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INTERNATIONAL METEOROLOGICAL MEETING IN LONDON.

By R. G. K. LEMPFERT, M.A.

THE last two weeks of June witnessed the assembly in London of a number of distinguished foreign meteorologists. We all agree that progress in meteorology depends to a great extent on co-operation, but the machinery for securing co-operation on the international scale is familiar to few of us. It may, therefore, not be out of place to describe briefly the organization which has grown up in the course of time for dealing with such matters. The body from which all authority derives is known as a "Conference of Directors." All heads of meteorological offices or of independent official observatories are entitled to receive invitations to these conferences. Three meetings on these lines have been held hitherto—at Munich in 1891, at Paris in 1896, and at Innsbruck in 1905.

The conferences appoint a Committee, consisting at the present time of not more than seventeen members, which holds office until the next conference. One of the duties entrusted to the Committee appointed at Innsbruck was that of crystallizing the various precedents set at previous meetings into a comprehensive scheme for regulating international meteorological business, and accordingly, at the meeting held in Paris in 1907, a "règlement" was discussed and approved. This provides that the Committee shall meet, as a rule, once in three years. Each member must belong to a separate country, and must be the Director of an independent meteorological establishment. The functions of the Committee are defined as follows:—"The Committee shall superintend the carrying out of the resolutions adopted at the conferences. It shall make it its business to propose measures likely to prove helpful to the development of science, to bring about uniformity or to foster the maintenance of good relations between the services of different countries, and shall prepare for discussion questions to be submitted to the conferences. Whenever necessary it shall appoint Commissions, whose duty it will be to advance the study of special questions."

These Commissions by affording opportunity for discussion of details across the table, have done much to promote progress. The

meetings which have just been held among us were of this nature. The Commissions which assembled numbered three. (1) The Commission on Weather Telegraphy, consisting of Dr. W. N. Shaw, President; Professor A. Angot, the Head of the French Meteorological Service; Rear-Admiral Herz, Director of the Deutsche Seewarte; Professor Willis L. Moore, Chief of the United States Weather Bureau, and Lieutenant-General Rykatcheff, the Director of the Russian Service. MM. Herz and Rykatcheff were unable to attend; Admiral Herz was represented by Professor Grossmann, of the Deutsche Seewarte. Prof. Moore was accompanied by Mr. C. F. Talman, the Librarian of the Weather Bureau, as Secretary. Dr. P. Polis, the Director of the Meteorological Observatory at Aachen, took part in some of the meetings of the Commission. (2) The Commission on Storm Signals, consisting of the gentlemen named above and the Rev. L. Froc, S.J., Director of the Zi-ka-wei Observatory, Shanghai, which issues storm-warnings for the coasts of China; Professor H. Mohm, Director of the Norwegian Service, and Mr. K. Nakamura, Director of the Central Observatory at Tokio, who was unable to be present. (3) The Solar Commission, which met under the presidency of Sir Norman Lockyer.

The Commission on Weather Telegraphy had on its programme, in the first instance, the question of wireless messages from the Atlantic Ocean as a means of extending to the westward the area mapped in our Daily Weather Reports. Other questions were concerned with the details of the code used in the European system for transmitting the daily messages. One of the most important changes suggested was that of introducing into the messages the barometric "tendency," *i.e.*, the variation of the barometer as shown on a barograph during the three hours preceding the hour of observation.

The second Commission was appointed to discuss the possibility of introducing an international system of storm warning signals. At present each country has its own system, and a signal which means one thing when displayed on one side of the Channel may mean something quite different on the opposite side. Our ocean liners are largely independent of wind, but even in these days of steam there are many small craft, sailing into foreign waters, to which warning of approaching gales is of great importance. The advantage of uniformity in such matters is obvious. The Commission favoured the general adoption of a system in which the different arrangements of two cones are used to indicate the probability of gales from each of the four directions, N.E., S.E., S.W., N.W., and of a hurricane from any quarter.

This Commission also had on its programme the consideration of a proposal made by Father Froc for extending a system now in use on the coast of China for signalling, by semaphore, to the captains of passing vessels the positions and intensities of atmospheric disturbances. A third question submitted was that of the most suitable scale and projection for marine meteorological charts.

The Solar Commission was appointed at the meeting of the International Committee at Southport in 1903, at the suggestion of Sir Norman Lockyer and Dr. Shaw, to further the study of the connection between Meteorology and Solar Physics. The Commission has held two previous meetings, at Cambridge in 1904 and Innsbruck in 1905. It consists of many members but on this occasion only a few were able to attend. They were Sir Norman Lockyer, President, MM. Angot, Mohu and Shaw, Professor van Everdingen, Director of the Meteorological Service of the Netherlands, Captain Lyons, late Director of the Survey Department of Egypt, and Captain Americo Silvano, until recently the head of the Brazilian Service. The meetings were held in the rooms of the Royal Society.

The subject entrusted to the Commission is a most fascinating one and its successful prosecution promises great rewards. The apparent connection between sunspot frequency and weather, though highly suggestive, cannot be looked upon as definitely established. The problem before us is a vastly complex one and success is likely to crown our efforts in proportion as we learn to regard our globe as one indivisible whole. World Meteorology must be our aim. Progress in the direction of securing data from distant regions is slow, but the last few years have seen a great advance in this direction, due partly to the efforts of the Commission. But what of the discussion of the results? He who has access to a large meteorological library will find much information but he will also find that his data are scattered through many hundreds of volumes and the labour of abstracting them is vast. Moreover many results are unpublished and thus the individual worker finds his efforts to deal with world meteorology hampered at every turn, even though he be fortunate in having access to a library. But where the individual fails, co-operative effort may succeed, and the question to be discussed by the Commission was that of making arrangements for the collection and publication, in convenient form, of the meteorological results, and of the corresponding solar data.

The lighter side of international intercourse was not absent. On Tuesday evening, June 22nd, Dr. Shaw entertained the foreign visitors at dinner in the Hotel Windsor, and invited a number of English men of science to meet them. The gathering at the hotel was preceded by an inspection of the evening work of the Meteorological Office. On Wednesday some of the members visited Cambridge to accept an invitation from the Master and Fellows of Christ's College to a garden party, given in connection with the celebration of the centenary of the birth of Darwin. Later they dined with the Master and Fellows of Emmanuel College. On Saturday the Commission was invited by the Director of the National Physical Laboratory to inspect the laboratory, and also the Kew Observatory. The proceedings terminated with a reception by Sir Norman Lockyer on the evening of Tuesday, June 29th, when Dr. W. J. S. Lockyer showed a fine collection of cloud photographs.

THE WEATHER OF JUNE, 1909.

By FRED. J. BRODIE.

THE miserably inclement weather of June was due, principally, to a material change in the position of the Atlantic anticyclone, which at this season of the year usually lies well south of the 50th parallel. Last month the borders of the system extended beyond our own western shores, and not infrequently as far north as Iceland; and as the barometer was at the same time low over the Continent, the atmospherical conditions were favourable for the flow of a stream of cold air from the neighbourhood of the Arctic Sea. The only material interruption occurred in the fourth week, when the high pressure system was temporarily broken into by a complex barometrical disturbance, which advanced very slowly across the United Kingdom from the westward, and produced a cyclonic circulation of wind, and extremely unsettled rainy weather in all districts.

In the middle of the month there were three distinct periods of fairly warm weather, but in none of them did the thermometer rise appreciably beyond its normal summer level. The first spell occurred between the 7th and 10th, when shade maxima exceeding 65° were registered in many parts of Great Britain, no station recording, however, a reading as high as 70° . The second period occurred between the 14th and 16th in Ireland, but a day or two later in England and Scotland. At some time between the 14th and 19th the thermometer rose above 70° in nearly all parts of the United Kingdom; a reading of 75° being recorded on the 17th at Camden Square, and a reading of 74° on the 19th at Greenwich. In the third period, occurring between the 19th and 21st, no station in Ireland or Scotland experienced a shade temperature much above 65° , but many places in England went slightly above 70° , and Greenwich touched 73° . A June in which the thermometer fails to exceed 75° in any part of the United Kingdom may certainly be regarded as a most exceptional month. At Westminster, the highest reading (71° on the 17th) was lower than in any other June since 1879, when the absolute maximum temperature was the same as this year.

