

M.O. 236 (Section VI)

AIR MINISTRY

METEOROLOGICAL OFFICE

THE

BOOK OF NORMALS  
OF METEOROLOGICAL ELEMENTS  
FOR THE BRITISH ISLES

Section VI

Normals of Relative Humidity

*Published by the Authority of the  
Meteorological Committee*



LONDON:

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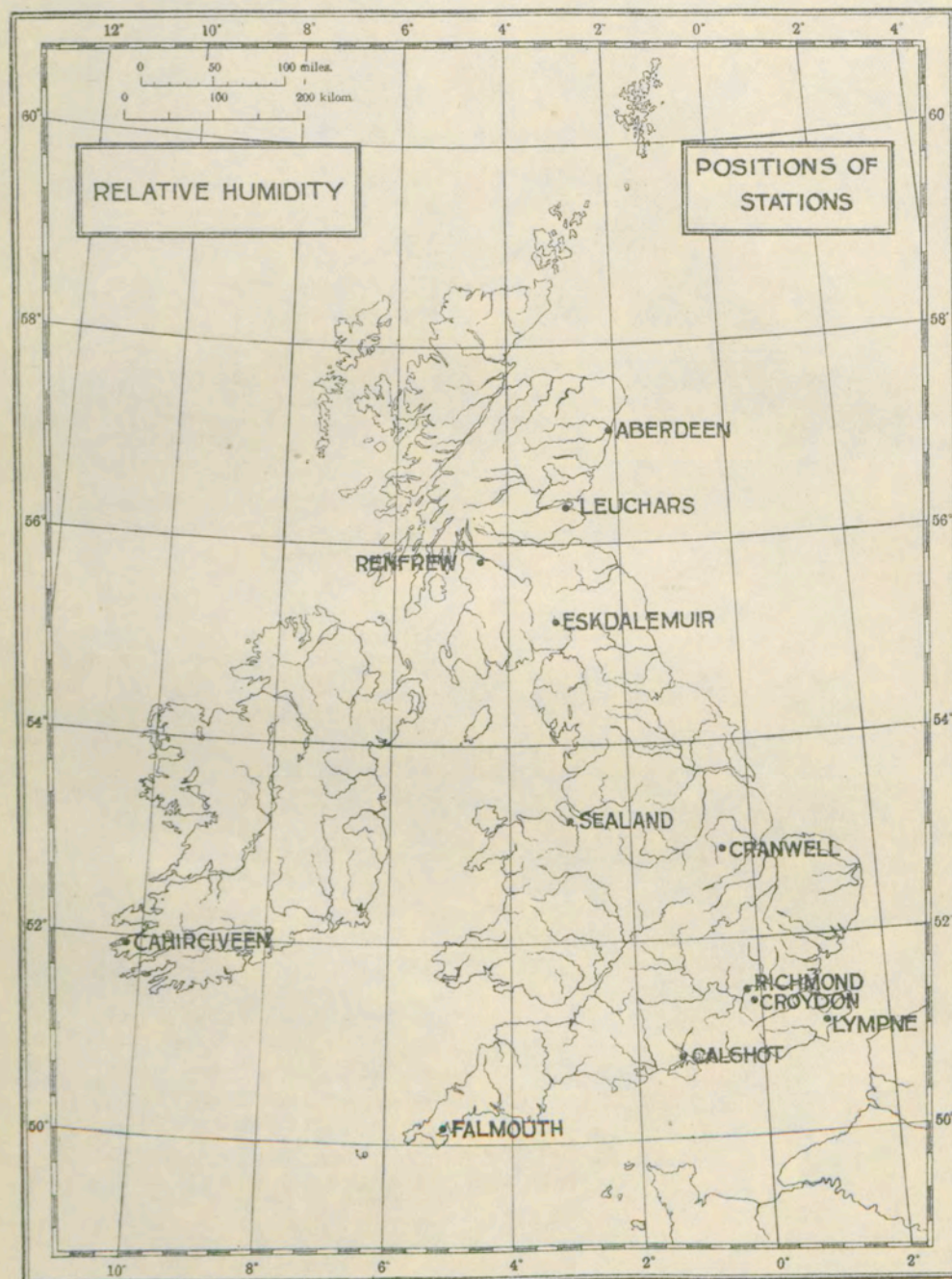


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1922

## THE BOOK OF NORMALS OF METEOROLOGICAL ELEMENTS OF THE BRITISH ISLES

### Section VI.—Normals of Relative Humidity

#### CONTENTS

	PAGE
Map showing position of Stations .. .. .	Frontispiece
Introduction .. .. .	294
Table 22. Hourly, Daily, Monthly and Annual Normals of Relative Humidity .. .. .	298
Isopleth Diagrams of Relative Humidity .. .. .	302



# THE BOOK OF NORMALS

## SECTION VI

### NORMALS OF RELATIVE HUMIDITY

Daily values of relative humidity have been obtained regularly for a long time at a considerable number of stations in the British Isles, from observations of dry and wet bulb thermometers exposed in Stevenson screens. The observations are made at a fixed hour or hours each day. They are reduced by means of "Glaishers' Hygrometrical Tables" (since 1926, by "Hygrometric Tables," M.O. publication 265), which give values of relative humidity corresponding with all possible combinations of readings of dry and wet bulb thermometers.

