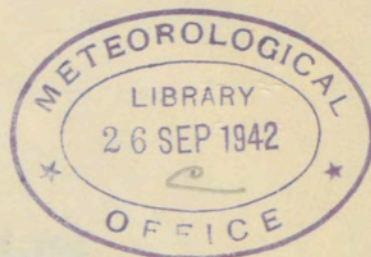


32.
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SPELL OF EXCEPTIONALLY DRY AIR OVER THE BRITISH ISLES.

By Miss L.F. Lewis.

During the latter half of April and the early part of May 1942 exceptionally dry air was experienced over the British Isles and some phenomenally low readings of relative humidity were obtained. In general the relative humidity at meteorological stations in the British Isles is derived from the wet and dry-bulb readings by means of the Meteorological Office Hygrometric Tables. The most striking values were reported on April 15 and May 6, and were comparable with, and in some cases were lower than, those obtained on July 10, 1934. *

Table I gives hourly values at a number of stations in the south-eastern districts on the afternoon of April 15, and, apart from the column giving vapour pressure, were supplied by Mr. R.S. Read.

* Exceptionally dry air, July 10th, 1934. Met.Mag.69, 1934, pp.181-4.

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TABLE I.
Low humidities from dry- and wet-bulb readings
on April 15, 1942.

<u>Station.</u>	<u>Time</u> <u>G.M.T.</u>	<u>Dry</u> <u>bulb</u> <u>temp.</u> <u>°F.</u>	<u>Wet</u> <u>bulb</u> <u>temp.</u> <u>°F.</u>	<u>Relative</u> <u>Humid-</u> <u>ity.</u> <u>%</u>	<u>Vapour</u> <u>Press-</u> <u>ure.</u> <u>mb.</u>	<u>Hoar</u> <u>frost</u> <u>point.</u> <u>°F.</u>
Croydon	1500	54.9	42.1	23	3.5	19.5
	1600	54.0	41.2	22	3.1	17.5
Kenley	1300	53.0	40.6	23	3.1	17.5
	1400	52.4	39.4	18	2.4	12.4
	1500	53.0	40.0	19	2.6	14
	1600	51.3	38.7	19	2.3	12
Hornchurch ..	1400	57.1	43.8	24	3.8	21.5
	1500	57.0	42.8	19	3.0	17
	1600	55.6	42.0	20	3.0	17.5
Northholt ...	1200	57.5	43.4	20	3.3	19
	1400	59.0	44.0	15	3.1	17
	1500	59.7	44.9	21	3.6	21
	1600	59.0	44.2	20	3.3	19
	1700	57.2	43.2	21	3.3	18
	1800	54.2	41.1	21	2.8	16
	1900	52.6	40.0	21	2.8	15.5
White Waltham .	1200	58.2	44.0	20	3.5	20
	1300	60.6	45.5	21	3.6	21
	1400	61.0	44.6	15	2.7	15
	1500	60.5	44.6	17	3.0	17
	1600	60.0	44.1	16	2.8	15.5

The figures show that the humidity remained notably low throughout the afternoon and early evening.

Table II gives humidities at a different selection of stations at fixed observation hours on April 15 and May 6.

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Table II.
Abnormally low humidities from dry- and wet-bulb readings,
April 15 and May 6.

<u>Station.</u>	<u>Time</u> <u>G.M.T.</u>	<u>Dry</u> <u>bulb</u> <u>temp.</u> <u>°F.</u>	<u>Wet</u> <u>bulb</u> <u>temp.</u> <u>°F.</u>	<u>Relative</u> <u>Humid-</u> <u>ity.</u> <u>%</u>	<u>Vapour</u> <u>Press-</u> <u>ure.</u> <u>mb.</u>	<u>Hoar</u> <u>frost</u> <u>point.</u> <u>°F.</u>
<u>April 15, 1942</u>						
Upper						
Heyford ..	1600	60.6	44.7	17	3.0	16
	1800	57.9	43.2	18	2.9	15
Boscombe						
Down	1800	57.5	42.0	14	2.2	8
<u>May 6, 1942.</u>						
Croydon	1300	71.0	52.0	19	4.8	26
	1600	73.0	53.3	19	5.1	28
Gorleston ...	1300	71.0	51.8	17	4.6	25
	1800	72.8	52.4	16	4.4	24
Sealand	1300	68.8	50.8	19	4.7	26
Mildenhall ..	1600	73.9	53.9	19	5.4	29
Nottingham ..	1600	72.0	50.0	9	2.5	11

At their face value these figures seem to be appreciably lower than those on July 10, 1934 or on other previous occasions of unusually dry air viz. July 11, 1921, April 1, 1931 or August 13, 1911. There is one rather disturbing factor, however, about accepting them without reserve and that is that at Kew Observatory, Richmond values of relative humidity, close to the time of the minimum values, taken with an Assmann Psychrometer were appreciably higher than those derived from the wet- and dry-bulb thermometer or photo-thermograms in the north wall screen. Table III and IV give data from instruments in the north wall screen and comparisons with readings of the Assmann psychrometer close to the times of the minimum values.

