInerrey.

Groenvlei (*Frankfort*).—The weather during this month has been considerably warmer than the preceding months. Rainfall: 4·77 inches on thirteen days, and in each case the fall has been soft, steady, soaking. Grazing is magnificent, and stock in splendid condition. Crops have put on remarkable growth this month, and they promise well. Grub has made its appearance in the maize fields, but the attack is so far mild.—B. Stollreither.

NATAL.

Ladysmith.—Excellent rains throughout the month, though some parts of the district report having had too much rain, with the result that crops are rotting in places. Heavy hailstorms are also reported from some parts of the district, fairly heavy damage being caused, especially to the fruit crop. The country generally is looking better than for some years, and stock are in good condition. Rainfall: 5·69 inches on fourteen days.—D. A. R. Leathern.

Maritzburg (*Mental Hospital*).—Stock and crops are looking well. Rainfall: 8·30 inches on seventeen days.—The Staff.

Dundee.—A pleasant month for December, with good growing weather. Rainfall: 6·63 inches on sixteen days.—West Thorrold.

Mid-Illovo.—Splendid growing weather, consequently hard to keep down weeds. Stock and crops looking well. Small streams running once more. Rainfall: 6·05 inches on twenty-one days. Rainfall, 1924: 38·85 inches.—Lt.-Col. J. W. V. Montgomery, G.C.M., D.S.O.

Greytown.—Mealie crops coming on very well. Rainfall: 7·55 inches on seventeen days.—J. M. Handley.

Nottingham Road.—Very wet, but vegetation rank. Stocks of all kind healthy. Rainfall: 7·04 inches on twenty-one days.—Miss E. Smythe.

Paulpietersburg.—Rainfall above average, and rivers fuller than they have been for some years at Christmas. Rainfall: 8·92 inches on seventeen days. Rainfall for 1924: 38·35 inches.—Dr. Niel Lipscomb.

Ingwangwane (*Polela*).—On the 20th two storms fell. No 1 storm from west to east registered 0·35 inches; duration of storm, twenty minutes. No. 2 storm, driven by gentle breeze from north-west, travelled in a south-easterly direction and lasted twenty-five minutes, accompanied by stones ¼ inch diameter, which lasted ten minutes, causing no damage; reading at 8 p.m. registered 1·71 inch. Rainfall: 11·6 inches on twenty-one days.—T. H. Houshold.

Impendhle.—The weather generally has been misty and damp. On the 21st a heavy hailstorm completely ruined fruit. The general state of surrounding country is very good. Cattle in good condition. Rainfall: 7·37 inches on sixteen days.—The Gaoler.

Paddock.—Hot days and thunderstorms have been the order for the month. So much rain that farmers cannot get ahead of the weeds. Rainfall: 6·72 inches on eighteen days.—G. Victor Merriman.

Bluebank (*Klip River*).—Everything promises for a record season. Rainfall: 4·00 inches on fifteen days.—T. N. Niland.

Glückstadt.—A cold snap occurred during the first week of the month. Rain has been abundant, and many fields are too wet. Some very severe and destructive hailstorms passed in the immediate neighbourhood. The

area ploughed is double that of last year, but dry weather is needed for the cultivation of the growing crops. Rainfall: 7·37 inches on fourteen days.—F. W. J. Schumann.

Kloofend (*Alexandra*).—We missed all the big rains which they got elsewhere. The Umzumbi has not been full yet. Rainfall: 4·32 inches on sixteen days.—J. D. Cruickshank.

Rongpoort (*Weenen*).—A lot of steady, soaking rains. Ground sodden and springs all over the veld. All streams running very strong. An unusual number of hailstorms in surrounding districts from the commencement of the season to the present time. Rainfall: 6·13 inches on fourteen days.—J. H. Bartholomew.

Sawoti (*Umzinto*).—Crops and stock doing exceedingly well, but not yet enough rain. Rainfall: 5·63 inches on eighteen days.—Archibald & Co.

CAPE.

Kimberley.—Warm weather and sultry, especially during nights. Nice light rains. A few duststorms. Country round about is beautifully green. Hailstorms have done some damage to fruit, etc., in district. Rainfall: 5·35 inches on eleven days.—C. H. Dowler.

Kokstad.—Very heavy rains; flooded rivers; several drowning fatalities—natives. Rainfall: 7·56 inches on nineteen days.—H. D. Coyte.

Queenstown.—Beautiful soaking rains for December. Country looking green, and grass growing well. Every one ploughing and sowing mealies. Rainfall: 5·28 inches on nineteen days.—H. Holley.

Sydney's Hope (*Albany*).—Weather mostly hot and sultry. A few cool, cloudy days. Some severe duststorms. Rainfall: 4·10 inches on eighteen days.—Rev. S. Rippon.

Kenhardt.—Drought relieved, not entirely broken. Heat excessive. Locusts in large quantities. Rainfall: 2·24 inches on five days.—R. Seydell.

Stutterheim.—Rains arrived just in time to save live stock, but too late for mealies to be planted in any quantity. Tiger beetle pest among beans. Rainfall: 4·79 inches on seventeen days.—F. C. Bousfield.

Aliwal North.—A month of high temperatures. A great deal of thunder and lightning. Only light rains, amounting to 2·82 inches on seventeen days.—Alex. Alcock.

Bedford.—Rainfall above normal in light showers, but it cannot be said that the drought is broken, as the rains have been partial. While veld has improved, many farmers have had no run-off into their dams and are short of water for stock. Birds are famishing and eating much fruit, which is backward for the season and suffering from prevalence of insects. Rainfall: 3·69 inches on seventeen days.—Thos. C. Hall.

Graaff-Reinet (*Convent*).—Temperature on some days rather high, reaching 105·2 degrees on the 31st. Winds variable and not strong. Thunderstorms frequent, but not severe. Rainfall: 1·32 inch on eight days.—The Mother Superior.

Prieska.—The most noticeable features of the weather were the lowness of the daily temperature and number of rainy and cloudy days. Rain fell in Prieska or immediate neighbourhood on fifteen separate days; only the rainfall on the 1st was at all general. Total rainfall at this station since beginning of September, 3·81 inches; some local farmers report 6 or even 8 inches. Such weather here is unprecedented. Orange River somewhat high and very muddy all the month. Locust hatchings unexpectedly slight. Rainfall: 1·46 inches on nine days.—E. G. Bryant.

Mount Fletcher.—Intense thunderstorms passed over from the south and south-west. Two hailstorms on the 19th and 29th, doing considerable damage to fruit trees and crops generally. All the rivers in the district have been in flood during the greater part of the month. Rainfall: 8·28 inches on nineteen days.—J. McDougall.