The deficiency of warmth last month was most marked in the daytime, but the nights were sometimes also very cool. Between the 3rd and 7th, the screened thermometer fell slightly below the freezing point in many western and northern districts; while instruments exposed on the grass sank to 21° at Llangammarch Wells, to 26° or 27° in the north of England, and to 29° as far south as London. Over the northern half of the kingdom, another ground frost occurred between the 10th and 12th, when the exposed thermometer fell to 23° at Crathes and Llangammarch Wells, and to 25° at Birmingham (Edgbaston). In the latter part of the month the sky was too cloudy to permit of much terrestrial radiation, so that while the night temperatures were often low, nothing more than a suspicion of frost was reported in any district.

Owing more to the absence of summer warmth than to the prevalence of great cold, the mean temperature of the month was below the average over the whole kingdom. In this respect, however, and also as regards sunshine and rainfall, the weather in Ireland and Scotland was less unfavourable than in England; the general conditions showing a complete reversal of those which obtained in the preceding month. In May, the duration of bright sunshine over the south of England was, it will be remembered, the highest on record for the month, and in some localities, including London, it was the highest on record for any time in the year. Last month the duration in the same district was the smallest on record for June, and in some places it was the smallest on record for any summer month. In an average June, the mean daily duration of bright sunshine at Westminster amounts to rather more than $5\frac{1}{2}$ hours; last month it was only a trifle over 3 hours, and was considerably less than one-third of the daily allowance in May. In the western and northern parts of the United Kingdom the sunshine record for last month was not much below the average, and at some places in the South of Ireland and in South Wales it was slightly in excess of the normal.

THE RAINFALL OF JUNE, 1909.

OUR Tables of rainfall this month show that June proved exceptionally dry in Scotland and Ireland, especially on the west coast, in striking contrast to the extreme, though by no means unprecedented, wetness of the south of England. There was no part of Ireland with so much as four inches of rain, and only a small part of the south of Scotland had as much. The north of England also had a comparatively slight excess where there was an excess at all, but the whole of England south-east of a line joining the Bristol Channel and the Wash had a large excess of rainfall. On the map for the month more than four inches are seen to have fallen in most parts of the country between Hampshire on the south and Warwickshire and Cambridgeshire on the north, and between Cornwall on the west and Suffolk on the east. The greater part of Hampshire received more than five inches, and patches of an equally heavy fall occurred in Oxfordshire, Buckinghamshire, Cambridgeshire and Suffolk, while at two points the total June fall reached or surpassed six inches. The general distribution recalled that of the very severe June of 1903; but that was due to eight very wet days; this to a wet and cloudy month.

The districts in which the rainfall was greatest appear on our monthly map of the Thames Valley and surrounding country, the greater part of which received more than four inches of rain, and several patches of considerable size had more than five inches; the largest of these extended from Winchester to Basingstoke, and others were near Aldermaston in Berkshire, round Chesham, near Woodstock and Burford, north-east of Cambridge, and in the extreme north-east of the map where more than six inches fell at Cockfield.

The rainfall of England and Wales was, as a whole, 141 per cent. of the average; that of Scotland on the other hand was only 69 per cent. of the average, the month having been a dry one, and the rainfall of Ireland came out as 83 per cent. of the average, while the British Isles as a whole had 110 per cent., the actual volume of rain which fell on our Islands being very little above the average.

At Camden Square the rainfall was 3·79 in., but here June has been wetter on eight occasions, the fall for the month having been as much as 6·43 in. in 1903 and 6·71 in. in 1878. Taking into account temperature as well as rainfall the only June, since the record began in 1858, which can compete in unseasonable dreariness with that of 1909 was that of 1860, which though not quite so cold abounded more in rain.



THE TEMPERATURE OF LONDON IN JUNE, 1909.

THE long record of rainfall and temperature in Camden Square was commenced by the late Mr. Symons in 1858, and during the half century which has since elapsed every variety of weather has been recorded in almost every degree so that it is rare, and yearly becoming rarer, to find a day, a month or a year more extreme in any particular than some one which has gone before. We therefore consider it worth while to put on record the fact that June, 1909, was in some respects the coldest June of the period over which our observations extend. (We beg any journalists who may do us the honour of quoting this statement to quote also the limitation that we speak of London only, and not of the whole country. It is most probable that this petition will be disregarded; our experience is full of instances of the detestation of the paragraphist for saving clauses. The latest was so much in point that we enlarge our parenthesis to include it. We were quoted as having said that June was a wet month with a large number of rain days, and on this text a journalist made the gloss that it was poor comfort indeed for the unfortunate people who had chosen June as the month for their holiday. As a matter of fact the contrary was the case. Outside London there were wide stretches of country where the sun shone and showers were few, and from a properly chosen holiday haunt the number of wet days in London could only appear as an added charm.)

Temperature may be compared in various ways of which we will refer to three:—(1) the maximum temperature in the shade, (2) the minimum temperature in the shade, and (3) the mean temperature.

In June, 1909, at Camden Square the mean of all the daily maximum temperatures was 63°·9, or 7°·4 less than the average for 40 years, which is 71°·3. This was the lowest in the record, showing a great want of afternoon warmth; the lowest previously recorded was 64°·7 in June, 1860. The highest temperature reached by the air at any time in June, 1909, was 75·1 on the 17th; but on three occasions, denoted in heavy type in the table, there had been Junes which failed to show so much, the worst being June, 1860, with 71°·9. The lowest maximum temperature for the month was 55°·1; but

there were nine earlier occasions when one afternoon failed to surpass that figure. It must be remembered that a single high or low temperature has only a small effect in altering the average of the thirty which go to the month; but a low mean can only result from a preponderance of low values.

The mean minimum temperature in the shade for June, 1909, was $48^{\circ}5$, and it was lower on only two occasions, in 1871 by one fifth of a degree, and in 1869 by $1^{\circ}6$. The highest shade minimum for the month was $57^{\circ}4$; but in ten earlier years the highest had not gone above this, and the lowest shade minimum in the month was $39^{\circ}0$, lower values having been recorded on six occasions. The coldness of the month was thus due rather to cool days than to cold nights, and taking account of all conditions of temperature—highest, lowest, 9 a.m. and 9 p.m.—the mean temperature of June, 1909, comes out at $55^{\circ}6$, an unprecedentedly low figure, $4^{\circ}8$ below the average mean temperature of the month, which is $60^{\circ}4$, and nearly a degree lower than that of the coldest previous June; 1860, when it was $56^{\circ}4$.

The Table prepared to accompany this article gives the data for every year in which any one of the temperature conditions was as low as in 1909, or lower. The coldness of June was no doubt due to the small amount of sunshine. We have not a sufficiently long sunshine record to afford a good comparison though other London records show that it was the least sunny June since they were established.

Temperature Records at Camden Square in the Month of June.