Table III.
Low relative humidity at Kew Observatory.

<u>Date and Time</u> <u>G.M.T.</u> <u>1942.</u>	<u>Minimum in the</u> <u>North Wall</u> <u>screen.</u> <u>%</u>	<u>Average in the</u> <u>N.W. screen from</u> <u>12h. to 13h. G.M.T.</u> <u>%</u>
April 15, 15h-15m.	10	17
May 5, 15h-16h.	19	29
May 6, 14h-15h.	15	23
May 7, 16h-17h.	17	23

Table IV.
Comparisons with an Assmann psychrometer.

<u>Date.</u>	<u>North Wall screen.</u>	<u>Assmann Psychrometer.</u>	<u>Screen difference.</u>
	%	%	%
April 15	10	17	-7
May 5	22	28	-6
May 7	19	21	-2

The differences in the results obtained by the two methods are interesting and Mr. Bilham points out that, using the psychrometric formula $x = f - A_p (t - t')$ if f is low and $t - t'$ is large, the value of the difference $f - A_p (t - t')$ is clearly very susceptible to small changes in the value of A , the constant assumed in computing tables from the formula. Consequently unless artificial aspiration is employed, the calculated values of vapour pressure, relative humidity and dew point are subject to a wide margin of error. This is very well illustrated in the graphs on p. 7 of M.O. 265.

The long duration of the spell of dry air is illustrated by the following note from Kew Observatory. "The period April 24 to May 9 inclusive, was one of exceptional low humidity, the hourly mean relative humidity being only 55 per cent. Of the 16 days concerned 11 had daily means below 60 per cent. and 4 below 50 per cent. On May 5 the daily range in relative humidity was over 70 per cent. and on April 15, May 3 and May 7 the range was over 60 per cent."

CLOUD DISPERSAL



The cloud is covering the sea and the
10 mile wide belt between the sea
and the range of mountains

CLOUD DISPERSAL.

The photograph reproduced herewith is contributed by Dr. R. Prith, the Meteorological Officer at George, South Africa. It illustrates well the dispersal of cloud over the lee side of a range of mountains.

The height of the mountains shown varies from about 1800 ft. in the foreground to 5200 ft, (the highest peak).

THE WEATHER AND SURGICAL OPERATIONS *

In the surgical bibliography there are a lot of papers dealing with the question of the influence of the weather on the frequency of post operational complications.

The Austrian surgeon Rappert has studied the reports of 2,100 operations, which took place in the hospital belonging to Vienna University Medical School (The Director being Prof. Denk).

Rappert stated that 90% of all the cases of complications took place when the operations were performed under cyclonic conditions and only 10% during quiet weather.

The reasons why atmospheric variations affect surgical operations has not yet been explained. Probably the factors influencing operations are changes in the atmospheric pressure and the atmospheric electricity.

Rappert advised surgeons to take into consideration meteorological conditions and to avoid operating during sharp changes of meteorological elements except in cases of emergency.

F.Lt. J. Mazur.

* Meteor.Hyrol. Moscow 1936 No.6, pp.90-92.
Original in Russian.

DAMAGE TO AEROPLANE BY HAIL.

The following account of a hail storm has been forwarded by Mr. J.G. Goodyear.

"The pilot was flying a Miles "Sparrow Hawk" machine between Kidderminster and Birmingham at the time - the evening of June 6th 1942, at about 1930 BDST - and was at a height of 1000-1500 ft. and speed about 170 mph. In this area he found a great mass of thundery looking cloud, rather like a line-squall and he then ran into the hail which continued for some distance, though neither lightning or thunder were noticed. The air beneath this cloud was of extreme turbulence, and in spite of pushing the control stick forward to descend the machine was carried upwards several hundred feet. During this time the machine was bombarded by hailstones which the pilot estimated to be as large as ping-pong balls, which I at first thought to be an exaggerated statement, but which was amply borne out by the repairs made necessary to the machine.