Kraaipan (*Mafeking*).—A very cool month, the average maximum shade temperature being 80·5 degrees, as compared with 89·8 degrees for corresponding month of last year. The frequent showers have kept the veld and crops in excellent condition, and stock of all kinds are looking well. Harvest prospects are good. Rainfall: 3·85 inches on ten days. Total rainfall for year was 15·27 inches, as compared with 19·68 inches for 1923.—P. J. Hart.

Nelspoort (*Beaufort West*).—The most notable feature was the breaking of the continued drought. During the month a rainfall of 3·65 inches on eight days was recorded, and this rain fell for the greater part in the first week of the month. On the morning of the 3rd–4th the Salt River rose suddenly at 2 a.m. to the height of 25 feet, and much damage resulted in loss of stock and destruction of weirs. A rainfall of 4 inches is reported to have taken place that night about twenty miles up. A flood of this extent is unknown here in December, and the water is stated to have reached almost the same level as the disastrous flood in March, 1909. Within twenty-four hours the river had again fallen sufficiently to allow a crossing.—Dr. P. Allan.

Port Alfred.—The weather on the whole has been pleasant; cool evenings. Rains were most welcome, but much below the average. On the 18th the heat was intense (maximum temperature, 104 degrees), causing considerable damage to crops and orchards. Stock healthy and condition improving. Rainfall: 2·94 inches on eight days.—W. H. Pascoe.

Liwandi, Addo (*Uitenhage*).—This has been an exceptionally unpleasant December. The heat, and more especially the hot nights, has been trying. Rainfall: 1·68 inch on twelve days.—Major J. Kreft.

Tsolo.—Nice rains have fallen. Crops looking well and promise a good harvest. No cattle disease reported. Rainfall: 5·99 inches on sixteen days.—H. C. Tillard.

Keerweder (*French Hoek*).—A hot and dry month. Fruit ripening about ten days later than usual, due to earlier cold weather. Rainfall: 0·05 inch on one day.—P. Eglington.

Louisvale (*Kenhardt*).—December closed with a heat wave. Good rains have fallen in parts, but not throughout the district, and much more is required. The river farmers are experiencing a tide of prosperity. Lucerne, grain, and fruit harvests are excellent, and prices favourable. Rainfall: 0·96 inch on four days.—Stuart N. Smith.

Darling (*Malmesbury*).—It has been an exceptionally hot December (seven days over 90 degrees, and some thirteen or fourteen days over 80 degrees). Heavy south-east winds and a very low barometer have been prevalent. Rainfall: 0·18 inch on one day.—P. H. Drake.

Andriesfontein (*Hanover*).—Weather threatening nearly every day, but with very little rain and hail. Last few days of month very hot. Stock in fair condition. Rainfall: 1·56 inch on seven days.—H. van der Merwe.

Queenstown.—Rainfall on nineteen days and a total of 5·17 inches was recorded. The veld is consequently much improved, but much more is required to restore the country and revive the springs.—J. F. C. Rein

Postmasburg (*Hay*).—Unusual rains. Rainfall: 4·91 inches on fourteen days.—D. Brown.

Lovedale.—The drought has broken, after lasting some one and a half year. The rainfall this month (4·48 inches on sixteen days) has been the largest since November, 1922. Even so, the total rainfall for 1924 falls short of the normal by a very large amount (15·93 inches), compared with 23·40 inches, or 69 per cent. of normal.—Charles A. Pilson.

Rietfontein (*Aliwal North*).—Good rains throughout month. Veld in good condition. Rainfall: 3·45 inches on fourteen days.—A. G. Smith.

Sydney-on-Vaal (*Barkly West*).—Marvellous month's weather for this district. Excellent rains, and except for last two days temperatures were much below normal. Veld has recovered throughout district. Natives are busy preparing mealie plots. Cotton farmers are fully occupied attempting to cope with plethora of weeds. One flying swarm of locusts observed on 28th flying due east from this place. Rainfall: 6·36 inches on fourteen days.—J. G. Richards.

Sandflats (*Mount Currie*).—2nd, dry and droughty again. 3rd, light showers at station; heavy storm passed from north-west to north-east over north part of farm. 15th, heavy washout about half a mile north of station; p.m., lightning very severe. 19th, exceptionally heavy storm seven and a half miles north-west of station, around New Amalfi railway station, p.m. 24th, heavy rain and east-south-east (8) wind, with hail 5.10 p.m., 5.30 p.m. heavy rain, stopped at 6.5 p.m. (1·03 inch); hailstones, average size, small marbles; damage to maize crops. 27th, 4.7 p.m. to 4.25 p.m., washout and hail, wind south-west (8), severe lightning, 0·65 inch in eighteen minutes; all lands water-logged. *Temperature:* Maximum, 84·6 degrees on 2nd; minimum, 45·0 degrees on 6th; minimum on grass, 42·0 degrees on 9th; mean maximum, 73·5 degrees; mean minimum, 53·9 degrees. *Live Stock:* Cattle fat and enjoying wet weather. Sheep good, notwithstanding heavy rainfall. Blow-fly still very active. No sickness in either. *Veld:* Very good. *Crops:* Maize standing well, until damaged by hail; starting to recover at end of month. Wheat crops standing well; ought to be a good harvest if hail keeps away. Teff, some lands washed out on 24th and again on 27th; other lands growing well. Swedes, etc., already planted for feed and washed away on 24th and 27th. Rainfall: 9·97 inches on nineteen days.—Hewson B. Corderoy.

Cathcart.—Fair rains during the month, with moderate winds. The veld is looking green and fresh. Stock greatly improved in condition. Rainfall: 4·69 inches on eighteen days.—C. E. Whibley.

Rooi River (*Uniondale*).—Tobacco and fruit crops 200 per cent. better than last year. Rainfall: 0·20 inch on one day.—W. J. Schaap, jun.

Rietfontein (*Ladismith*).—Drought most serious and the worst known since the 1865 drought. All classes of stock dying in large numbers. Harvest a failure. Rainfall: 0·23 inch on two days.—F. W. Johnson.

Snydersfontein (*Beaufort West*).—Severe hailstorm on the 17th, lasting fifteen minutes, when 1·07 inch was registered; damage to gardens and window-panes broken. The veld is beautiful and stock in good condition. Rainfall: 2·93 inches on eight days.—A. G. van der Westhuizen.

Vineyard (*Albert*).—Outlook very promising, crops splendid, cattle and sheep in very good condition. Mealies coming on well. Rainfall: 3·27 inches on eight days.—C. J. Hoar.

