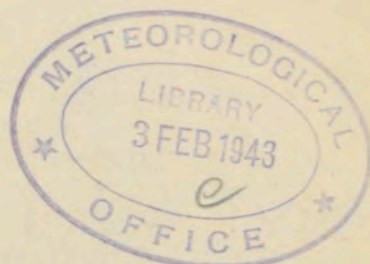


January 1943.



Climate and Energy.

Mr. S. F. Markham, M.P., who has had contact with the Meteorological Office on several occasions (he is no doubt chiefly remembered by the staff for his questions in Parliament about averages of relative humidity and about the "manipulation" of sunshine records) has published a book \* in which he energetically pursues the thesis that in the race for supremacy, other things being equal, the nation with the best climate will win. By "climate" however he does not mean quite the climate of the open air, but the climate in which the more progressive members of the nation live and work, in other words, to a large extent the climate of indoors. His thesis is that the most favourable climate is one with monthly mean temperatures which lie between 60°F. and 76°F. and mean relative humidities between 40 and 70 per cent. Differences of temperature within these limits can be compensated by differences of clothing, but temperatures below these limits involve the expenditure of energy which must be subtracted from that available for making progress, while higher temperatures produce lassitude.

When civilisation began, the control of indoor temperature was in its infancy, for although fire had been discovered, chimneys had not. Hence the early civilisations - Egypt, Sumeria, northern India - developed where the outdoor climate approximates most closely to the ideal, that is along the 70° isotherm. The progressive northward move of civilisation is bound up with gradual improvement of the means of warming rooms, in other words, the invention of chimneys, the cheapening of fuel and the glazing of windows. For the control of climate has so far been a one-way control; heating has preceded cooling. Even the most favourable climate (with the possible exception of a few elevated equatorial places too limited in area to count) has summers which are too hot for continuous progress, but in countries which have ideal summers (like south-eastern England), the winters, if not too cold, can be brought up indoors to the summer level, and the process automatically reduces the relative humidity to the optimum. The winters must not be too cold, first because man must go outdoors sometimes, and secondly because too great a rise of temperature carries the relative humidity below the optimum.

\* Climate and the Energy of Nations - By S. F. Markham, M.A.B. Litt. M.P., F.R. Met. S., ...



St. here

The process of heating, of course, presupposes that the necessary heat energy is available, and it is shown that the apparent exceptions refer to areas which are poor in natural supplies of energy.

Mr. Markham gives a remarkable series of maps of Europe in which he demonstrates the essential identity between on the one hand the areas above the 30° F. January isotherm and below the 75° F. July isotherm, and on the other hand low death rate, low infantile mortality, high national income per head and high trade per head. Even within the British Isles the same principle is found, the dry warm south-east being superior to the colder wetter north-west in respect of employment, death-rate, infantile mortality, wireless licences and number of eminent men. (He does not however answer the possible criticism that all the latter indices are merely different ways of saying the same thing).

In recent years there has been a new development with the discovery and cheapening of air conditioning. It is now possible to bring the summer heat down to, as well as the winter cold up to, the optimum, and this must work against the countries whose sole advantage is an ideal summer. Mr. Markham thinks that the tide of civilisation may flow south again, but let us hasten to add the hope that this will mean, not a renewed struggle for survival with the dice loaded against us, but a commonwealth of equal partners in all parts of the world.



THE DISTURBED CONDITIONS, GALES AND ROUGH SEAS OF  
DECEMBER 1942.

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Pressure was generally unusually low on the North Atlantic from December 5th-23rd, and secondary depressions moved along the west and north-west seaboard of the British Isles. Notably low pressure readings were registered in mid-Atlantic on the 16th (about 940 mb. at the centre of the disturbance) and over south Greenland on the 19th (roughly 932 mb. at the centre). It is interesting to compare these figures with previous low readings in temperate regions: for example, 925.5 mb. on H.M.S. *Tarifa* in the Atlantic 51°3'N, 23°59'W on February 5th 1870, 925.5 mb. at Ochertyre, Perthshire on January 26th, 1884, 927.2 mb. at Belfast on December 8th, 1886, 927.9 mb. on s.s. *Westpool* in the Atlantic on December 4th 1929 and 927.2 mb. at Reykjavik on January 3rd, 1933.

Gales were frequent on the west and north coasts of the British Isles and were severe at times causing considerable local damage. A whole gale was registered at Stornoway, in a somewhat sheltered situation in the Northern Hebrides on the 9th, 13th and 14th and among the highest speeds attained in gusts were 95 m.p.h. and 93 m.p.h. at Valentia, south-west Ireland on the 14th, 86 m.p.h. at St. Ann's Head on the 20th and 84 m.p.h. at Stornoway on the 13th. The strong southerly to south-westerly winds and gales both on the Atlantic and the coasts of the British Isles caused rough seas on our shores and we read in the Press that in mid-December there were unusually high tidal waves; for example the Chesil bank, near Portland, was breached and the district flooded by huge waves, at Black Rock lighthouse, on the north-west coast of Ireland, landing derricks and steps were smashed, on the west coast of Ireland a high tide flooded hundreds of acres and in the Solway Firth area sheep were drowned and over 300 acres of land were flooded. We read also that five soldiers were drowned by a huge wave at Aberystwyth and in Cork harbour two Eire government launches foundered with the loss of five lives. The reports of sea disturbance at nearby stations give some support to these reports. On the 13th at Blacksod Point a sea disturbance 8 was reported, which represents towering rollers and on the same day the sea disturbance at Tisce, in the south-west Hebrides, Portland Bill and Roches Point, near Cork, was 7, or rollers with steep fronts.