Year.	SHADE MAX. TEMP.				SHADE MIN. TEMP.				MEAN TEMP.		Year.
	Mean.	Diff. from Aver.	Highest	Lowest.	Mean.	Diff. from Aver.	Highest	Lowest.	Mean.	Diff. from Aver.	
1860	64.7	-6.6	71.9	55.3	49.6	-1.3	57.9	43.4	56.4	-4.0	1860
1861	71.2	-0.1	83.6	58.0	50.9	0.0	56.4	42.0	60.6	+0.2	1861
1864	70.5	-0.8	78.2	56.3	50.2	-0.7	57.4	42.7	59.4	-1.0	1864
1869	68.6	-2.7	89.3	54.9	46.9	-4.0	56.2	35.6	57.4	-3.0	1869
1871	66.8	-4.5	76.0	57.2	48.3	-2.6	57.4	39.0	56.5	-3.9	1871
1875	72.3	+1.0	85.1	62.1	50.9	0.0	56.5	43.3	60.7	+0.3	1875
1879	67.1	-4.2	74.0	57.0	50.6	-0.3	57.3	40.6	58.1	-2.3	1879
1880	69.1	-2.2	79.8	59.6	50.1	-0.8	57.0	38.3	58.6	-1.8	1880
1881	70.6	-0.7	82.7	55.6	50.4	-0.5	58.2	37.4	60.1	-0.3	1881
1882	66.8	-4.5	74.3	58.6	49.4	-1.5	56.6	41.5	57.8	-2.6	1882
1886	69.6	-1.7	80.2	54.7	49.2	-1.7	55.0	40.2	58.5	-1.9	1886
1888	68.1	-3.2	84.7	54.7	50.8	-0.1	61.3	43.9	58.6	-1.8	1888
1889	72.7	+1.4	84.5	53.5	53.4	+2.5	61.6	46.9	62.1	+1.7	1889
1892	69.6	-1.7	82.7	54.3	49.6	-1.3	59.3	38.6	58.9	-1.5	1892
1893	74.9	+3.6	90.4	64.8	51.4	+0.5	59.2	38.3	62.2	+1.8	1893
1897	71.7	+0.4	87.8	55.1	53.0	+2.1	62.3	43.3	61.9	+1.5	1897
1900	72.2	+0.9	90.1	54.4	52.3	+1.4	60.3	45.8	61.4	+1.0	1900
1903	67.5	-3.8	85.9	50.8	48.6	-2.3	61.3	39.7	57.6	-2.8	1903
1904	70.1	-1.2	76.7	61.1	49.4	-1.5	54.4	43.1	59.2	-1.2	1904
1905	71.3	0.0	81.9	52.5	53.0	+2.1	59.7	46.2	61.4	+1.0	1905
1907	67.0	-4.3	78.0	58.0	50.4	-0.5	56.1	43.9	58.0	-2.4	1907
1909	63.9	-7.4	75.1	55.1	48.5	-2.4	57.4	39.0	55.6	-4.8	1909

Correspondence.

To the Editor of Symons's Meteorological Magazine.

JUNE, 1909.

THIS must have been one of the coldest Junes on record. I have registered as follows :—

Maximum.	Minimum.	Mean.	Grass.
59°·2	44°·9	52°·1	40°·5

The next lowest in 30 years are :—

Maximum.	Minimum.	Mean.	Grass.
59°·7 (1907)	45°·0 (1903)	53°·2 (1907)	41°·2 (1903)

The mean temperature is thus 1°·1 below any other June since and including 1879.

CHARLES LEWIS BROOK.

Harewood Lodge, Meltham, July 7th, 1909.

CLOUD OBSERVATIONS, JUNE, 1909.

THE presence of mammato-cumulus cloud being of infrequent occurrence, it is, perhaps, somewhat remarkable to have to chronicle its appearance upon three days during the month of June, the 1st, 13th, and 26th. The formation on the 13th was of such an unstable and fleeting character that it must be dismissed without further remark. On the 1st, the weather becoming showery towards 4 p.m., cumulo-nimbus spread over from S.W. (the surface wind being N.), and at 4.30 p.m. at the zenith, a well-developed form of mammato-cumulus cloud was apparent; the cloud moved from a S.W. point, and was visible nearly ten minutes, when a very rapid coalescence of the balls of cloud took place. A thunderstorm and heavy rain followed five hours afterwards. On the 26th, towards 3.30 p.m., cumulo-nimbus (thunder clouds) gathered in N.W. and W., and moved slowly across the sky from N.W. (the surface wind being S.W.). At 4 p.m. mammato-cumulus again formed, near the zenith, the well-developed shape of the cloud balls closely approximating to figure 26 of the "International Cloud Atlas." The cloud moved very sluggishly from N.W., and remained visible nearly 20 minutes. A rainfall of seventeen hours duration followed. The formation of this cloud appears to be an indication of very disturbed conditions, and a precursor of heavy rain.

On June 27th an observation was obtained of the apparent absorption of cirro-cumulus by cumulus. Massive cumulus formed about half-an-hour after sunset; at the time there were small drifts of cirro-cumulus over the sky. The passage of the cumulus across the cirro-cumulus was followed by a complete disappearance of the latter cloud.

SPENCER C. RUSSELL.

Epsom, July 3rd, 1909.

SOME RELATIONS OF JUNE.

It is useful, I think, to compare the rainfall of June (at Greenwich) with the character of the summer season as a whole.

If June has more than 3 inches, it seems rare for the days with 80° or more, or with 70° or more, to be in excess. Such Junes occurred in 1848, 1852, 1860, 1863, 1866, 1878, 1879, 1888, 1902, 1903, 1905 (eleven cases). Only in 1852 had the season an excess of days with 80° or more (21 = + 6; and only in 1848 an excess of days with 70° or more (79 = + 2).

Similarly, with such Junes, the rainfall of summer as a whole (3 months) is usually over average (6·75 in.) In one case only, 1863, was it under (slightly, 6·61 in.) On the other hand, when June has less than 1·50 in. the summer rainfall is pretty sure to be under average (21 cases to 3).

“A wet June makes a dry September.” In a little book on “Observing and Forecasting the Weather,” I find Mr. Horner refers to this saying as “almost invariably true.” I don't think, however, it holds for Greenwich. Thus, in the 68 years, 1841–1908, there were 30 Junes wet (rainfall over average); September was wet in 14 cases, dry in 16—too small a difference. Curiously, however, on further analysis the “saw” would appear to be justified by the experience since 1883, for 12 wet Junes (since then) have been followed by a dry September, and only one by a wet. But from 1841 to 1883 it is distinctly the other way, only 4 wet Junes followed by a dry September, 13 by a wet. Thus the “saw” does not seem to help us much, unless a relation which has prevailed for the last 26 years is likely to continue. As for dry Junes, these were followed about twice as often by a dry September as by a wet (26 to 12).

ALEX. B. MACDOWALL.

MAY SUNSHINE RECORDS.

I HAVE been informed that in *Symons's Meteorological Magazine* for this month there is a paragraph about the remarkable record of bright sunshine at Falmouth during the 22 days, April 30th to May 21st, both inclusive, the number of hours being 262·1.

Upon looking up the record taken by one of Messrs. Negretti and Zambra's Campbell-Stokes' sunshine recorders belonging to this Council, I find that the total recorded is 286·6 hours, and enclose you a copy of the daily record herewith, thinking that you may be interested therein :—

30th April.....	12·6 hrs.	12th May	13·0 hrs.
1st May.....	12·8 „	13th „	13·2 „
2nd „	14·0 „	14th „	10·0 „
3rd „	13·2 „	15th „	14·0 „
4th „ ..	13·6 „	16th „	6·8 „
5th „	14·2 „	17th „	13·2 „
6th „	14·0 „	18th „	14·0 „
7th „	13·6 „	19th „	14·8 „
8th „	14·0 „	20th „	14·6 „
9th „	14·2 „	21st „	11·6 „
10th „	11·2 „		
11th „	14·0 „	Total ...	286·6 „

*Urban District Council, Town Hall,
Ilfracombe, 26th June, 1909.*

OSWALD M. PROUSE.

NORTH DEVON was favoured with brilliant weather during the twenty-two days, April 30th to May 21st, as the following records show :—

Ilfracombe, 286·6 hours, daily average 13 hours ; on 16 days the duration was over 13 hours, the longest being 14·8 on the 19th.

Woolacombe, 270·5 hours, daily average 12·2 hours ; on 10 days the average was 13 hours or over, the longest duration 14·5 on the 19th.

THOS. WAINWRIGHT.

Barnstaple, 26th June, 1909.

[No records of *June* sunshine have been sent in to us from watering places or health resorts ; the contrast with May could not fail to be extremely interesting.—Ed., *S.M.M.*]

JUNE FROST.

ONE degree of frost was registered here during early a.m. of 8th inst. ; the following being readings of Kew verified thermometers :—

Screen min., 38°·7 Grass min., 31°·0.

This is the first June frost experienced at this station since observations commenced—six years ago.

W. J. CARTER.

Montem Road, New Malden, June 9th, 1909.