Kilcullen (*Barkly East*).—We had splendid rains during December; crops 50 per cent. to 60 per cent. better than last year. Stock, both large and small, in good condition. Rainfall: 5·75 inches on thirteen days.—O. A. S. Vorster.

BECHUANALAND.

Kalamari.—The veld is at its best. The whole district was heavily infested with voetgangers, but I am glad to report that good work has been done in destroying them.—E. Smith.

Dikgatlong Ranch (*Tuli Block*).—December has been a good month in every respect. Moderately large swarms of locusts are passing south-east, but many drop on the way and contain one or even two maggots. Rainfall: 3·26 inches on ten days.—Paul Jousse.

Serowe.—Exceptionally cool for December. Crops and grass in good condition. Rainfall: 2·66 inches on eighteen days.

BASUTOLAND.

Mafeteng.—Good rains fell during the month, totalling 4·15 inches on nine days. Severe thunderstorms on several days. Very hot spell from 24th to 31st. Crops and stock looking splendid.—F. Hodgson.

FEBRUARY WEATHER CHARACTERISTICS.

Except along the west coast, where it is increasing, there is a marked decrease in the rainfall throughout the Union during the month of February. The eastern Transvaal, with a normal of about 5·5 inches, is now the area of heaviest precipitation, whilst the Transvaal high veld follows with slightly less than 5 inches. In Natal and Basutoland, 4 inches; in Kaffraria, 3·5 inches; over the Orange Free State and the north-east and south-east of the Cape Province, 3 inches; over the Cape northern borders, 2 inches; along the south coast and over the northern and east-central Karroo, 1·5 inch; and over the remainder of the Cape Province, less than 1 inch constitute the normal.

The mean daily temperature is now decreasing inland, but over the coastal districts it is generally slightly higher than during the preceding month, and the yearly maximum is reached. The mean temperature usually experienced over the Cape northern border is about 77 degrees; over the southern Karroo, 75 degrees; over the Transvaal low veld, 74 degrees; over the east-central Karroo, 73 degrees; in the Orange Free State, Natal, over the northern Karroo, and the south-western and south-eastern districts of the Cape Province, and along the west coast, 71 degrees; along the south coast and in Basutoland, 70 degrees; and in Kaffraria and over the Peninsula, 68 degrees.

The prevalent wind directions during this month are south over south-west of the Cape Province, north-east at East London, east-north-east at Kimberley, and north-north-west at Johannesburg. Compared with the previous month there is a large increase of southerly winds over the Cape Peninsula, together with a slight increase of north-north-westerly winds, but a slight decrease of those from all other directions. At East London there is an increase of northerly and north-easterly winds, as also of westerly and west-north-westerly winds, but a diminution in the frequency of all other breezes, particularly of those from south-west; this is counterbalanced by an almost equal increase of those from north-east. Kimberley shows an increase in frequency of winds lying between north-east and south, also of those from west and west-north-west, more particularly of those from south-east; but a diminution in all others,

especially those from south-south-west. At Johannesburg there is a considerable falling-off of all northerly winds (north-north-westerly and north-north-easterly), but a much smaller decrease of those from south-east, whilst all other directions, especially east-north-east and east, show enhanced values. Over the Cape Peninsula the winds attain their maximum force during February; at East London and Johannesburg the velocity remains the same as in the preceding month, whilst there is a slight decrease in velocity at Kimberley.

On the high veld this is the cloudiest month of the year; the hours of bright sunshine in the Transvaal being now only 55 per cent. of the total number possible, whereas in the south-west of the Cape Province the percentage is now 87, and is the maximum of the year.

C. STEWART,

Pretoria. *Chief Meteorologist.*

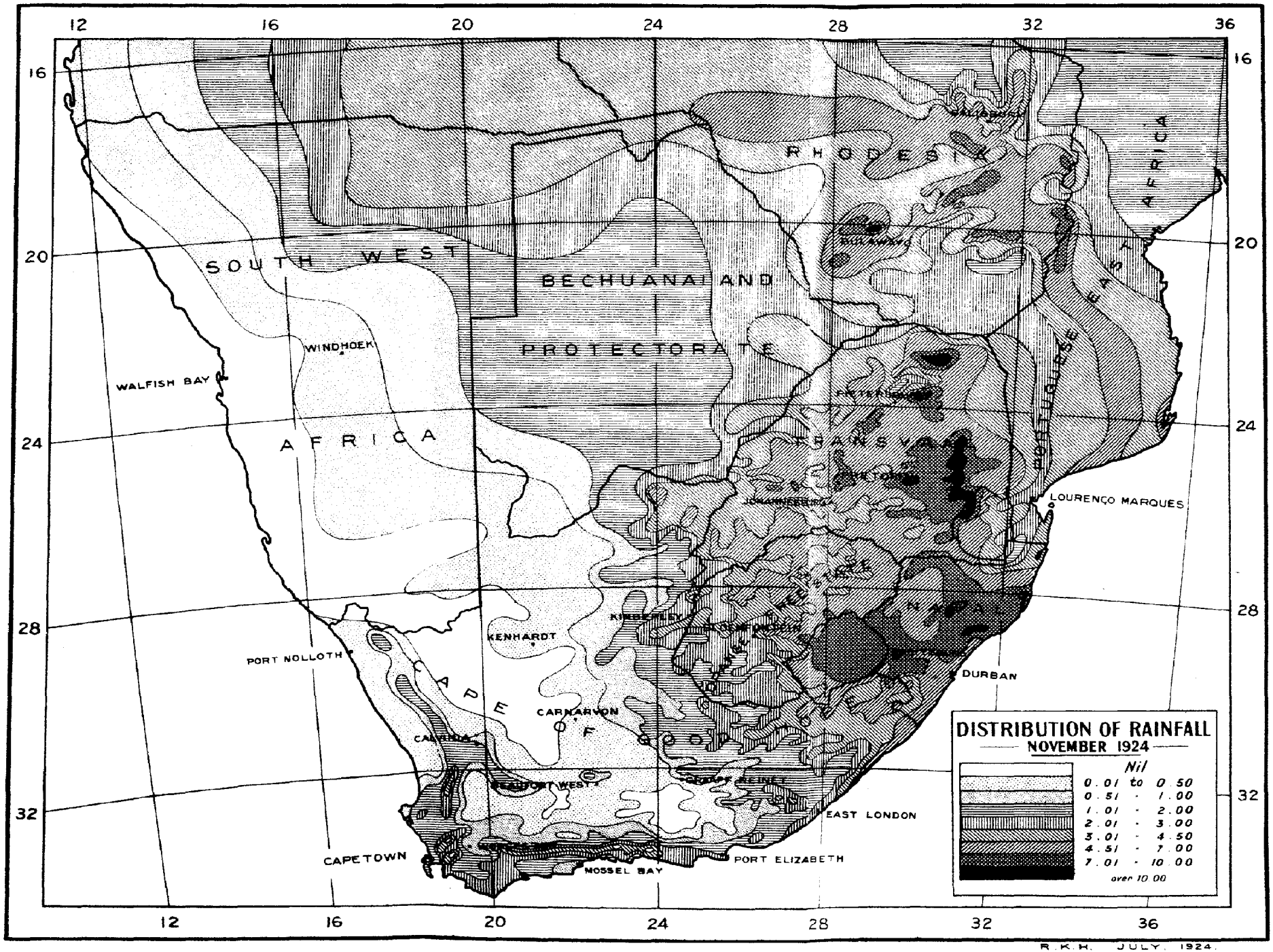
AIR TEMPERATURES (SELF-REGISTERING THERMOMETERS IN THERMOMETER-SCREENS), DECEMBER, 1924.