The pilot landed at West Freugh and found the hail had done the following damage, which was made good before coming on to Belfast:-

(a) Large dents were made in the metal spats covering the wheels, (b) no less than 6 holes through the tail-plane, (c) 3 holes through the plywood immediately behind the leading edge of the main-plane, (d) a flattened metal propeller boss, and (e) a severe bruise to the pilot's head. This account was related to me by the pilot concerned, and although I was myself unable to see the damage before the machine left, this was confirmed by the Control Officer."

Mr. Goodyear adds that it would be of interest to have any notes about the size of the hail-stones reaching the ground in the Kidderminster-Birmingham area.

REVIEW.

STORM. By George R. Stewart. Hutchinson & Co.

This is an unusual novel. It gives, with abundance of scientific detail, the life-story of Maria from her birth south of Japan to her death twelve days later in California. Maria is presumably the villain, for she caused much damage and several deaths; the heroes are the men who maintained the power and telephone lines, kept open the road, railway and air line, and fought the floods. Maria was a temperate depression; the young meteorologist of San Francisco gave all his depressions names, for "he could more easily say (to himself, of course) 'Antonia' than 'the low pressure centre which was yesterday in latitude 175E longitude 42N'.

Maria formed on a cold front between advancing cold Siberian air and retreating tropical air, and her immediate cause is stated to be a small island which caused an eddy. She moved eastward, at first as a wave. Preceding depressions had advanced north-eastwards, leaving California in the grip of a drought, but a cold wave advancing south, behind Cornelia kept Maria in a more southerly track and finally held her up for some days off California. Another cold wave advancing south in the Western Pacific curved first east and then north, to supply her with energy; this swept along and eventually gave way to tropical air causing steady rain. But in this tropical air was an island of unstable old polar air, and this, reaching the mountains, provides a dramatic climax. Finally before she died, Maria gave birth to a daughter, Little Maria, to afflict New York.

The weather changes are skilfully described but need an atlas to follow, and the meteorologist would like a series of synoptic charts. Most interesting however are their multifarious reactions on the life of the community, first of the weather forecasts, and later of their realisation. The losing fight to keep open the mountain road threatened by snow, the battle against rising floods, the running repairs to power and telephone lines, and the way the planes got through, provide a running accompaniment which brings startlingly to life the technical details about weather charts. All weather forecasters should put this book on their lists of light literature.

C.E.P. Brooks.

OBITUARY.

Mary Teresa Gordon - Mrs. Gordon, who died on March 17th, 1942 in her 94th year, was, for more than half a century, a regular contributor of rainfall observations. Her records at Drimmin, in the parish of Morven, Argyll were first included in "British Rainfall 1890" and they have appeared in every subsequent volume. In 1936 she was instrumental in setting up another gauge at Drumbuy, at the junction of Loch Sunart and Loch Teacuis, and about 5 miles distant from Drimmin. She took a keen interest in these observations and was a frequent and charming correspondent. Both records are being continued.

Mrs. Gordon went to the West Coast of Scotland to live 66 years ago when the only links uniting Morven with the outside world were a weekly boat from Glasgow and a tri-weekly mail service by pony to Fort William. She early realised the important part which transport and communications would play in the life of the people, and with her late husband, strove unceasingly to further their development.

James Cospatrik Scott - Mr. J.C. Scott, who met a tragic death in a road accident on July 20th, had been Chamberlain to the Duke of Roxburgh since 1913. He accepted responsibility for the climatological records at Broomlands, near Kelso, and regularly forwarded returns to Edinburgh for inclusion in the Monthly Weather Report.

Mr. Scott was associated with every society in the county of Roxburgh which sought to promote agricultural interests. He was a keen horseman and follower of hounds, and had been a member of Kelso Home Guard since its formation, holding the rank of captain.

OBITUARY. (Contd)

Brigadier General E.M.P. Stewart of Coll. C.B., C.B.E.

Brigadier General Stewart died in London on April 11th, aged 77. In recent years he had spent most of his time at Breachacha Castle, the modern residence of the principal landlord of Coll, on which island he set up two raingauges in 1935. He personally supervised the observations and forwarded the monthly returns to Edinburgh up to the time of his death.

J. Hannay Thompson - Mr. Thompson, who died on March 22nd, had held the position of General Manager and Engineer of Dundee Harbour Trust for 40 years when he retired in July 1941. He maintained climatological stations at Dundee Harbour, Buddonness and Tayport and regularly sent copies of these records to the Meteorological Office, Edinburgh. All three records are being continued.

Mr. Thompson played an important part in improving the harbour facilities at Dundee, his most notable achievement being the construction of the ultra-modern King George Wharf, the foundation of the last section of which was laid by the King in 1930.

H.E.C.