A SHELTERED RAIN GAUGE

FEARING that a yew hedge to the west of my rain gauge, though at a greater distance than its height, might prevent some rain falling into the gauge, I placed on the 1st January a new gauge at a distance of 108 feet in a south-easterly direction on a lawn in a perfectly open position. I have continued to take readings from the old gauge, and am interested to find that every month the partially screened gauge has given a larger total than the new gauge on the open ground, the difference for the six months being half an inch. The figures are :—

	New Gauge.		Old Gauge.
January.....	2·00 in.	.....	2·13 in.
February	2·20 „	.....	2·23 „
March.....	2·67 „	.....	2·79 „
April	3·49 „	.....	3·61 „
May.....	1·98 „	.....	2·01 „
June	2·27 „	.....	2·33 „
	<hr/>		<hr/>
Total	14·61 „	.....	15·10 „

Hampson-in-Ellel, Lancaster.

W. G. WELCH.

DINNER OF THE ROYAL METEOROLOGICAL SOCIETY.

THE Third Annual Dinner of the Royal Meteorological Society was held at the Trocadero Restaurant, Piccadilly Circus, on Tuesday evening, June 15th, the attendance of Fellows being supplemented by guests invited by the President and the Council. The seating of the company in small groups at separate tables gave a pleasing effect and also tended to promote conversation. The speakers were at a long table, so as to be seen and heard easily by all the others in the room.

The President, Mr. H. Mellish, occupied the chair, and the company included the following (the names of the guests being printed in small capitals :—Mr. F. Campbell Bayard, Mr. R. Bentley, Mr. F. J. Brodie, Capt. F. G. P. Butler, Capt. W. F. Caborne, C.B., Mr. C. J. P. Cave, SIR WILLIAM CHURCH, Bart., President of the Royal Society of Medicine, Mr. J. E. Clark, Capt. M. H. Clarke, Mr. R. Cooke, Mr. R. Cross, Major H. A. Cummins, MR. T. S. DYMOND, Mr. F. B. Edmonds, Mr. H. N. Farrington, Mr. L. R. W. Forrest, SIR DAVID GILL, K.C.B., F.R.S., Mr. E. Gold, Dr. Gordon, REV. DR. J. Gow, Headmaster of Westminster School, Mr. W. Vaux Graham, Mr. N. Holden, Mr. R. Inwards, Mr. A. P. Jenkin, Mr. B. Lailey, Mr. Baldwin Latham, Mr. G. B. Latham, Mr. R. G. K. Lempfert, Capt. W. G. Lingham, Dr. W. J. S. Lockyer, MR. A. MALLOCK, F.R.S., Mr. S. S. Markham, Mr. W. E. Markham, Mr. W. Marriott, Mr. W. J. Marriott, Dr. H. R. Mill,

Mr. H. W. Monckton, Mr. R. Mond, Mr. P. P. Pennant, Col. H. E. Rawson, C.B., Mr. C. Salter, Dr. R. H. Scott, F.R.S., Mr. W. Sedgwick, Dr. W. N. Shaw, F.R.S., Mr. C. H. Thompson, Dr. J. H. T. TUDSBERY, Mr. S. G. Warner and Dr. C. Theodore Williams.

The musical arrangements were under the direction of Mr. H. Schartau.

After the usual loyal toasts had been proposed by the President, Dr. H. R. Mill proposed "Kindred Institutions" and associated with it the names of Sir David Gill, President of the Royal Astronomical Society, and Sir William Church, President of the Royal Society of Medicine.

Sir David Gill, referring to his stay at the Cape Observatory, said that in the Colonies it seems to be thought by the public that the duties of an astronomer are to make meteorological predictions. He, however, used to explain that his kingdom began at the moon and extended outwards; or else, that he never prophesied unless he knew, and he did not know. He also stated that in meteorology there is the peculiarity that while meteorological observations are of themselves perhaps in their simpler forms the easiest to make, we have yet to find the meteorological Newton able to cope with the highest flights of meteorology; and when found he would have to tackle a problem so enormously complicated that the work of Newton and Adams would be child's play compared with it.

Sir William Church, in acknowledging the toast, said that meteorology necessarily is of interest to most of those who practice medicine as climate plays its part in the treatment of disease.

The Rev. Dr. J. Gow, Headmaster of Westminster School, proposed the toast of "The Royal Meteorological Society."

The President in responding expressed regret at the absence of Professor Willis Moore whose ship was delayed on the Atlantic, and of several others who had hoped to be present, and then referred to some branches of the work which the Society is carrying on, especially with regard to education and research.

Mr. Richard Bentley proposed the toast of "The Visitors," to which Dr. J. H. T. Tudsbery, Secretary of the Institution of Civil Engineers, responded.

Dr. W. N. Shaw then proposed the toast of "The Chairman," and the President briefly replied.

ROYAL METEOROLOGICAL SOCIETY.

THE last meeting for the present session was held in the Society's rooms, 70, Victoria Street, Westminster, on Wednesday afternoon, June 16th, Mr. H. Mellish, President, in the chair.

A paper by Mr. R. C. Mossman on the "Interdiurnal Variability

of Temperature in Antarctic and sub-Antarctic regions," was read by the Secretary. The author discussed the day to day difference in the mean temperature of successive days at a few places in the Antarctic regions, for which the necessary detailed daily observations are available. The greatest mean annual temperature variability, viz. $5^{\circ}9$, was recorded during the drift of the *Belgica* in the ice pack, this high value being closely followed by a mean of $5^{\circ}3$ at the South Orkneys. In the Victoria Land region, Ross Island and Cape Adare have a somewhat lower temperature variability of $4^{\circ}5$, the values of the southern station being higher in summer and autumn, and lower in winter and spring than at the northern station. South Georgia occupies an intermediate position between a continental and an oceanic climate in its curve of variability, the mean monthly values varying according to the proximity of the pack ice. At this station the seasonal values show a small variation, and this is also the case at Ushuaia in Tierra del Fuego. The variability at the Falkland Islands and New Year's Island is very small, pointing to the conserving influence exerted by the insular conditions which prevail at these places. The maximum variability occurs in winter, and the minimum in summer, at the three Antarctic stations as well as at South Georgia and the South Orkneys. The smallest variability at any season for any station occurs at the South Orkneys in summer, being only $1^{\circ}4$. It is at this season that cloud amount and fog frequency are at a maximum, while at the same time rapidly moving cyclonic disturbances are of infrequent occurrence.

Mr. W. W. Bryant, Colonel H. E. Rawson, Dr. W. N. Shaw, Mr. W. B. Tripp, Mr. W. Marriott, and the President took part in the discussion.

Mr. Ernest Gold described some experiments which he and Dr. W. Schmidt, of Vienna, had made with a view of ascertaining if appreciable errors could enter into the temperatures recorded in balloon ascents, owing to errors in the alcohol-carbonic acid method of testing the apparatus.

Mr. F. Campbell Bayard, Mr. W. W. Bryant, Mr. C. J. P. Cave, Dr. W. N. Shaw, and the President took part in the discussion, and Mr. Gold replied.

A paper by Mr. L. C. W. Bonacina, advocating the use of freely exposed thermometers in addition to sheltered ones, was read by the Secretary. Mr. W. D. Horner, Mr. F. J. Brodie, Dr. H. R. Mill, Mr. C. J. P. Cave, Mr. W. Marriott, Mr. W. W. Bryant, Mr. R. Inwards, and the President took part in the discussion.

The following gentlemen were elected Fellows of the Society:—
Mr. Edward C. Burton, Mr. Cecil Broadbent, and Mr. Bankim C. Sen.

REVIEWS.

The Force of the Wind, by HERBERT CHATLEY, B.Sc. Illustrated. London, Charles Griffin & Co., Ltd., 1909. Size $7\frac{1}{2} \times 5$. Pp. viii + 84. Price 3s. net.

THE author classifies the practical problems in which wind-force plays a part into (1) Wind Load on structures, (2) Resistance to Moving Bodies, (3) Power Production; the second including problems of resistance to trains and flying machines. The theory of stream lines is introduced to explain the action of wind on obstacles, and a series of interesting diagrams is given showing the action of wind in producing eddies on coming in contact with an obstruction. This is the part of the subject which is of interest in the disturbance of rainfall measurements by high wind. The treatment of wind-force could not well be more terse or pointed than the author has succeeded in making it.