As a rule the readings of the thermometers at climatological stations are made at 9h. or at 9h. and 21h.; at telegraphic stations they are made at 7h. (8h. prior to 1908) and at 18h. Only in a relatively few instances have readings been taken at an afternoon hour, such as 15h. or 13h.

Relative humidity shares with air temperature the property of exhibiting conspicuous diurnal variations, especially in the warmer months of the year. The greater part of the diurnal variation of relative humidity is, in fact, directly due to the diurnal variation of temperature. As the air temperature rises the capacity of the air for water vapour rapidly increases, and hence the relative humidity falls considerably, even if the actual quantity of water present in the atmosphere as vapour (the absolute humidity), remains constant, or increases slightly. Actually the absolute humidity has only a small diurnal variation even in summer. Yet the dependence of relative humidity on temperature does not diminish the climatic importance of the former element, which is considerable, both from the purely meteorological point of view and from a consideration of its influence in extreme cases on the animal world. The diurnal variation of relative humidity is, however, less well-known than that of temperature, partly because there are no simple instruments, similar to maximum and minimum thermometers, which are available to the ordinary observer for indicating extremes of relative humidity; and partly because, except in extreme cases which occur infrequently in this country, the effect of varying relative humidity on the human organism is not apparent, as is the case with varying temperature. It so happens that the important variations in relative humidity occur during the hours of daylight between 7h. and 21h. and are not adequately disclosed by observations at 7, 8, 9, 18 or 21h. An observation in the early afternoon is required to indicate the extent of the fluctuations.

Hence the available observations from the ordinary stations are unsuitable for representing adequately the normal variations of relative humidity, and it is desirable to utilise hourly tabulations of records from self-recording instruments in order to obtain a correct representation of the normal variations of the element.

There are two kinds of autographic instrument, tabulations from which have been used for the preparation of data published in this section. One is the photographic dry and wet bulb thermograph as installed at the observatories. This instrument is described briefly in recent volumes of the *Observatories' Year Book* and more fully in the *Report of the Meteorological Office* for 1867. The bulbs of the mercury thermometers are large and the thermometers are normally exposed in louvred screens attached to north walls of observatory buildings.\* The second instrument is the hair hygograph as produced originally by MM. Richard Frères of Paris. The pen of this instrument records variations of relative humidity directly on a chart, and the "sensitive element" of the instrument is a bundle of specially treated human hairs, the length of which is known to respond to variations in relative humidity. The hair hygograph is exposed in a Stevenson screen, which is usually made twice as large as the ordinary pattern in order to accommodate the hair hygograph and a thermograph in addition to the normal equipment of dry and wet bulbs and maximum and minimum thermometers.

The photographic dry and wet bulb thermograph has been in continuous operation since 1869 at the observatories at Richmond (Kew Observatory), Falmouth (till 1912), Aberdeen and Cahirciveen (Valentia Observatory); and since 1911 at the observatory at Eskdalemuir. From the mean monthly and annual values of dry and wet bulb temperature at each hour of the day have been derived by Glaishers' tables mean monthly and annual values of relative humidity at each hour of the day. These means refer to the period of 25 years, 1886-1910, at Richmond, Falmouth, Aberdeen and Cahirciveen, and to the period of 15 years 1911-2 and 1914-26, at Eskdalemuir. The mean hourly values for these observatories for the years named are printed in the following pages, and they are also represented graphically by isopleth diagrams. The method of construction of the diagrams and the information derivable from them are explained later.

The remaining isopleth diagrams which are reproduced are derived from mean hourly values for the months and the year of the hourly tabulations of the records of relative humidity obtained from hair hygographs at the following stations:—Leuchars, Renfrew, Sealand, Cranwell, Croydon, Lympne, Calshot. The positions of all the stations are shown in the frontispiece map. The period

\*At Eskdalemuir the screen stands in the open; at Aberdeen the north-wall screen is at a height of 41 ft. above the ground.



to which the mean values refer are stated on the diagrams, but they are all short and in no case exceed six years. In spite of this fact the curved lines comprising the isopleth diagrams are regular in shape, indicating that at least in general form and broad features the diagrams can be accepted as representing with fair accuracy the normal state of the atmosphere at these stations. This matter has been examined in respect of Kew Observatory by comparing the hourly averages for January, April and July for the six years 1921-6 at Kew with the normals for 1886-1910. The result is that the six-year averages are slightly in excess of the normals in January and April and slightly in defect in July. For the mean of the 24 hours the excesses in January and April are 1.6 and 1.6 per cent and the defect in July is 1.8 per cent. The extreme values for the differences are +2.9 per cent in January and -3.4 per cent in July.