Place.	Observer.	Month—Dec., 1924.		Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes.			
		Mean Max.	Mean Min.				Highest.	Date.	Lowest.	Date.
		°F	°F	°F	°F	°F	°F		°F	
Transvaal—										
Barberton	Walter Grubb	80·8	61·7	71·2	72·1	− 0·9	90·0	2nd, 3rd, 20th, and 21st	56·0	7th and 14th
Belfast	The Forester	71·3	48·8	60·0	61·2	− 1·2	79·0	2nd	38·0	14th
Bloemhof	Sergt. P. J. Jordaan	83·3	58·9	71·1	73·5	− 2·4	90·2	29th	53·5	11th
Ermelo	J. Dean	72·7	52·7	62·7	65·4	− 2·7	80·3	3rd	46·4	6th.
Johannesburg (Observatory)	The Staff	72·3	54·0	63·2	64·8	− 1·6	79·8	2nd	47·0	1st.
Klerksdorp (Strathmore)	Chas. Scott	80·7	59·0	69·8	73·4	− 3·6	90·0	30th	54·0	21st.
Komatipoort	H. J. Evans	86·9	66·5	76·7	80·6	− 3·9	98·0	4th	59·0	1st.
Louis Trichardt	R. J. Potgieter	75·6	55·5	65·6	71·9	− 6·3	88·0	4th	41·0	17th and 19th.
Middelburg	—	—	—	—	67·4	—	—	—	—	—
Nylstroom	G. Bakker	79·2	60·1	69·6	72·0	− 2·4	86·5	20th	55·5	14th.
Pietersburg	W. J. Frankleyne	77·9	58·0	68·0	70·2	− 2·2	86·0	20th	53·0	2nd, 7th, and 13th.
Piet Retief	J. Werner	74·9	57·1	66·0	67·4	− 1·4	83·9	2nd	50·1	6th.
Pigeonhole (New Agatha)	Jno. McCallum	71·0	57·1	64·0	—	—	81·0	19th	51·0	7th and 8th.
Pilgrims Rest	E. M. Skea	75·2	55·5	65·4	67·3	− 1·9	87·0	19th	47·0	14th and 15th.
Potchefstroom (Exp. Farm)	The Manager	79·5	58·1	68·8	70·1	− 1·3	88·0	30th	52·3	1st.
Pretoria (Meteorological Office)	The Staff	76·7	59·2	68·0	71·2	− 3·2	84·7	21st	55·8	6th.
Rustenburg	A. Streatfield	83·0	59·2	71·1	73·9	− 2·8	101·0	12th	55·0	21st.
Standerton	—	—	—	—	66·2	—	—	—	—	—
Zeerust	H. Dietrich	82·6	60·1	71·4	74·7	− 3·3	98·1	30th	55·4	18th.
Swaziland—										
Mbabane	Swaziland Police	75·8	57·2	66·5	66·4	+ 0·1	85·0	3rd and 4th	50·0	6th.
Orange Free State—										
Bethulie	J. J. Wardhaugh	81·8	56·4	69·1	72·0	− 3·8	92·7	31st	45·0	6th.
Bloemfontein	G. A. Scheepers	79·4	57·2	68·3	71·9	− 3·6	88·3	29th	49·6	6th.
Harrismith	The Forester	70·3	50·7	60·5	65·4	− 4·9	81·0	2nd	43·0	6th and 11th.
Kroonstad	A. C. Mason	80·2	57·6	68·9	71·6	− 2·7	90·3	30th	52·0	24th.
Ladybrand	The Forester	74·9	54·1	64·5	68·2	− 3·7	82·0	30th and 31st	49·0	11th.
Lindley	J. Murphy	77·0	55·5	66·2	67·6	− 1·4	85·0	2nd and 30th	50·0	1st, 6th, 10th, and 24th
Natal—										
Dundee	West Thorrold	78·1	55·7	66·9	72·0	− 5·1	90·0	2nd	49·0	6th.
Durban (Point)	The Port Captain	79·9	68·9	74·4	74·8	− 0·4	84·4	20th and 24th	58·8	6th.
Empangeni	The Forester	82·1	65·9	74·0	75·6	− 1·6	95·0	4th	57·0	6th.
Estcourt	The Town Clerk	—	—	—	71·8	—	—	—	—	—
Hlabisa	E. E. Redgrove	78·7	61·3	70·0	71·6	− 1·6	90·0	4th	53·0	6th.
Ladysmith	D. A. R. Leathern	82·2	60·3	71·2	77·4	− 6·2	95·0	2nd	53·0	10th.
Maritzburg (Mental Hospital)	The Staff	79·5	61·9	70·7	71·8	− 1·1	92·2	3rd	54·2	6th.
Stanger	Cecil C. Foss	81·4	65·4	73·4	75·0	− 1·6	90·0	24th	57·0	6th.
Weenen	The Gaoler	80·8	59·5	70·2	76·5	− 6·3	92·4	2nd	52·0	6th.