Chambers's Wonder Books. The Atmosphere. By EDWIN J. HOUSTON, Ph.D. New York, Frederick A. Stokes Company. London and Edinburgh, W. & R. Chambers, Ltd. 1908. Size $7\frac{1}{2} \times 5\frac{1}{2}$. Pp. [viii.] + 326.

A POPULAR book touching lightly on many interesting phenomena of the atmosphere, but apparently written at different times. The references to weather and weather predictions apply mainly to the United States. It would be a good exercise for a student to determine the dates of the various chapters by considering the internal evidence. As an introduction to the study of the air the book should be useful, as the style is likely to attract readers, and the subject matter to interest them.

Observing and Forecasting the Weather. Meteorology without Instruments. By D. W. HORNER, F.R.Met.Soc. Second edition. London, Witherby & Co. Price 6d. net. Size $7\frac{1}{2} \times 5$. Pp. 48. Plates.

THIS pamphlet has been revised and enlarged, and in its new form with illustrations is much improved. The statement on p. 11 that when stratus cloud is *high* it produces intense gloom seems to us erroneous, though it is true that, as stated, when in contact with the ground it forms fog. Extensive low stratus within a very small distance of the ground is, no doubt, meant as the cloud which produces intense gloom.



METEOROLOGICAL NEWS AND NOTES.

BRITISH RAINFALL 1908, is now in an advanced stage of preparation, and several sheets have already been printed off. It is still possible, however, to find room in the General Table for late returns if they are sent in within a week of the publication of this number. Any reader who knows of rainfall records which have not yet appeared in *British Rainfall* would help in making the new volume more complete by writing on the subject to the Editor, at 62, Camden Square, London, N.W.

WIRELESS WEATHER MESSAGES are now being received daily at the Meteorological Office, giving the height of the barometer as observed on Atlantic steamers, and although the hour of the observations varies, and the time of arrival does not always enable the figures to be utilized, there have been occasions recently in which the drawing of the isobars over the Atlantic on the charts in the *Daily Weather Report* has been facilitated by figures received in time.

THE DREARY JUNE and its continuation through the early part of July will lead many readers to sympathize with the member of the Athenæum Club, who sends to *The Times* of July 12th, as an apt quotation, the dismal lines of Tennyson—

“ Midnight—and joyless June gone by,
And from the deluged park
The cuckoo of a worse July
Is calling through the dark.”

PRAYERS FOR RAIN AND FINE WEATHER form the subject of a letter in a country newspaper of July 9th, 1909, which we quote below.

Sir,—Some time since a letter appeared in your columns from the Bishop requesting the clergy to intercede for rain, and (if in direct answer or not, I know not) we seem to be getting a little. In view of the present great necessity for reverse conditions, would it not be well if we prayed for fair weather?

Perhaps a request from our worthy Bishop would lead to such petitions on the coming Sunday?—Yours truly,
H. D. R.

ERRATUM.—To explain a joke is a dreary business, and to have to explain that a statement was not a joke but a blunder is not much more agreeable. On p. 93 of our last issue “Snow on April 31st” was reported and escaped the eyes of the Editor and Printer, and of all their assistants, until a correspondent wrote for enlightenment, “as it was beyond his brain-power to see the joke.” For 31st read 30th.

RAINFALL TABLE FOR JUNE, 1909.

STATION.	COUNTY.	Lat. N.	Long. W. [*E.]	Height above Sea. ft.	RAINFALL OF MONTH.	
					Aver. 1870-99. in.	1909. in.
Camden Square.....	London.....	51 32	0 8	111	2'09	3'79
Tenterden.....	Kent.....	51 4	*0 41	190	1'96	2'68
West Dean.....	Hampshire.....	51 3	1 38	137	2'02	3'30
Hartley Wintney.....	".....	51 18	0 53	222	1'89	4'58
Hitchin.....	Hertfordshire.....	51 57	0 17	238	1'89	4'95
Winslow (Addington).....	Buckinghamshr.....	51 58	0 53	309	1'99	3'68
Bury St. Edmunds (Westley).....	Suffolk.....	52 15	*0 40	226	2'04	3'50
Brundall.....	Norfolk.....	52 37	*1 26	66	1'89	2'75
Winterbourne Steepleton.....	Dorset.....	50 42	2 31	316	2'32	3'82
Torquay (Cary Green).....	Devon.....	50 28	3 32	12	2'13	4'34
Polapit Tamar [Launceston].....	".....	50 40	4 22	315	2'12	2'65
Bath.....	Somerset.....	51 23	2 21	67	2'31	2'68
Stroud (Upfield).....	Gloucestershire.....	51 44	2 13	226	2'23	2'97
Church Stretton (Wolstaston).....	Shropshire.....	52 35	2 48	800	2'46	4'18
Coventry (Kingswood).....	Warwickshire.....	52 24	1 30	340	2'41	3'17
Boston.....	Lincolnshire.....	52 58	0 1	25	1'94	3'38
Worksop (Hodsoek Priory).....	Nottinghamshire.....	53 22	1 5	56	2'24	3'08
Derby (Midland Railway).....	Derbyshire.....	52 55	1 28	156	2'70	2'26
Bolton (Queen's Park).....	Lancashire.....	53 35	2 28	390	3'21	2'96
Wetherby (Ribston Hall).....	Yorkshire, W. R.....	53 59	1 24	130	2'38	3'36
Arncliffe Vicarage.....	".....	54 8	2 6	732	3'69	3'95
Hull (Pearson Park).....	"..... E. R.....	53 45	0 20	6	2'12	3'16
Newcastle (Town Moor).....	Northumberland.....	54 59	1 38	201	2'03	2'18
Borrowdale (Seathwaite).....	Cumberland.....	54 30	3 10	423	6'97	4'74
Cardiff (Ely).....	Glamorgan.....	51 29	3 13	53	2'53	2'18
Haverfordwest (High Street).....	Pembroke.....	51 48	4 58	95	2'61	1'93
Aberystwyth (Gogerddan).....	Cardigan.....	52 26	4 1	83	2'93	2'94
Llandudno.....	Carnarvon.....	53 20	3 50	72	2'00	1'95
Cargen [Dumtries].....	Kirkcudbright.....	55 2	3 37	80	2'68	3'04
Hawick (Branxholm).....	Roxburgh.....	55 24	2 51	457	2'21	2'00
Edinburgh (Royal Observatory).....	Midlothian.....	55 55	3 11	442	...	1'91
Girvan (Pinmore).....	Ayr.....	55 10	4 49	207	2'95	3'30
Glasgow (Queen's Park).....	Renfrew.....	55 53	4 18	144	2'70	2'98
Inveraray (Newtown).....	Argyll.....	56 14	5 4	17	3'64	2'06
Mull (Quinish).....	".....	56 36	6 13	35	3'55	1'19
Dundee (Eastern Necropolis).....	Forfar.....	56 28	2 57	199	2'15	'83
Braemar.....	Aberdeen.....	57 0	3 24	1114	2'44	1'38
Aberdeen (Cranford).....	".....	57 8	2 7	120	2'09	1'39
Cawdor.....	Naïrn.....	57 31	3 57	250	2'24	1'49
Fort Augustus (S. Benedict's).....	E. Inverness.....	57 9	4 41	68	2'28	'75
Loch Torridon (Bendamph).....	W. Ross.....	57 32	5 32	20	4'78	1'45
Dunrobin Castle.....	Sutherland.....	57 59	3 56	14	2'14	1'93
Castletown.....	Caithness.....	58 35	3 23	100	...	1'94
Killarney (District Asylum).....	Kerry.....	52 4	9 31	178	3'29	1'79
Waterford (Brook Lodge).....	Waterford.....	52 15	7 7	104	2'61	2'30
Broadford (Hurdlestown).....	Clare.....	52 48	8 38	167	2'52	3'22
Abbey Leix (Blandsfort).....	Queen's County.....	52 56	7 17	532	2'43	3'51
Dublin (Fitz William Square).....	Dublin.....	53 21	6 14	54	1'95	1'96
Mullingar (Belvedere).....	Westmeath.....	53 29	7 22	367	2'73	2'37
Ballinasloe.....	Galway.....	53 20	8 15	160	2'69	1'94
Crossmolina (Enniscooe).....	Mayo.....	54 4	9 18	74	2'95	1'94
Collooney (Markree Obsy.).....	Sligo.....	54 11	8 27	127	3'16	1'85
Seaford.....	Down.....	54 19	5 50	180	2'72	2'76
Londonderry (Creggan Res.).....	Londonderry.....	54 59	7 19	320	2'92	1'49
Omagh (Edenfel).....	Tyrone.....	54 36	7 18	280	2'88	1'21