*Isopleth Diagrams.*—The word "isopleth" means literally "equally full." An isopleth diagram is one which shows graphically by means of "isopleths" how the variation of a quantity depends upon the variation of two other independent quantities. The two independent variables are taken as ordinates and abscissæ referred to axes of rectangular co-ordinates and the value of the dependent variable is plotted in the ordinary way at the point of intersection of the appropriate ordinate and abscissa. Lines are then drawn through the plotted values in such a way that the dependent variable has a constant value along the length of any one line; these lines are called "isopleths." It will be seen that the term isopleth diagram is a generic one and that it includes many diagrams familiar in geography and meteorology, e.g. contour lines, isobars, isohyets, etc., in which the two independent variables are distances measured respectively in a north-south and east-west direction.

In the present case the independent variables are time of day and month of year, the former being set out horizontally and the latter vertically. The dependent variable is relative humidity. If we pass down the vertical column marked "Noon" we cross a number of isopleths, the values of which represent the mean relative humidity at noon in the several months of the year as indicated at the side of the diagram; and similarly for any other hour of the day. Again, if we pass along a horizontal row, say, that for July, we again cross a number of isopleths, the values of which represent the mean relative humidity throughout the average day in July. A comparison of the diagram for Richmond with the corresponding table will make this clear, and will indicate how the diagrams can readily be used to obtain an approximate value of the normal value of relative humidity at any time of year and any time of day.

The features common to all the diagrams are (1) the low value of relative humidity which occurs during the afternoon in summer, (2) the relatively small diurnal variation in winter, and (3) the

relatively small seasonal variation in the early morning. It will now be evident why the hours of observation at ordinary stations are unsuited to give a full representation of the normal variation of relative humidity.

At most stations the air is normally driest in the early afternoon in June and July, a distinction which is shared at Aberdeen, Renfrew and Sealand by April. At Falmouth and Cahirciveen the air is normally driest in the afternoon in May. The mean annual range of relative humidity is less in the extreme western districts of the British Isles than in the eastern districts and is greater at inland stations than at stations on the coast; at Richmond the annual range of relative humidity is more than twice that at Cahirciveen.



TABLE 22. NORMALS OF RELATIVE HUMIDITY FOR EACH HOUR  
ABERDEEN 1886-1910

Month.	0.	Hour. 1.	G.M.T. 2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
Jan.	% 80.6	% 80.8	% 80.8	% 81.0	% 81.1	% 81.4	% 81.6	% 81.5	% 81.5	% 81.4	% 80.7	% 79.5	% 78.3
Feb.	% 80.4	% 80.5	% 80.6	% 80.8	% 81.0	% 80.9	% 81.1	% 81.1	% 80.7	% 80.2	% 78.9	% 77.3	% 75.8
Mar.	% 81.4	% 82.1	% 82.2	% 82.5	% 82.7	% 82.9	% 83.0	% 82.9	% 81.0	% 79.3	% 76.4	% 74.9	% 72.9
April	% 83.0	% 83.6	% 84.0	% 84.3	% 84.5	% 84.7	% 84.0	% 82.4	% 79.5	% 76.3	% 73.7	% 72.3	% 71.2
May	% 84.5	% 85.0	% 85.3	% 85.9	% 86.3	% 85.7	% 83.7	% 80.5	% 78.0	% 75.9	% 74.4	% 73.1	% 72.1
June	% 84.5	% 85.2	% 86.0	% 86.2	% 86.5	% 85.2	% 82.0	% 78.8	% 76.2	% 74.5	% 73.3	% 72.3	% 72.0
July	% 84.7	% 84.9	% 85.6	% 85.8	% 86.3	% 85.0	% 82.6	% 79.6	% 76.8	% 74.5	% 72.9	% 71.7	% 71.7
Aug.	% 84.7	% 85.4	% 86.1	% 86.4	% 87.0	% 87.0	% 85.5	% 82.2	% 79.5	% 75.8	% 74.0	% 72.4	% 71.3
Sept.	% 85.2	% 85.6	% 85.9	% 86.1	% 86.5	% 86.6	% 86.6	% 85.2	% 82.5	% 79.0	% 75.8	% 73.7	% 72.7
Oct.	% 85.2	% 85.5	% 85.6	% 85.7	% 85.6	% 85.7	% 85.9	% 85.8	% 84.8	% 82.9	% 80.1	% 77.8	% 76.3
Nov.	% 83.6	% 83.7	% 83.7	% 83.6	% 83.5	% 83.6	% 83.6	% 83.8	% 83.4	% 82.8	% 81.3	% 80.1	% 78.8
Dec.	% 82.3	% 82.9	% 83.0	% 83.3	% 83.3	% 83.2	% 82.8	% 83.0	% 82.9	% 82.5	% 82.2	% 81.5	% 80.5
Year	% 83.3	% 83.8	% 84.1	% 84.3	% 84.5	% 84.3	% 83.5	% 82.2	% 80.6	% 78.8	% 77.0	% 75.6	% 74.5