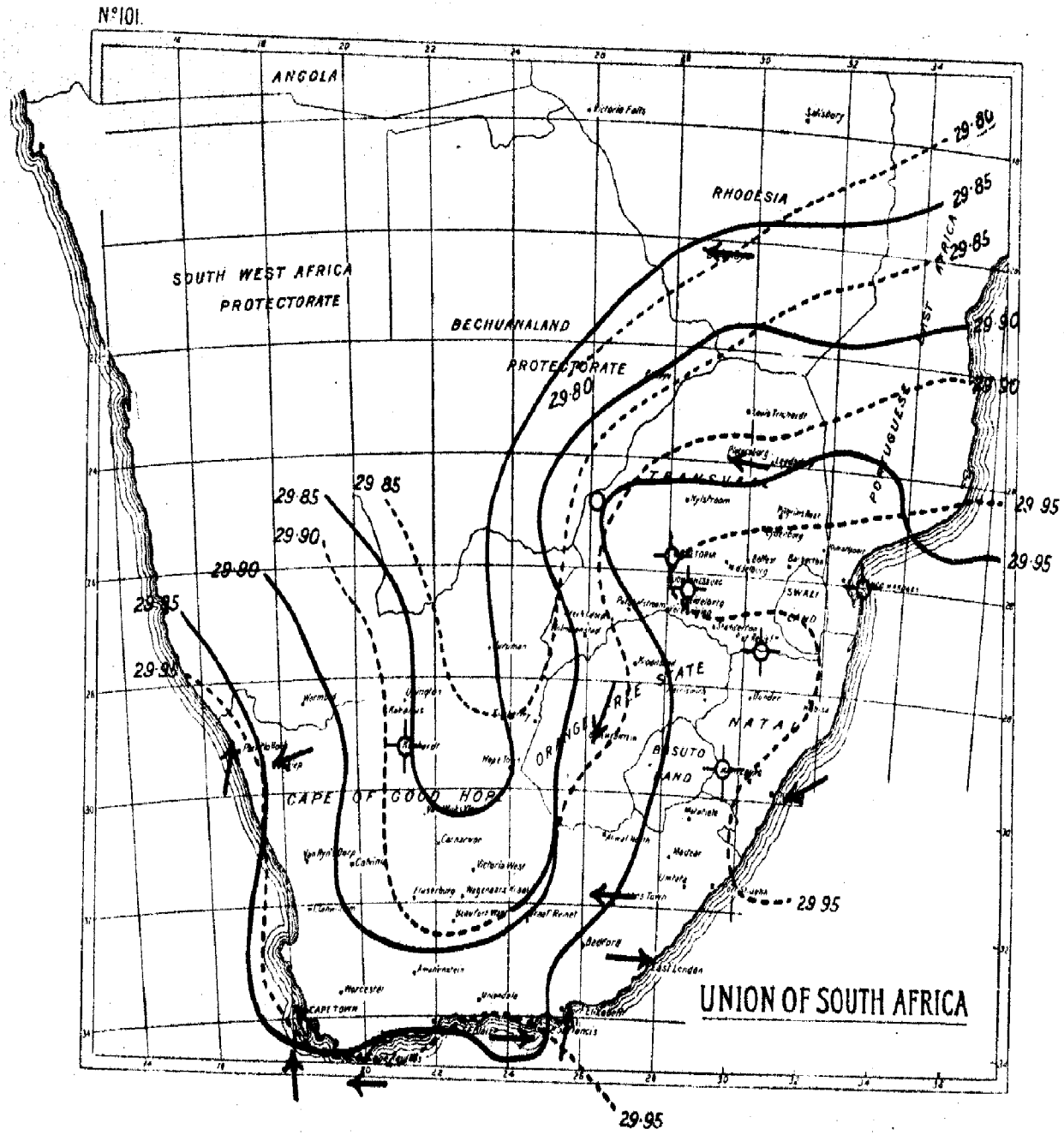
AIR TEMPERATURES, DECEMBER, 1924—(*continued*).

Place.	Observer.	Month—Dec., 1924. Mean Max.	Month—Dec., 1924. Mean Min.	Mean Monthly Temperature.	Normal Monthly Temperature.	Difference from Normal.	Extremes. Highest.	Extremes. Date.	Extremes. Lowest.	Extremes. Date.
		° F	° F	° F	° F	° F	° F		° F	
Cape Province—										
Alliwal North	Alex. Alcock	82·3	55·5	68·9	68·3	+ 0·6	93·5	31st	48·0	6th and 11th.
Bedford	Thos. C. Hall	80·5	58·0	69·2	68·3	+ 0·9	100·0	1st	48·5	10th.
Capetown (Royal Observatory)	The Staff	80·8	62·2	71·5	67·3	+ 4·2	94·2	1st	54·6	13th.
Carnarvon	A. P. Malherbe	86·3	58·5	72·4	73·5	− 1·1	98·0	31st	49·0	6th.
Clanwilliam	—	—	—	—	73·2	—	—	—	—	—
East London	The Port Captain	77·7	63·0	70·4	68·5	+ 1·9	101·0	18th	54·0	4th and 6th.
Graaff-Reinet (Convent)	The Mother Superior	87·5	60·9	74·2	71·8	+ 2·4	105·2	31st	48·8	10th.
Grahamstown	The Vet. Res. Officer	80·0	55·4	67·7	67·6	+ 0·1	100·2	1st	42·2	6th.
Groot Drakenstein	A. Franceys	87·4	60·8	74·1	70·4	+ 3·7	104·0	31st	51·5	20th.
Kenhardt	R. Seydell	94·6	65·6	80·1	78·4	+ 1·7	107·0	31st	55·0	20th.
Kimberley	C. H. Dowler	83·4	60·7	72·0	75·7	− 3·7	93·5	31st	51·0	6th.
Kingwilliamstown	W. A. Kindness	82·1	61·2	71·6	69·8	+ 1·8	99·7	13th	55·0	10th, 11th, and 21st.
Kokstad	H. D. Coyte	75·9	53·5	64·7	63·2	+ 1·5	88·0	2nd	47·6	1st and 6th.
Mafeking (Convent)	The Mother Superior	80·6	60·5	70·6	74·7	− 4·1	91·8	30th	55·2	22nd.
Mossel Bay (Cape St. Blaize)	The Lightkeeper	74·7	64·6	69·6	67·5	+ 2·1	79·0	2nd, 13th, 27th, and 31st.	60·0	9th.
Murraysburg	W. H. Rose-Innes	—	—	—	69·4	—	—	—	—	—
O'okiep	J. Burrows	85·1	60·4	72·8	71·4	+ 1·4	97·2	17th	45·1	9th.
Port Elizabeth	The Lightkeeper	76·8	64·2	70·5	67·7	+ 2·8	95·0	18th	58·0	6th.
Port Nolloth	The Lightkeeper	65·8	52·9	59·4	59·0	+ 0·4	84·2	2nd	44·8	27th.
Port St. Johns (Cape Hermes)	The Lightkeeper	76·8	66·1	71·4	71·4	± 0·0	85·0	31st	58·0	6th.
Queenstown	H. Holley	81·2	58·1	69·6	68·4	+ 1·2	96·0	31st	48·0	6th.
Somerset East	C. Harris	78·7	58·3	69·0	69·1	− 0·1	98·3	31st	47·8	10th.
Stutterheim	F. C. Bousfield	77·9	58·4	68·2	65·9	+ 2·3	96·5	2nd	50·0	6th.
Sydney's Hope	Rev. S. Rippon	79·3	59·4	69·4	65·2	+ 4·2	102·5	1st	50·5	6th.
Uitenhage	H. Inggs	82·6	61·1	71·8	70·2	+ 1·6	96·0	18th	51·0	12th.
Umtata	A. Dixpeek	80·6	59·7	70·2	69·1	+ 1·1	98·3	14th	51·4	6th.
Vryburg	Chas. Butler	83·1	59·6	71·4	75·3	− 3·9	94·0	30th	53·0	10th.
Wynberg (Convent)	The Mother Superior	79·8	61·3	70·6	66·3	+ 4·3	91·5	16th	55·5	9th and 20th.
Basutoland—										
Maleteng	F. Hodgson	75·0	54·3	64·6	69·6	− 5·0	84·0	30th	48·0	6th.