RAINFALL TABLE FOR JUNE, 1909—*continued.*

RAINFALL OF MONTH (con.)					RAINFALL FROM JAN. 1.				Mean Annual 1870-1899.	STATION.
Diff. from Av. in.	o/o of Av.	Max. in 24 hours.		No. of Days	Aver. 1870-99. in.	1909. in.	Diff. from Aver. in.	o/o of Av.		
		in.	Date.							
+1.70	181	.53	26	17	10.63	11.54	+ .91	109	25.16	Camden Square
+ .72	137	.85	3	16	11.55	11.38	- .17	99	28.36	Tenterden
+1.28	163	.74	1	21	12.61	11.83	- .78	94	29.93	West Dean
+2.69	242	1.33	1	18	11.59	12.94	+1.35	112	27.10	Hartley Wintney
+3.06	262	1.38	1	16	10.26	12.74	+2.48	124	24.66	Hitchin
+1.69	185	.73	23	18	11.28	10.74	- .54	95	26.75	Addington
+1.46	172	.73	26	15	10.32	10.20	- .12	99	25.39	Westley
+ .86	145	.60	1	17	10.12	9.36	- .76	92	25.40	Brundall
+1.50	165	.63	6	21	16.36	14.65	-1.71	90	39.00	Winterbourne Stpltn
+2.21	204	1.22	3	15	15.05	14.65	- .40	97	35.00	Torquay
+ .53	125	1.08	3	14	15.45	15.54	+ .09	101	38.85	Polapit Tamar
+ .37	116	.44	22	16	13.03	11.43	-1.60	88	30.75	Bath
+ .74	133	.40	21	17	12.83	11.77	-1.06	92	29.85	Stroud
+1.72	170	.81	5	16	14.31	13.63	- .68	95	33.04	Wolstaston
+ .76	131	.60	1	14	12.56	11.30	-1.26	90	29.21	Coventry
+1.44	174	1.20	24	16	9.76	10.36	+ .60	106	23.30	Boston
+ .84	137	.69	25	17	10.81	10.90	+ .09	101	24.70	Hodsock Priory
- .44	84	.70	24	14	11.48	10.58	- .90	92	26.18	Derby
- .25	92	.46	23	16	16.75	18.24	+1.49	109	42.43	Bolton
+ .98	141	1.32	24	14	11.63	13.49	+1.86	116	26.96	Ribston Hall
+ .26	107	1.06	23	14	26.47	26.93	+ .46	102	60.96	Arnccliffe Vic.
+1.04	149	.85	24	16	11.24	11.52	+ .28	102	27.02	Hull
+ .15	107	.62	26	14	11.35	14.65	+3.30	129	27.99	Newcastle
-2.23	68	.95	22	14	57.36	49.17	-8.19	86	132.68	Seathwaite
- .35	86	.55	21	18	17.19	13.71	-3.48	80	42.81	Cardiff
- .68	74	.57	21	8	19.67	16.14	-3.53	82	47.88	Haverfordwest
+ .01	100	.70	23	12	17.59	15.53	-2.06	88	45.41	Gogerddan
- .05	98	.40	4	16	12.18	11.23	- .95	92	30.98	Llandudno
+ .36	113	1.70	22	8	18.75	22.69	+3.94	121	43.43	Cargen
- .21	91	.81	22	14	14.66	16.29	+1.63	111	34.80	Branxholm
...	...	.53	22	14	...	13.68	...	...	...	Edinburgh
+ .35	112	1.30	23	14	20.52	20.23	- .29	99	48.87	Girvan
+ .28	110	1.15	22	13	14.94	18.06	+3.12	121	35.80	Glasgow
-1.58	57	.91	21	12	26.57	27.09	+ .52	102	57.90	Inveraray
-2.36	34	.44	21	11	23.84	20.58	-3.26	86	57.53	Quinish
-1.32	39	.32	21	9	12.09	13.69	+1.60	113	28.95	Dundee
-1.06	57	...	...	...	14.94	14.30	- .64	96	36.07	Braemar
- .70	66	.62	21	14	13.69	15.30	+1.61	112	33.01	Aberdeen
- .75	66	.42	22	11	11.92	12.84	+ .92	108	29.37	Cawdor
-1.53	33	.17	27	8	19.30	14.59	-4.71	76	43.71	Fort Augustus
-3.33	30	.49	17	9	36.04	32.49	-3.55	90	86.50	Bendamp
- .21	90	.78	21	10	13.45	15.72	+2.27	117	31.60	Dunrobin Castle
...	...	.83	22	18	...	13.71	...	...	...	Castletown
-1.50	54	.60	22	14	25.99	21.46	-4.53	83	58.11	Killarney
- .31	88	.59	5	11	17.19	16.55	- .64	96	39.30	Waterford
+ .70	128	1.38	24	13	14.12	18.64	+4.52	132	33.47	Hurdlestown
+1.08	144	1.14	23	13	15.20	17.11	+1.91	113	35.19	Abbey Leix
+ .01	101	.60	23	9	11.88	12.05	+ .17	101	27.75	Dublin
- .36	87	1.10	23	12	15.50	17.24	+1.74	111	36.48	Mullingar.
- .75	72	.55	21	16	15.92	15.39	- .53	97	37.04	Ballinasloe
-1.01	66	.94	21	15	21.74	21.21	- .53	98	50.50	Ennisceoe
-1.31	59	.90	21	13	17.51	17.40	- .11	99	41.83	Markree Obsy.
+ .04	101	.90	23	8	16.92	19.33	+2.41	114	38.61	Seaford
-1.43	51	.45	22	16	17.07	20.12	+3.05	118	41.20	Londonderry
-1.67	42	.30	23	11	15.86	17.68	+1.82	111	37.85	Omagh

SUPPLEMENTARY RAINFALL, JUNE, 1909.