ESKDALEMUIR 1911-2 and 1914-26

Month.	0.	Hour. 1.	G.M.T. 2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
Jan.	% 88.2	% 88.4	% 88.0	% 88.2	% 88.0	% 88.2	% 88.2	% 89.0	% 88.7	% 89.1	% 87.6	% 87.1	% 86.1
Feb.	% 87.6	% 87.7	% 87.6	% 87.9	% 88.0	% 87.9	% 87.6	% 88.0	% 88.1	% 87.9	% 85.7	% 84.7	% 83.1
Mar.	% 86.4	% 87.0	% 86.8	% 87.4	% 87.1	% 87.3	% 87.1	% 87.1	% 85.8	% 83.8	% 79.9	% 78.2	% 76.6
April	% 86.8	% 87.0	% 87.0	% 87.2	% 87.5	% 87.8	% 87.3	% 86.0	% 82.4	% 78.4	% 75.0	% 75.0	% 70.9
May	% 87.3	% 88.1	% 88.4	% 88.9	% 88.9	% 88.8	% 87.3	% 84.4	% 80.3	% 76.4	% 73.7	% 73.7	% 69.4
June	% 87.0	% 87.6	% 88.0	% 88.4	% 88.4	% 87.6	% 85.5	% 81.7	% 77.3	% 73.6	% 71.8	% 69.7	% 68.6
July	% 89.3	% 90.0	% 90.6	% 90.8	% 90.7	% 90.8	% 89.2	% 86.2	% 82.1	% 78.7	% 76.4	% 74.4	% 72.9
Aug.	% 90.1	% 90.2	% 90.3	% 90.6	% 90.9	% 91.0	% 90.5	% 88.8	% 85.5	% 81.8	% 78.8	% 76.4	% 74.9
Sept.	% 89.0	% 89.5	% 89.4	% 89.5	% 89.3	% 89.5	% 89.4	% 88.7	% 86.5	% 83.5	% 79.7	% 77.6	% 75.6
Oct.	% 88.6	% 89.2	% 89.2	% 89.4	% 89.1	% 89.1	% 88.9	% 89.2	% 88.3	% 86.6	% 83.1	% 80.4	% 78.4
Nov.	% 87.7	% 87.9	% 88.1	% 87.9	% 87.8	% 88.1	% 88.0	% 88.3	% 87.9	% 87.6	% 86.0	% 84.0	% 82.5
Dec.	% 89.0	% 89.1	% 88.8	% 88.8	% 88.6	% 88.7	% 88.6	% 88.9	% 89.1	% 89.0	% 87.9	% 87.1	% 86.3
Year	% 88.1	% 88.5	% 88.5	% 88.7	% 88.7	% 88.7	% 88.1	% 87.2	% 85.2	% 83.0	% 80.5	% 78.6	% 77.1