SOUTH AFRICA



R.K.H. JULY. 1924.



December, 1924. Prevailing Winds and Mean Atmospheric Pressure at 8.30 a.m.
The dotted lines indicate the normal distribution for December.

RAINFALL, DECEMBER, 1924.

Place.	Observer.	Month. Dec., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Transvaal—										
Barberton	W. Grubb	5·02	4·74	+ 0·28	31·05	31·79	− 0·74	18·19	14·02	+ 4·17
Belfast	The Forester	4·32	5·83	− 1·51	36·57	32·45	+ 4·12	16·56	15·93	+ 0·63
Bethal	H. Joubert	5·41	5·34	+ 0·07	33·05	29·61	+ 3·44	17·05	15·61	+ 1·44
Bloemhof	B. J. Jordaan	5·32	2·12	+ 3·20	—	—	—	11·35	6·54	+ 4·81
Claremont	S. A. Police	4·30	3·22	+ 1·08	23·66	18·68	+ 4·98	9·53	7·93	+ 1·60
Ermelo	The Forester	5·13	5·59	− 0·46	34·08	31·67	+ 2·41	16·54	17·12	− 0·58
Haenertsburg	The Forester	4·62	5·79	− 1·17	39·27	38·37	+ 0·90	18·92	13·99	+ 4·93
Heidelberg	—	—	—	—	—	—	—	—	—	—
Johannesburg (Observatory)	The Staff	5·75	4·82	+ 0·93	28·97	30·73	− 1·76	13·66	14·38	− 0·72
Klerksdorp (Strathmore)	C. Scott	4·61	3·66	+ 0·95	23·35	23·28	+ 0·07	12·48	9·80	+ 2·68
Komatipoort	H. J. Evans	7·23	3·92	+ 3·31	28·86	27·65	+ 1·21	18·50	9·91	+ 8·59
Louis Trichardt	R. J. Potgieter	5·12	5·35	− 0·23	33·85	30·10	+ 3·75	15·87	11·91	+ 3·96
Middelburg	—	—	—	—	—	—	—	—	—	—
Nylstroom	G. Bakker	3·86	3·94	− 0·08	28·42	24·87	+ 3·55	11·50	10·76	+ 0·74
Pietersburg	W. Frankleyne	3·97	4·39	− 0·42	24·08	21·28	+ 2·80	10·89	9·90	+ 0·99
Piet Retief	J. Werner	10·06	5·89	+ 4·17	42·75	36·29	+ 6·46	25·39	18·04	+ 7·35
Pigeon Hole (New Agatha)	J. McCallum	7·56	7·66	− 0·10	58·73	47·66	+11·07	25·54	18·81	+ 6·73
Pilgrims Rest	E. M. Skea	5·26	5·79	− 0·53	33·22	40·09	− 6·87	17·59	14·34	+ 3·25
Potchefstroom (Expt. Farm)	The Manager	3·10	4·27	− 1·17	27·26	23·68	+ 3·58	13·95	11·02	+ 2·93
Pretoria (Meteorological Office)	The Staff	5·55	4·62	+ 0·93	26·91	29·39	− 2·48	15·04	13·47	+ 1·57
Rooiberg	N. H. Munro	4·51	3·63	+ 0·88	21·19	24·83	− 3·64	10·89	10·66	+ 0·23
Rustenburg	A. Streatfield	5·94	4·40	+ 1·54	31·23	26·44	+ 4·79	13·54	11·95	+ 1·59
Standerton	—	—	—	—	—	—	—	—	—	—
Wakkerstroom	J. Cilliers	2·10	4·87	− 2·77	—	—	—	16·34	15·40	+ 0·94
Woodbush	The Forester	11·95	11·15	+ 0·80	63·47	71·31	− 7·84	33·32	26·08	+ 7·24
Zeerust	H. Dietrich	7·79	3·53	+ 4·26	29·11	23·90	+ 5·21	14·75	9·73	+ 5·02
Swaziland—										
Mbabane	Swaziland Police	14·09	8·02	+ 6·07	70·73	53·04	+17·69	39·77	23·51	+16·26
Orange Free State—										
Bethulie	J. J. Wardhaugh	2·65	2·19	+ 0·46	22·84	17·60	+ 5·24	7·53	6·19	+ 1·34
Bloemfontein	G. A. Scheepers	4·58	2·27	+ 2·31	23·31	21·68	+ 1·63	10·08	7·79	+ 2·29
Boshof	The Postmaster	5·45	2·02	+ 3·43	20·31	19·45	+ 0·86	9·81	7·36	+ 2·45
Harrismith	The Forester	4·56	4·30	+ 0·26	31·87	29·50	+ 2·37	17·32	13·98	+ 3·34
Kroonstad	A. C. Mason	5·19	3·19	+ 2·00	27·48	24·25	+ 3·23	17·31	9·94	+ 7·37
Ladybrand	The Forester	5·67	3·23	+ 2·44	34·52	27·27	+ 7·25	20·40	11·99	+ 8·41
Lindley	The Gaoler	5·33	3·69	+ 1·64	—	24·20	—	—	10·66	—
Natal—										
Dundee	W. Thorrold	6·63	5·17	+ 1·46	37·90	32·09	+ 5·81	19·20	14·43	+ 4·77
Durban (Point)	The Port Captain	4·70	4·92	− 0·22	39·89	41·51	− 1·62	19·69	20·72	− 1·02
Empangeni	The Forester	6·23	4·45	+ 1·78	45·77	46·01	− 0·24	26·50	21·84	+ 4·66

RAINFALL, DECEMBER, 1924—(*continued*).