Div.	STATION.	Rain inches	Div.	STATION.	Rain. inches
II.	Warlingham, Redvers Road	3·46	XI.	Rhayader, Tyrmynydd	2·88
"	Ramsgate	2·18	"	Lake Vyrnwy	3·83
"	Steyning	3·33	"	Llangyhanfal, Plás Draw	3·68
"	Hailsham	1·86	"	Llwydiarth Esgob	1·86
"	Totland Bay, Aston House	3·62	"	Snowdon, Cwm Dyli	3·09
"	Stockbridge, Ashley	4·53	"	Lligwy	1·52
"	Grayshott	3·28	"	Douglas, Woodville	1·76
"	Reading, Calcot Place	4·60	XII.	Stoneykirk, Ardwell House	4·15
III.	Harrow Weald, Hill House	3·63	"	Dalry, The Old Garroch ...	4·92
"	Oxford, Magdalen College	3·56	"	Langholm, Drove Road	2·46
"	Pitsford, Sedgebrook	2·87	"	Moniaive, Maxwellton House	3·65
"	Huntingdon, Brampton	4·26	XIII.	N. Esk Reservoir [Penicuik]	2·50
"	Woburn, Milton Bryant	3·93	XIV.	Maybole, Knockdon Farm	2·63
"	Wisbech, Monica Road	3·80	XV.	Campbeltown, Witchburn	2·72
IV.	Southend Water Works	3·36	"	Glenreadell Mains	2·76
"	Colchester, Lexden	4·30	"	Ballahulish House .....	...
"	Newport, The Vicarage	4·29	"	Islay, Fallabus	1·45
"	Rendlesham	3·23	XVI.	Dollar Academy	1·51
"	Swaffham	3·56	"	Loch Leven Sluice	2·03
"	Blakeney	2·42	"	Ballquhidder, Stronvar	2·45
V.	Bishops Cannings	3·35	"	Perth, The Museum	1·22
"	Ashburton, Druid House	3·85	"	Coupar Angus	·83
"	Honiton, Combe Raleigh	3·68	"	Blair Atholl	1·21
"	Okehampton, Oaklands	2·81	"	Montrose, Sunnyside Asylum	1·13
"	Hartland Abbey	1·45	XVII.	Alford, Lynturk Manse ...	1·49
"	Lynmouth, Rock House	1·53	"	Keith Station	2·47
"	Probus, Lamellyn	2·34	XVIII.	N. Uist, Lochmaddy	1·35
"	North Cadbury Rectory	3·39	"	Alvey Manse	1·07
VI.	Clifton, Pembroke Road	4·07	"	Loch Ness, Drumnadrochit	1·13
"	Ross, The Graig	2·11	"	Glencarron Lodge	1·46
"	Shifnal, Hatton Grange	3·10	"	Fearn, Lower Pitkerrie	1·93
"	Blockley, Upton Wold	5·28	XIX.	Invershin	1·70
"	Worcester, Boughton Park	3·88	"	Altnaharra	1·52
VII.	Market Overton	1·90	"	Bettyhill	2·12
"	Market Rasen	2·30	XX.	Dunmanway, The Rectory	1·18
"	Bawtry, Hesley Hall	2·22	"	Cork	2·27
"	Buxton	2·64	"	Mitchelstown Castle	1·45
VIII.	Neston, Hinderton Lodge	2·90	"	Darrynane Abbey	1·54
"	Southport, Hesketh Park	2·68	"	Glenam [Clonmel]	2·02
"	Chatburn, Middlewood	2·41	"	Ballingarry, Gurteen	1·92
"	Cartmel, Flookburgh	2·47	"	Miltown Malbay	2·65
IX.	Langsett Moor, Up. Midhope	4·72	XXI.	Gorey, Courtown House ...	2·70
"	Scarborough, Scalby	3·17	"	Moynalty, Westland	2·00
"	Ingleby Greenhow	4·35	"	Athlone, Twyford	1·41
"	Mickleton	2·74	XXII.	Woodlawn	1·90
X.	Bardon Mill, Beltingham	3·02	"	Westport, St. Helens	1·20
"	Ewesley, Font Reservoir	2·79	"	Mohill	1·88
"	Ilderton, Lilburn Cottage	2·22	XXIII.	Enniskillen, Portora	1·48
"	Keswick, The Bank	3·18	"	Dartrey [Cotehill]	1·75
XI.	Llanfrecfa Grange	3·14	"	Warrenpoint, Mauor House	2·20
"	Treherbert, Tyn-y-waun	5·27	"	Banbridge, Milltown	2·03
"	Carmarthen, The Friary	1·75	"	Belfast, Springfield	2·36
"	Castle Malgwyn [Llechryd]	1·91	"	Bushmills, Dundarave	1·75
"	Plynlimon	4·80	"	Sion House	1·27
"	Crickhowell, Ffordlas	3·70	"	Killybegs	1·31
"	New Radnor, Ednol	2·86	"	Horn Head	2·05

METEOROLOGICAL NOTES ON JUNE, 1909.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Temp. for Temperature; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow; F for number of days Frost in Screen; f on Grass.

LONDON, CAMDEN SQUARE.—With the exception of the third week which was fine and sunny, the weather throughout was of a cheerless nature. Cloudy skies and frequent R were associated with some remarkably low temp. records (see p. 108). Duration of sunshine, 91·9* hours, and of R, 56·1 hours. Mean temp. 55°·6, or 4°·8 below the average and the lowest in the 52 years record. Shade max. 75°·1 on 17th; min. 39°·0 on 11th. F 0, f 0.

TENTERDEN.—Duration of sunshine 136·0† hours, or much less than half that in May. Shade max. 74°·5 on 1st; min. 36°·0 on 11th. F 0, f 0.

TOTLAND BAY.—Duration of sunshine, 153·3* hours, was the least amount and the R the greatest amount ever recorded in June. Shade max. 67°·2 on 18th; min. 42°·1 on 8th. F 0, f 0.

PITSFORD.—R ·92 in. above the average. Mean temp. 53°·7. Shade max. 70°·4 on 20th; min. 39°·0 on 13th and 15th. F 0.

TORQUAY.—Duration of sunshine, 162·4* hours, or 66·3 hours below the average. Mean temp. 56°·0, or 2°·6 below the average. Shade max. 71°·3 on 30th; min. 44°·2 on 28th. F 0, f 0.

NORTH CADBURY.—The coldest June in 13 years with many hours of R but no great amount. Dangerous TS on 29th, from 3 to 4 p.m., when a farmhouse was damaged by L. Shade max. 74°·5 on 15th, min. 41°·0 on 8th. F 0, f 0.

ROSS.—Shade max. 71°·8 on 14th; min. 38°·6 on 6th. F 0, f 0.

HODSOCK PRIORY.—The wettest June since 1896 and the coldest since the record commenced in 1876. Shade max. 70°·6 on 17th; min. 32°·8 on 7th. F 0, f 5.

BOLTON.—Mean temp. 51°·4, or 3°·9 below the average. Shade max. 66°·5 on 14th; min. 38°·2 on 7th. F 0, f 1.

SOUTHPORT.—R ·52 in. above the average of 35 years. Duration of sunshine 180·7* hours, or 35·1 hours below the average. Duration of R 57·4 hours. Mean temp. 53°·2, or 3°·7 below the average, and the lowest in 38 years' record. Shade max. 67°·8 on 15th; min. 37°·2 on 7th. F 0, f 3.

HULL.—Shade max. 68°·0 on 18th; min. 38°·0 on 7th. F 0, f 1.

CARMARTHEN.—Cold, dull, and dry. Hay and corn crops growing but little; crops generally light.

HAVERFORDWEST.—Duration of sunshine 228·3* hours; no sunless days.

LLANDUDNO.—Shade max. 67°·0 on 18th; min. 42°·0 on 7th. F 0, f 0.

DOUGLAS.—Fine to 15th with much bright sunshine and strong polar winds. Generally wet and gloomy from 17th to 26th. Cold throughout, temp. being persistently below normal.

CARGEN.—Shade max. 71°·0 on 14th; min. 35°·0 on 6th.

EDINBURGH.—Shade max. 65°·8 on 17th; min. 38°·9 on 6th. F 0, f 1.

DUNDEE.—Shade max. 71°·2 on 19th; min. 38°·7 on 7th. F 0.

FORT AUGUSTUS.—Shade max. 66°·3 on 16th; min. 35°·0 on 6th. F 0.

WATERFORD.—Shade max. 72°·0 on 19th; min. 40°·0 on 22nd. F 0.

DUBLIN.—A cool month. Dry till 18th, after which a sunny spell lasted to 28th. Constant polar winds. Mean temp. 55°·2. Shade max. 67°·1 on 14th; min. 39°·0 on 7th. F 0, f 0.

MARKREE.—Shade max. 67°·0 on 29th; min. 33°·4 on 7th. F 0, f 5.

WARRENPOINT.—Shade max. 70°·0 on 14th, 18th, and 21st; min. 40°·0 on 1st and 2nd. F 0, f 0.

* Campbell-Stokes.

† Jordan.

Climatological Table for the British Empire, January, 1909.