CAHIRCIVEEN (VALENTIA OBSERVATORY) 1886-1910

Month.	0.	Hour. 1.	G.M.T. 2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
Jan.	% 86.7	% 86.6	% 87.1	% 87.1	% 87.3	% 87.2	% 87.3	% 87.4	% 87.2	% 86.9	% 86.9	% 86.2	% 85.4
Feb.	% 87.4	% 87.2	% 87.3	% 87.5	% 87.4	% 87.5	% 87.6	% 87.0	% 87.4	% 87.1	% 86.4	% 84.5	% 82.7
Mar.	% 86.6	% 86.6	% 86.9	% 87.2	% 87.3	% 87.3	% 87.4	% 87.5	% 86.9	% 85.2	% 83.0	% 80.7	% 79.1
April	% 85.8	% 86.2	% 86.6	% 86.5	% 86.8	% 86.8	% 86.9	% 86.4	% 84.9	% 81.9	% 79.5	% 77.0	% 76.1
May	% 86.5	% 87.0	% 87.0	% 87.4	% 87.7	% 87.8	% 87.4	% 85.3	% 81.9	% 78.7	% 76.9	% 75.1	% 74.2
June	% 86.9	% 87.2	% 87.9	% 87.9	% 88.2	% 88.1	% 87.2	% 85.2	% 82.4	% 79.6	% 77.6	% 76.2	% 75.6
July	% 88.2	% 88.4	% 88.7	% 89.1	% 89.2	% 89.7	% 89.0	% 87.6	% 85.4	% 83.0	% 81.0	% 79.3	% 78.6
Aug.	% 88.5	% 88.7	% 89.3	% 89.1	% 89.3	% 89.3	% 89.3	% 88.7	% 86.8	% 84.4	% 82.2	% 80.4	% 79.2
Sept.	% 87.6	% 88.0	% 87.9	% 88.3	% 88.4	% 88.2	% 88.4	% 88.1	% 87.3	% 84.8	% 82.3	% 79.9	% 78.8
Oct.	% 86.4	% 86.6	% 86.9	% 86.9	% 86.8	% 86.9	% 86.7	% 87.0	% 86.7	% 85.7	% 84.0	% 81.5	% 80.2
Nov.	% 86.9	% 86.9	% 87.3	% 87.4	% 87.5	% 87.7	% 87.8	% 87.9	% 87.8	% 87.3	% 86.5	% 85.0	% 83.5
Dec.	% 87.9	% 88.1	% 87.6	% 87.8	% 88.0	% 87.5	% 87.9	% 87.9	% 87.8	% 87.7	% 87.6	% 86.4	% 86.1
Year	% 87.1	% 87.3	% 87.5	% 87.7	% 87.8	% 87.8	% 87.7	% 87.2	% 86.0	% 84.4	% 82.8	% 81.0	% 80.0

OF THE DAY IN EACH MONTH AND IN THE YEAR

ABERDEEN 1886-1910

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	Mean.
% 77.8	% 77.6	% 78.1	% 79.4	% 80.1	% 80.4	% 80.8	% 80.9	% 80.8	% 80.8	% 80.8	% 80.6	% 80.3
% 75.4	% 75.1	% 75.4	% 76.5	% 78.2	% 79.4	% 79.9	% 79.9	% 79.9	% 80.0	% 80.2	% 80.5	% 79.2
% 72.5	% 72.2	% 72.6	% 73.4	% 75.2	% 77.4	% 79.3	% 80.1	% 80.6	% 81.2	% 81.3	% 81.5	% 78.8
% 70.9	% 71.1	% 71.4	% 72.0	% 73.4	% 75.0	% 77.3	% 79.6	% 80.5	% 81.5	% 82.5	% 83.1	% 78.3
% 72.3	% 72.3	% 72.6	% 73.1	% 73.6	% 74.6	% 76.7	% 79.1	% 81.1	% 82.5	% 83.8	% 84.5	% 78.8
% 71.5	% 71.4	% 72.3	% 72.7	% 72.8	% 74.0	% 75.6	% 77.9	% 80.4	% 82.3	% 83.7	% 84.4	% 78.2
% 71.0	% 71.2	% 71.6	% 72.5	% 73.3	% 74.5	% 76.3	% 78.9	% 81.4	% 82.9	% 83.7	% 84.6	% 78.3
% 70.9	% 70.6	% 71.4	% 72.3	% 74.0	% 75.9	% 78.6	% 81.2	% 82.4	% 83.5	% 84.2	% 84.7	% 79.2
% 72.1	% 72.3	% 72.9	% 74.1	% 76.0	% 78.5	% 81.0	% 82.4	% 83.5	% 84.2	% 84.7	% 85.2	% 80.5
% 75.8	% 75.0	% 76.3	% 77.8	% 80.4	% 82.1	% 83.6	% 83.8	% 84.4	% 84.7	% 84.9	% 85.3	% 82.3
% 78.5	% 78.6	% 79.7	% 80.5	% 81.6	% 82.0	% 82.5	% 82.5	% 82.9	% 82.9	% 83.2	% 83.3	% 82.1
% 79.9	% 79.7	% 80.8	% 81.2	% 81.7	% 82.0	% 82.4	% 82.2	% 82.3	% 82.4	% 82.5	% 82.4	% 82.1
% 74.1	% 73.9	% 74.6	% 75.5	% 76.7	% 78.0	% 79.5	% 80.7	% 81.7	% 82.4	% 83.0	% 83.4	% 79.8