At the end of the month northerly or north-westerly gales occurred at exposed places and a gust of 80 m.p.h. was registered at Kirkwall on the 28th and at Lerwick on the 29th.

L.F.L.



# MONTHLY MEAN TEMPERATURE 1901 to 30 and 1871 to 1900.

The general monthly values of mean temperature at sea level over the British Isles for 1901-30 (published in the Q.J.R. Meteor. Soc. January 1941) do not show as regular a change of temperature throughout the year as would be expected, if a longer period had been used. In order to bring out any temperature abnormalities of this period the distribution of the monthly temperatures during 1871-1900 was examined. This was done by comparing the averages 1871-1900 in Temperature Tables of the British Isles (Official No. 154 published in 1902) with those in M.O. 364 (1933). The monthly differences (1901 to 1930) - (1871 to 1900) for some 45 well distributed stations were plotted. The earlier publication gives means corrected to the period 1871-1900, while in M.O. 364 any short records could be adjusted to the period 1901-1930 by reference to the monthly maps of mean temperature. The final values were surprisingly uniform on each monthly map, and lines of equal differences could be drawn without difficulty. This confirms that means for shorter periods can be corrected to the standard period and give satisfactory values by reference to long records at adjacent stations.

The general values (1901 to 1930) - (1871 to 1900) are given below in °F.:—

J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	D.	YEAR.
England and Wales -												
+1.5	+.2	+.7	-.4	+1.1	-.9	-.1	-.4	-.0	+1.5	-.3	+1.4	+.3
Scotland -												
+.8	+.3	+.4	-.6	+.0	-.9	-.3	-.7	-.3	+.7	-.3	+1.0	+.0
Ireland -												
+1.2	+.0	+.1	-.8	+.4	-.8	+.2	-.5	-.0	+1.5	-.2	+1.1	+.2
BRITISH ISLES -												
+1.2	+.2	+.5	-.5	+.6	-.9	-.1	-.5	-.1	+1.3	-.3	+1.4	+.3

The winter half year 1901 to 1930 was much warmer than in 1871 to 1900 and the summer half year somewhat colder. January, October and December were all appreciably warmer in 1901 to 1930 and June appreciably colder.

The values above enable general monthly mean values at sea level to be given for the sixty years 1871-1930, and these show more regular monthly differences than for either of the periods 1871 to 1900 or 1901 to 1930.



GLAZED FROST, JANUARY 10th 1943.

The following notes have been received from Mr. J.W. Hopson (aged 15) of Carrington, Nottingham.

"On taking observations at 8 a.m. on the morning of 10.1.43 it was discovered that everywhere was covered with "GLAZED FROST"

Almost every exposed surface had a thin coating of ice especially on the E. and S. sides of buildings, as these were windward. The N. sides of bldgs. had no ice coat as these had been protected from the rain-bearing S.E. winds.

The phenomenon had formed over night when rain that had fallen froze as it reached any exposed surface; the temperature being below 32°F.

The weather for the night was determined after examining the rain gauge for three important facts were revealed:-

1. Water in the jar proving that rain had fallen in the ordinary manner. .17" of rain was the amount in the jar.
2. A coating of ice covered the funnel proving that the temperature had fallen and consequently the still falling rain had frozen forming the "Glazed Frost".
3. Granular snow lay on top of the ice coating inside the funnel showing that the rain had abated a great deal and had frozen into granular snow before reaching the ground.

At 8 a.m. the temperature was still below freezing but by 09.30h. the 'glazed frost' was beginning to thaw slowly.

By 10.45 a.m. the ice coat was thawing fast as the temperature began to rise and fog began to form; probably the cause of warmer air coming into contact with the colder. By the end of the day visibility was 0.

Although by the end of the day the 'glazed frost' had not totally melted away many of the "needles" on branches etc. had disappeared and the uniform coating of ice had decreased.

The following are average thicknesses of the glazed frost:-

1. 3 ins. thick on the E. side of buildings.
2. " " " S. " "
3. 2-5 ins. thick on twigs, branches etc. "



AURORAL NOTES, APRIL TO NOVEMBER 1942.

During April 1942 aurora was seen on 18 nights which is well above the average. A fairly active display on the 4th was observed at Lerwick from 20h.30m. to 22h.08m. after which time cloud made further observation impossible. On the 11th aurora was seen from Wick, Montrose and as far south as St. Abb's Head. Stranraer and Invergordon reported aurora on the 14th and it was seen from Skye on the 16th. The phenomenon was seen on the evenings of April 17th and 18th from numerous stations between Shetland and Berwickshire and on the 29th it was reported from Abbotsinch. At some northern stations it was seen also on April 3rd, 8th, 10th, 12th, 13th, 15th, 19th, 20th, 23rd, 24th, 27th and 28th.