Place.	Observer.	Month. Dec., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Natal—(continued).										
Estcourt	The Town Clerk	6·63	4·67	+ 1·96	34·67	28·91	+ 5·76	21·47	12·34	+ 9·13
Hlabisa	E. E. Redgrove	8·81	5·99	+ 2·82	—	43·74	—	24·94	20·92	+ 4·02
Howick	The Gaoler	3·87	4·55	− 0·68	32·12	33·34	− 1·22	16·62	15·03	+ 1·59
Ladysmith	D. A. R. Leathern	5·69	4·58	+ 1·11	36·06	28·47	+ 7·59	20·30	12·25	+ 8·05
Maritzburg (Mental Hospital)	The Staff	8·30	5·53	+ 2·77	36·00	37·27	− 1·27	20·60	17·26	+ 3·34
Stanger	C. C. Foss	7·18	6·11	+ 1·07	40·35	42·66	− 2·31	24·20	22·50	+ 1·70
Vryheid	The Gaoler	8·48	5·95	+ 2·53	35·36	35·01	+ 0·35	19·10	16·77	+ 2·33
Weenen	The Gaoler	5·31	3·93	+ 1·38	28·23	27·34	+ 0·89	18·49	12·10	+ 6·39
Cape Province—										
Aliwal North	A. Alcock	2·82	2·49	+ 0·33	21·57	20·36	+ 1·21	7·61	7·76	− 0·15
Beaufort West	The Gaoler	1·24	0·85	+ 0·39	6·50	9·58	− 3·08	2·12	3·50	− 1·38
Bedford	T. C. Hall	3·69	2·81	+ 0·88	17·69	26·58	− 8·89	8·01	11·01	− 3·00
Britstown	S.A. Police	1·03	0·87	+ 0·16	10·55	11·45	− 0·90	3·58	3·24	+ 0·34
Calvinia	The Gaoler	0·14	0·22	− 0·08	6·01	8·23	− 2·22	3·14	3·49	− 0·35
Capetown (Royal Observatory)	The Staff	0·04	0·85	− 0·81	18·82	25·40	− 6·58	10·24	12·92	− 2·68
Ceres	The Gaoler	0·00	1·32	− 1·32	34·89	41·47	− 6·58	18·86	22·79	− 3·93
Carnarvon	A. P. Malherbe	—	0·45	—	—	7·89	—	—	2·24	—
Clanwilliam	The Gaoler	0·00	0·17	− 0·17	5·41	8·66	− 3·25	3·34	4·33	− 0·99
Concordia	F. R. Carstens	0·53	0·21	+ 0·32	—	6·40	—	—	2·70	—
Driefontein (French Hoek)	The Forester	0·13	1·37	− 1·24	66·42	76·50	−10·08	38·79	38·43	+ 0·36
East London	A. Downie	5·20	3·24	+ 1·96	22·68	32·74	−10·06	10·98	16·25	− 5·27
Fraserburg	The Gaoler	0·45	0·37	+ 0·08	4·12	6·71	− 2·59	1·40	2·00	− 0·60
Grahamstown	The Vet. Res. Officer.	2·17	2·52	− 0·35	15·84	28·03	−12·19	7·88	13·80	− 5·92
Gariep	The Gaoler	—	0·12	—	—	4·98	—	—	2·51	—
Graaff-Reinet (Convent)	The Mother Superior.	1·32	1·30	+ 0·02	9·84	13·85	− 4·01	3·80	5·67	− 1·87
Groot Drakenstein	A. L. Franceys	0·16	0·97	− 0·81	35·02	35·59	− 0·57	18·58	18·58	± 0·00
Griquatown	The Gaoler	5·81	1·25	+ 4·56	—	12·90	—	—	3·69	—
George (Rectory)	Rev. Canon B. Price.	4·19	3·05	+ 1·14	28·61	34·12	− 5·51	18·51	16·46	+ 2·05
Hanover	The Gaoler	1·11	0·99	+ 0·12	10·19	13·20	− 3·01	3·36	4·07	− 0·71
Hope Town	The Gaoler	4·09	1·02	+ 3·07	—	12·56	—	—	3·76	—
Kenhardt	R. Seydell	2·24	0·39	+ 1·85	4·67	5·76	− 1·09	2·61	1·53	+ 1·08
Kimberley	H. D. Dowler	5·35	1·97	+ 3·38	18·23	16·05	+ 2·18	9·22	5·73	+ 3·49
Knysna	The Gaoler	1·91	2·40	− 0·49	25·20	28·57	− 3·37	14·50	14·91	− 0·41
Kokstad	H. D. Coyte	7·86	4·03	+ 3·83	33·26	27·04	+ 6·22	18·94	11·65	+ 7·29
Kingwilliamstown	W. Kindness	4·62	2·73	+ 1·89	19·15	25·09	− 5·94	8·72	11·66	− 2·94
Kuruman	The Magistrate	6·04	2·24	+ 3·80	—	16·87	—	—	4·93	—
Mafeking (Convent)	The Mother Superior.	5·21	3·60	+ 1·61	21·78	22·60	− 0·82	11·79	9·26	+ 2·53
Mossel Bay (Cape St. Blaize)	The Lightkeeper	0·87	1·36	− 0·49	12·36	17·20	− 4·84	6·15	8·49	− 2·34
Murraysburg	W. Rose-Innes	—	0·92	—	—	10·89	—	—	3·57	—
O'okiep	J. Burrows	0·29	0·19	+ 0·10	2·13	6·97	− 4·84	1·18	3·30	− 2·12
Philipstown	The Gaoler	2·42	1·23	+ 1·19	17·29	13·45	+ 3·84	4·78	4·16	+ 0·62

RAINFALL, DECEMBER, 1924—(*continued*).