STATIONS. (Those in <i>italics</i> are South of the Equator.)	Absolute.				Average.				Absolute.		Total Rain		Aver. Cloud.
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	
	Temp.	Date.	Temp.	Date.									
London, Camden Square	51°0	14	24°6	25	42°6	34°0	35°8	90	73°2	19°7	inches .71	13	7·1
Malta	62·1	7	42·0	21	56·4	43·6	45·8	79	131·6	...	4·34	22	5·5
Lagos	91·0	9	68·0	7, 8	86·8	73·8	72·8	75	148·0	65·0	4·75	5	8·0
Cape Town	90·7	1	53·5	8	78·8	61·6	59·0	68	...	...	.58	4	2·5
Durban, Natal	90·3	10	63·6	19	82·9	68·9	...	...	148·3	...	4·61	23	7·2
Johannesburg	82·9	4	47·9	19	71·5	56·5	57·5	87	155·8	46·5	18·42	23	7·8
Mauritius	87·1	8	65·3	7	84·7	71·8	69·6	77	163·4	60·5	5·00	22	6·2
Calcutta	87·1	25	51·0	30	81·7	58·5	55·5	62	138·1	44·0	.00	0	1·8
Bombay	83·3	2	61·3	12	80·2	66·5	62·9	71	127·4	54·4	.00	0	0·6
Madras	87·3	29	64·5	25	83·9	68·1	67·9	81	138·8	60·7	4·30	5	3·5
Kodaikanal	68·8	25	44·6	30	63·1	48·7	37·6	51	122·2	28·2	9·87	7	3·4
Colombo, Ceylon	89·4	14*	68·0	13	87·2	71·9	70·2	75	154·8	63·0	1·66	9	4·2
Hongkong	73·4	19	50·8	15	61·1	57·6	54·8	80	121·2	...	1·46	6	8·3
Melbourne	98·9	28	46·5	23	74·8	57·1	51·9	60	167·5	42·5	3·24	11	5·6
Adelaide	112·1	2	49·8	24	85·8	60·2	51·9	49	170·5	44·1	.74	6	4·0
Coolgardie ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...
Perth ... ..	...	...	...	...	...	...	...	...	...	...	...	...	...
Sydney	104·0	3	55·0	24	79·6	64·3	57·6	60	136·0	45·9	1·41	1	5·6
Wellington	74·0	29	44·0	1	65·5	53·8	51·1	74	125·0	35·0	3·06	13	8·0
Auckland	77·0	7, 24	50·0	16	70·1	58·2	53·8	42	142·0	44·0	1·88	13	5·2
Jamaica, Kingston	88·1	13	62·7	11	84·5	66·2	65·0	77	...	...	1·24	11	4·3
Trinidad	89·0	16	65·0	4, 18	85·7	67·6	71·5	86	158·0	55·0	5·69	17	...
Grenada	96·0	11	70·0	16	82·6	72·7	69·2	76	144·2	...	4·61	26	5·0
Toronto	57·0	24	-2·6	18	33·6	19·1	...	...	56·0	-13·0	2·66	18	7·0
Fredericton	52·8	6	-27·0	2	24·2	2·3	...	84	...	...	5·75	11	5·8
St. John's, N.B.	53·3	6	-9·6	17	30·8	12·2	...	...	...	...	2·80	16	5·5
Victoria, B.C.	50·8	19	7·4	7	36·5	28·5	...	85	...	...	3·25	19	8·0
Dawson	-12·0	1	-65·0	24	-37·7	-48·7	...	...	...	...	.30	7	7·2

* and 27.

MALTA.—Mean temp. of air 51°·9. Average sunshine 5·5 hours per day.

Johannesburg.—E twice that of any previous month since 1888, when observations commenced. Bright sunshine 147·4 hours.

Mauritius.—Mean temp. of air 1°·3, of dew point 0°·6, and R 2·95 in., below averages. Mean hourly velocity of wind 9·7 miles, or 1·4 below average.

KODAIKANAL.—Bright sunshine 251 hours. Hoar frost on 7 days.

COLOMBO.—Mean temp. of air 78°·4, or 0°·7 below, of dew point 0°·1 above, and R 1·82 in. below, average. Mean hourly velocity of wind 6·7 miles. TS on 19th.

HONGKONG.—Mean temp. of air 60°·6. Bright sunshine 85 hours, or 57 below average. Mean hourly velocity of wind 14·1 miles.

Melbourne.—Mean temp. of air 1°·6 below, and R 1·36 in. above, averages.

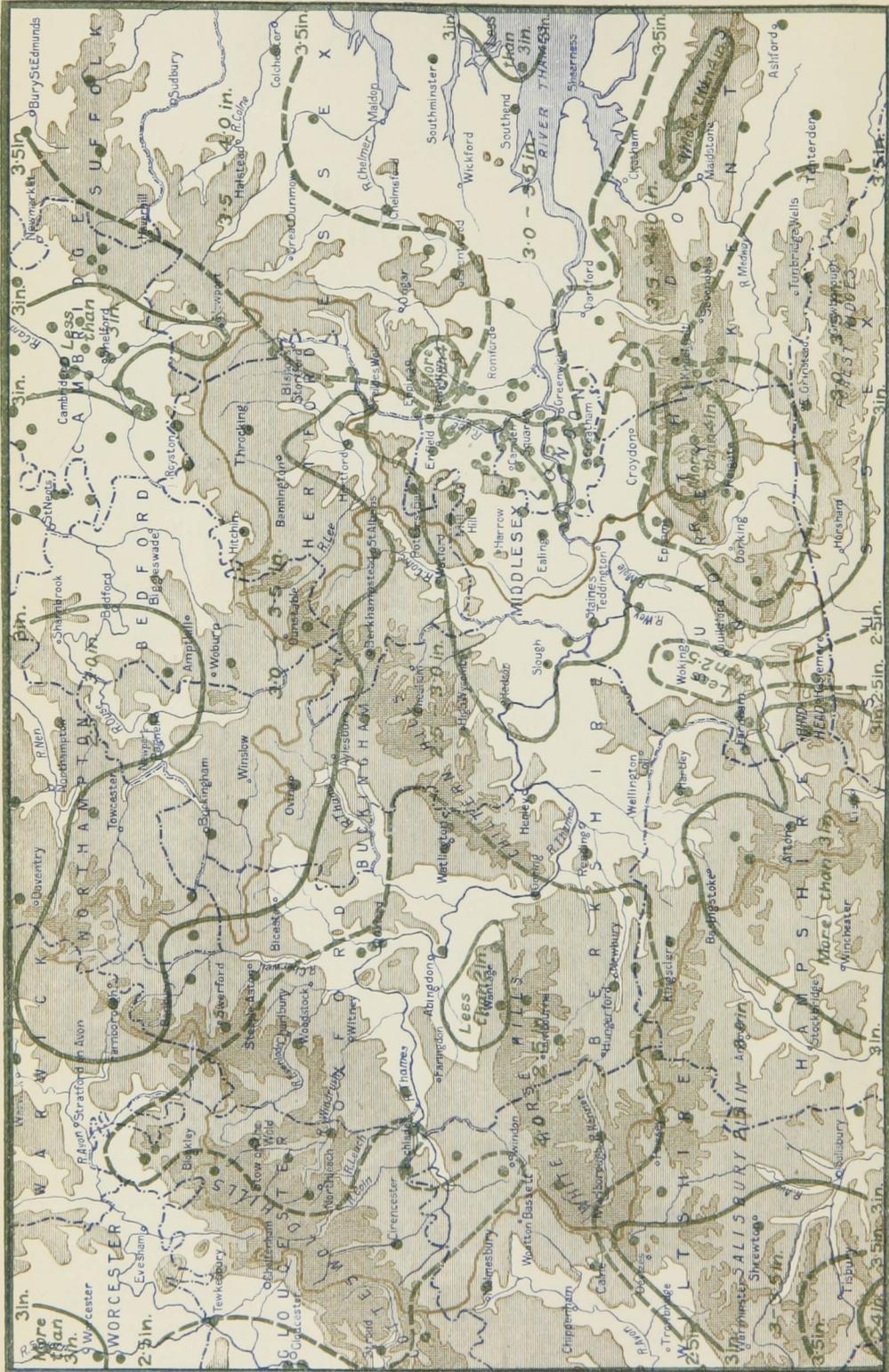
Sydney.—Mean temp. of air 0°·4 above, and R 2·00 in. below, averages.

Wellington.—Mean temp. of air 3°·2 below, and R ·37 in. below averages. Bright sunshine 235·9 hours.

Auckland.—Mean temp. of air 3°·0 below, and R ·75 in. below, averages.

TRINIDAD.—R 2·84 in. above the 45 years' average.

RAINFALL OF THAMES VALLEY — JULY, 1909.



ALTITUDE SCALE

Below 250 feet 250 to 500 feet 500 to 1000 feet Above 1000 feet

SCALE OF MILES