The only observations in May were from Abbotsinch on the 6th, Leuchars on the 11th and Invergordon on the 15th. The absence of reports from Lerwick is due to the suspension of the "watch" at that station from May to August 1942. Aurora was not reported again until August 14th when Mr. Seton Gordon observed a display from Skye. Observers at Perth and Abbotsinch saw it on August 16th.

In September aurora was observed at northern stations on 12 nights, viz. 1st, 2nd, 5th-7th, 10th-15th and 18th. Probably the best display was on the 11th when Lerwick reported a bright and active arc with ray structure between West and North, 15 to 17 degrees altitude, between 22h. and 22h.20m. This display was widely observed over the northern half of Scotland and in the Islands. The complete absence of auroral reports between September 18th and October 2nd is noteworthy.

Lerwick reported a corona of moderate intensity with active rays to the west and east horizons on the evening of October 2nd. It was observed from 19h.45m. to 22h.40m. but the observations were at times interfered with by cloud. The display was seen by many observers in north and west Scotland as also - though to a lesser extent - was the aurora on the 4th. On October 11th aurora was seen as far south as Eskdalemuir. A variable display on the 28th, consisting of bands with ray structure, diffuse luminous surfaces, and draperies was seen for some hours at Lerwick; it was also reported from several other places including Linlithgow and Stranraer. On the 29th aurora was seen as

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far south as Greenock. Other nights in October when it was observed at the most favourably situated stations were the 3rd, 5th, 8th, 10th-13th, 15th, 16th, 20th, 30th and 31st.

In November aurora was observed on 15 nights but with a few exceptions reports were confined to northern stations. The exceptions included reports of its occurrence on the 3rd at Leuchars, on the 8th at Eskdalemuir, on the 10th at Abbotsinch; on the 11th at Tiree, Abbotsinch and Leuchars, and on the 14th at Leuchars. The display on the 10th was the most widely reported. Other November nights on which aurora was seen in Shetland were the 2nd, 5th, 7th, 12th, 23rd, 24th and 27th-30th.

H.E.C.

#### AN ARCH OF MIST.

Surely a freak of nature was the "rainbow" of mist, seen at Bowerchalke (Wilts) on 2nd October 1942.

It was early morning, about half-an-hour before sunrise, and a marked inversion prevailed. On Marleycombe Down the air was warm, considering the hour and the season, but the valleys were much colder and enveloped in a thick white mist. The temperature difference would be about 4°F.

The mist lay to a depth of some sixty feet, and the upper surface was level to the point of mathematical precision. Out of this thick and even layer, however, there protruded a perfectly symmetrical arc of mist - a rainbow without spectrum. The base of the arc measured roughly half-a-mile, its vertical radius fifty feet, and the elevation from ground level 70°. Between the extremity of the arc and the main mist-layer the atmosphere seemed perfectly clear and free from any trace of mist. Twenty minutes later, the arc had dispersed completely.

As a tentative explanation I would suggest that, although inversion conditions prevailed, a belt of air slightly warmer than the surface layer (but colder than the layer immediately above) expanded and rose above the main mist-belt to a height of fifty feet - where condensation took place. Why this detached air-mass should assume the form of an arc is beyond my rather limited comprehension.

J. Johnston.



NEW YEAR HONOURS LISTS 1943.

A/Cdr. C.E.N. Frankcom, R.N.R., O.B.E. (Military Division)

Mr. R.H. Matthews, O.B.E.

Mr. M.T. Spence, O.B.E.

Mr. W. Hayes, M.B.E.

Mr. A.E. Cornewall-Walker of the East Surrey Water Co. (who for many years has sent rainfall records to this Office) C.B.E.

INTERNATIONAL METEOROLOGICAL COMMITTEE.

Mr. Helge Petersen, Head of the Forecast Section of the Danish Meteorological Service and a member of the Synoptic Weather Information Commission since 1934 has been elected as a member of the International Meteorological Committee in succession to the late Dr. D. la Cour.



### METEOROLOGICAL STATIONS.

Climatological stations at Frampton Cotterell and Horsham have been approved. The station at Frampton Cotterell has been maintained by Mr. H.H. Harding for many years but previously rainfall records only were sent to the Office. Mr. John L. Bennett has maintained a station <sup>at Haslemere</sup> since 1940 but the observations were twice interrupted by enemy action.

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The climatological station at Bromyard has ceased as Miss M.A. Philpott is in failing health and is unable to obtain further help with the observations. The station which was set up by the late Mr. T.V. Philpott has been in operation since 1910.

The Crop weather station at Cambridge (University Farm) has been closed for the duration of the war, owing to staff difficulties.

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### OBITUARY.

W.K. Aston who set up the meteorological station at Prestwood Sanatorium in July 1940 died in November 1942 after a long period of illness.

The Secretary of the Sanatorium who is now responsible for the observations writes "He was the founder of the station and with his passing we have lost a great help in the running of it, for although he was in bed he was always actively interested and was always pointing out those little errors that new comers are apt to make at first. "

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