ESKDALEMUIR 1911-2 and 1914-26

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	Mean.
% 85.9	% 86.2	% 86.3	% 87.0	% 87.9	% 87.8	% 88.0	% 87.8	% 87.9	% 87.8	% 87.9	% 88.1	% 87.8
% 82.8	% 82.7	% 83.1	% 83.8	% 85.2	% 86.1	% 86.7	% 87.2	% 87.4	% 87.5	% 87.4	% 87.7	% 86.4
% 75.4	% 74.8	% 75.1	% 76.4	% 78.6	% 81.5	% 83.5	% 84.7	% 85.6	% 85.8	% 86.2	% 86.4	% 82.9
% 69.5	% 68.8	% 68.5	% 70.1	% 72.3	% 75.0	% 79.4	% 82.2	% 84.4	% 85.2	% 86.1	% 86.6	% 79.9
% 68.9	% 68.5	% 68.4	% 69.6	% 71.0	% 73.2	% 77.2	% 81.5	% 84.4	% 85.9	% 86.9	% 87.4	% 79.6
% 67.8	% 67.5	% 67.4	% 68.5	% 69.5	% 71.8	% 75.0	% 79.3	% 82.7	% 84.6	% 86.0	% 87.0	% 78.1
% 72.2	% 72.0	% 71.8	% 72.7	% 74.3	% 76.2	% 79.3	% 83.2	% 86.3	% 87.7	% 88.9	% 89.5	% 82.0
% 74.5	% 74.2	% 74.6	% 75.3	% 77.3	% 80.2	% 83.8	% 86.4	% 88.2	% 88.8	% 89.4	% 90.1	% 84.0
% 74.7	% 74.3	% 74.7	% 76.0	% 78.7	% 82.4	% 85.3	% 86.5	% 88.0	% 88.2	% 88.6	% 88.6	% 84.0
% 77.2	% 76.9	% 78.0	% 80.6	% 83.7	% 85.9	% 87.0	% 87.4	% 88.2	% 88.3	% 88.7	% 88.6	% 85.6
% 81.8	% 81.9	% 83.3	% 85.0	% 86.1	% 86.8	% 87.0	% 87.4	% 87.6	% 87.8	% 88.0	% 87.7	% 86.5
% 86.0	% 86.2	% 87.2	% 87.5	% 88.3	% 88.4	% 88.8	% 88.6	% 89.1	% 88.9	% 89.1	% 89.0	% 88.4
% 76.4	% 76.2	% 76.5	% 77.7	% 79.4	% 81.3	% 83.4	% 85.2	% 86.7	% 87.2	% 87.8	% 88.1	% 83.8

CAHIRCIVEEN (VALENTIA OBSERVATORY) 1886-1910

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	Mean.
%	%	%	%	%	%	%	%	%	%	%	%	%
84.4	84.1	84.3	84.7	85.6	86.1	86.3	86.4	86.7	86.5	86.5	86.7	86.3
81.4	81.0	81.2	81.8	83.2	84.8	85.3	86.2	86.1	86.4	87.0	87.2	85.5
77.9	78.0	77.7	78.4	79.4	81.2	83.5	84.8	85.0	85.6	86.0	86.6	83.7
75.8	75.3	75.5	75.7	77.0	78.6	80.9	83.3	84.5	85.2	85.7	85.9	82.0
74.1	73.7	74.1	74.0	74.2	76.5	78.6	81.4	83.6	85.0	86.0	86.6	81.0
75.1	75.1	75.1	74.4	74.5	76.9	78.9	81.4	84.1	85.4	86.1	86.9	81.5
77.8	77.4	77.0	77.1	76.9	79.0	81.2	83.8	86.0	87.1	87.8	88.3	83.7
78.5	78.0	78.2	78.7	79.0	81.0	83.2	85.4	86.8	87.7	88.0	88.1	84.6
77.9	77.7	77.7	78.7	79.7	82.4	84.4	85.7	86.4	86.8	87.4	87.6	84.3
79.4	79.0	79.1	80.2	81.6	83.7	84.3	84.9	85.3	86.0	86.1	86.6	84.3
82.5	82.1	82.5	83.7	84.9	85.5	85.7	86.4	86.4	86.7	86.8	87.0	86.0
85.5	85.3	85.5	86.5	86.9	87.1	87.2	87.6	88.0	87.9	88.0	87.8	87.2
79.2	78.9	79.0	79.5	80.2	81.9	83.3	84.8	85.7	86.4	86.8	87.1	84.2