Place.	Observer.	Month. Dec., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
Cape Province—(continued).		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
Piquetberg	The Gaoler	0·07	0·68	− 0·61	—	20·84	—	—	11·43	—
Port Elizabeth	The Lightkeeper	2·50	1·62	+ 0·88	—	22·37	—	—	12·12	—
Port St. Johns	The Lightkeeper	6·88	5·81	+ 1·07	42·31	50·01	− 7·70	20·44	24·97	− 4·53
Port Nolloth	The Lightkeeper	0·28	0·07	+ 0·21	1·49	2·36	− 0·87	0·91	1·08	− 0·17
Prieska	The Gaoler	1·07	0·75	+ 0·32	7·45	9·65	− 2·20	3·54	2·42	+ 1·12
Queenstown	H. Holley	5·28	2·95	+ 2·33	18·12	22·81	− 4·69	8·39	8·84	− 0·45
Steytlerville	The Gaoler	1·05	0·79	+ 0·26	5·31	9·31	− 4·00	2·38	3·72	− 1·34
Sutherland	The Gaoler	—	0·39	—	—	9·38	—	—	3·97	—
Swellendam	The Gaoler	—	2·88	—	—	31·85	—	—	15·60	—
Sydney's Hope	Rev. S. Rippon	4·10	2·07	+ 2·03	19·79	22·57	− 2·78	10·39	10·92	− 0·53
Somerset East	C. Harris	4·11	2·83	+ 1·28	17·05	25·47	− 8·42	7·33	11·21	− 3·88
Stutterheim	F. C. Bousfield	4·79	3·74	+ 1·05	24·39	29·83	− 5·44	9·61	13·21	− 3·60
Uitenhage	H. Inggs	2·57	1·29	+ 1·28	12·73	17·24	− 4·51	6·95	8·44	− 1·49
Umtata	B. J. Hackett	4·92	3·01	+ 1·91	19·76	25·44	− 5·68	10·51	10·98	− 0·47
Uniondale	The Gaoler	0·52	0·64	− 0·12	9·70	13·31	− 3·61	6·25	6·38	− 0·13
Upington	The Gaoler	1·90	0·72	+ 1·18	6·91	7·18	− 0·27	2·13	1·97	+ 0·16
Victoria West	The Gaoler	1·76	0·89	+ 0·87	8·65	10·41	− 1·76	3·83	3·18	+ 0·65
Vryburg	Chas. Butler	4·12	2·53	+ 1·59	19·97	19·13	+ 0·84	8·53	5·90	+ 2·63
Worcester	The Gaoler	0·00	0·39	− 0·39	—	12·53	—	—	6·66	—
Wynberg (Convent)	The Mother Superior	0·00	1·22	− 1·22	34·35	46·16	−11·81	21·09	25·84	− 4·75
Basutoland—										
Mafeteng	F. Hodgson	4·15	4·68	− 0·53	33·12	31·69	+ 1·43	14·55	12·33	+ 2·22
South-West Africa—										
Aroab	S.W.A. Police	0·38	0·54	− 0·16	6·86	7·76	− 0·90	0·39	1·54	− 1·15
Aus	E. Martins	0·16	0·13	+ 0·03	1·19	4·06	− 2·87	0·79	1·30	− 0·51
Bethanie	Rev. Peter	0·65	0·31	+ 0·34	2·29	3·30	− 1·01	1·52	0·77	+ 0·75
Duestenbrock	R. Matthiessen	0·57	1·18	− 0·61	8·10	13·27	− 5·17	1·89	2·24	− 0·35
Gabis	Rev. P. Rehor	0·57	0·26	+ 0·31	1·49	4·31	− 2·82	0·59	1·32	− 0·73
Garinais	F. Bentling	0·88	0·43	+ 0·45	4·79	6·03	− 1·24	1·20	1·59	− 0·39
Gibeon	The Postmaster	0·24	0·31	− 0·07	3·02	6·13	− 3·11	0·59	1·18	− 0·59
Gobabis	Rev. Irle	0·85	1·99	− 1·14	12·20	15·77	− 3·57	3·21	3·80	− 0·59
Grootfontein	Pitkowski	4·19	3·94	+ 0·25	17·95	23·76	− 5·81	7·64	6·57	+ 1·07
Gr. Witvley	G. Maas	1·87	2·16	− 0·29	7·94	14·78	− 6·84	3·80	3·66	+ 0·14
Haribes	G. Freund	0·32	0·34	− 0·02	3·67	8·04	− 4·37	0·68	1·62	− 0·94
Heirachabis	Rev. P. Stroka	0·02	0·37	− 0·35	1·48	3·94	− 2·46	0·30	0·91	− 0·61
Kalkfontein S.	S.W.A. Police	0·42	0·13	+ 0·29	2·64	4·21	− 1·57	0·91	0·58	+ 0·33
Franzfontein	H. Janson	0·30	1·43	− 1·13	7·13	10·08	− 2·95	0·61	2·21	− 1·60
Luderitz Bay	E. Stoeber	0·00	0·02	− 0·02	0·00	0·67	− 0·67	0·01	0·26	− 0·25

RAINFALL, DECEMBER, 1924—(*continued*).

Place.	Observer.	Month. Dec., 1924.	Normal.	Difference from Normal.	From 1st January, 1924.	Normal.	Difference from Normal.	From 1st July, 1924.	Normal.	Difference from Normal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
South-West Africa—(contd.)										
Maltahoehe	E. Just	0·18	0·42	− 0·24	3·47	6·26	− 2·79	0·29	0·93	− 0·64
Neu Heusis	Liebig's Extract Co.	0·16	1·47	− 1·31	5·06	13·62	− 8·56	0·67	2·66	− 1·99
Okahandja	B. Templin	1·35	1·96	− 0·61	11·06	14·13	− 3·07	3·87	3·08	+ 0·79
Okasangumingo	R. H. A. Schneider	1·26	2·08	− 0·82	12·24	17·66	− 5·42	2·88	5·23	− 2·35
Omaruru	The Postmaster	0·56	1·53	− 0·97	7·87	15·31	− 7·50	1·71	2·45	− 0·74
Otjiwarongo	The Magistrate	1·59	2·42	− 0·83	12·71	16·14	− 3·43	4·22	3·92	+ 0·30
Outjo	The Magistrate	1·83	2·40	− 0·57	7·83	15·39	− 7·56	3·97	3·72	+ 0·25
Rehoboth	The Postmaster	0·00	1·20	− 1·20	1·99	11·96	− 9·97	0·29	2·55	− 1·26
Rietfontein	B. Leist	1·60	2·91	− 1·31	11·65	20·14	− 8·49	4·33	5·83	− 1·50
Swakopmund	The Goaler	0·00	0·11	− 0·11	0·10	0·66	− 0·56	0·10	0·29	− 0·19
Tsumeb	Ing. Schetter	4·61	4·08	− 0·53	10·41	23·67	− 13·26	9·22	6·91	+ 2·31
Usakos	Rev. Diehl	0·73	0·54	+ 0·19	3·31	5·22	− 1·91	0·89	0·98	− 0·09
Voigtsgrund	A. Voigts	0·23	0·54	− 0·31	10·67	7·32	+ 3·35	0·54	1·22	− 0·68
Warmbad	E. Luchtenstein	0·73	0·09	+ 0·14	1·14	3·48	− 2·34	0·74	0·70	+ 0·04
Waterberg	D. Hahn	3·04	2·98	+ 0·06	14·14	19·77	− 5·63	4·70	5·03	− 0·33
Wilhelmstal	W. Boehmker	0·82	1·60	− 0·78	5·23	12·44	− 7·21	1·72	2·62	− 0·90
Windhoek	Observatory	0·74	1·79	− 1·05	9·53	14·75	− 5·22	2·62	3·23	− 0·61