## RICHMOND (KEW OBSERVATORY) 1886-1910

Month.	o.	Hour. 1.	G.M.T. 2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
	%	%	%	%	%	%	%	%	%	%	%	%	%
Jan.	86.8	86.6	86.9	86.8	86.8	86.5	87.1	87.0	87.1	86.4	85.6	82.9	81.6
Feb.	84.9	84.7	85.2	85.2	85.7	85.4	85.9	85.4	85.6	84.0	82.1	78.5	76.4
Mar.	85.3	85.4	86.7	86.6	87.1	86.8	87.3	86.4	85.0	81.0	77.8	73.1	70.8
April	83.7	84.4	85.7	86.1	87.1	86.9	86.8	83.8	80.1	75.3	70.4	66.6	63.7
May	83.3	84.6	86.3	86.8	87.6	86.8	85.3	81.1	76.2	71.1	67.8	65.0	62.8
June	83.1	84.3	85.8	87.1	87.6	85.7	83.7	79.7	75.7	71.3	67.9	64.8	62.3
July	83.8	85.1	86.4	87.2	88.1	87.1	85.3	80.8	75.9	70.7	67.0	63.4	61.5
Aug.	85.8	86.8	87.7	88.5	89.0	89.0	88.2	84.9	80.2	74.3	69.9	65.4	63.0
Sept.	87.7	88.4	89.5	89.6	90.1	90.1	90.4	88.5	85.0	80.0	75.1	70.7	67.6
Oct.	90.0	89.9	90.7	90.6	91.3	91.1	91.3	90.6	89.3	85.9	82.5	78.2	75.2
Nov.	89.4	89.2	89.7	89.7	89.8	89.4	90.0	89.6	89.6	87.9	86.4	83.6	81.3
Dec.	87.9	87.4	88.0	87.6	88.0	87.8	88.1	87.4	87.9	87.1	86.4	84.4	83.0
Year	86.0	86.4	87.4	87.7	88.2	87.7	87.5	85.4	83.1	79.6	76.7	73.1	70.8

## FALMOUTH 1886-1910

Month.	o.	Hour. 1.	G.M.T. 2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
	%	%	%	%	%	%	%	%	%	%	%	%	%
Jan.	84.6	84.9	84.9	85.0	85.1	85.3	85.3	85.3	85.4	85.0	83.9	82.2	81.2
Feb.	83.8	83.6	83.5	83.7	83.7	83.9	84.0	83.9	83.9	83.2	81.4	79.4	77.9
Mar.	84.6	84.4	84.8	84.9	84.9	85.2	85.4	85.6	84.2	81.6	79.1	77.1	75.7
April	84.4	84.6	84.9	85.4	85.6	85.6	85.4	83.5	80.5	77.3	74.9	73.5	72.6
May	87.0	87.2	87.5	87.6	88.0	88.1	86.5	83.0	78.8	75.6	73.9	73.1	72.4
June	88.8	89.1	89.4	89.8	89.8	89.9	87.9	84.0	79.7	76.6	75.0	74.2	73.8
July	89.4	89.6	90.0	90.1	90.1	90.2	89.0	85.5	81.1	77.0	75.2	73.8	72.8
Aug.	89.4	89.7	89.9	90.1	90.3	90.7	90.6	87.8	83.9	79.7	77.1	75.6	74.3
Sept.	88.4	88.8	89.2	89.4	89.4	89.8	90.0	88.9	86.2	82.9	80.1	78.0	76.5
Oct.	90.0	89.9	90.5	90.6	91.2	91.2	91.3	90.6	89.3	86.1	82.8	79.1	76.5
Nov.	85.4	85.7	85.6	85.4	85.7	85.9	85.5	85.9	85.8	84.8	83.2	81.3	79.7
Dec.	85.0	85.0	84.8	85.0	85.0	85.1	84.7	85.2	85.1	84.9	84.2	82.8	81.5
Year	86.7	86.9	87.1	87.3	87.4	87.6	87.1	85.8	83.7	81.2	79.2	77.5	76.2

The above table includes values both true mean for the day has been found by initial and final midnights to the rest of

## RICHMOND (KEW OBSERVATORY) 1886-1910

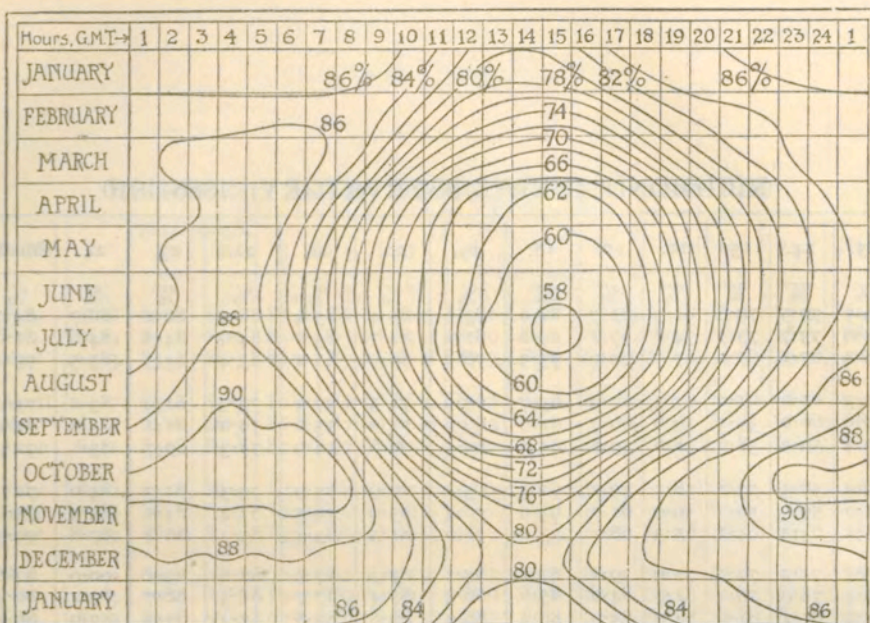
13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	Mean.
%	%	%	%	%	%	%	%	%	%	%	%	%
79.7	79.5	79.6	81.5	82.7	84.0	84.6	85.4	85.4	86.2	86.1	86.7	84.7
74.6	73.7	73.7	74.7	77.1	79.8	81.2	82.7	83.2	84.0	84.3	84.8	81.6
68.4	67.1	67.0	67.7	69.9	73.5	76.8	79.9	81.2	83.4	84.3	85.5	79.1
62.3	61.0	61.0	61.3	62.9	65.7	69.9	74.3	77.4	79.9	81.9	83.2	75.0
60.9	60.0	59.5	59.6	60.7	62.6	66.6	71.9	75.6	79.0	81.1	83.3	73.4
60.4	59.3	58.6	58.8	59.8	61.9	65.5	70.6	74.9	78.3	80.7	83.1	72.9
59.4	58.3	57.8	58.1	59.2	61.4	65.1	70.9	75.9	79.3	81.7	84.0	72.9
61.0	59.9	59.7	59.9	61.7	64.9	70.4	75.9	79.5	82.4	84.1	85.9	75.6
65.4	64.3	64.1	65.3	68.1	73.2	78.0	81.5	83.4	85.3	86.4	87.8	79.5
73.3	72.2	72.8	75.0	79.1	83.1	85.2	87.3	87.6	88.6	89.1	90.0	84.6
79.4	78.9	79.2	81.9	84.0	85.6	86.3	87.4	87.7	88.5	88.7	89.2	86.4
81.8	81.1	81.9	84.0	85.0	86.1	86.2	86.8	86.8	87.4	87.3	87.9	86.1
68.9	67.9	67.9	69.0	70.9	73.5	76.3	79.6	81.6	83.5	84.6	86.0	79.3

## FALMOUTH 1886-1910

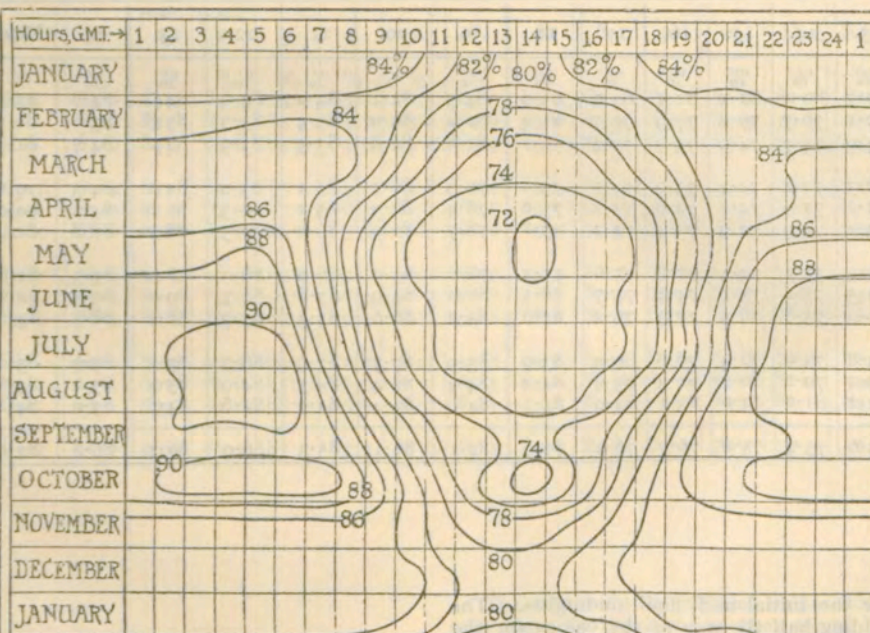
13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	Mean.
%	%	%	%	%	%	%	%	%	%	%	%	%
80.7	80.3	81.1	82.1	83.2	83.9	84.3	84.1	84.2	84.6	84.6	84.8	83.8
77.1	76.7	77.2	77.9	79.7	81.4	82.2	82.9	83.4	83.5	83.8	83.8	81.7
74.9	74.7	74.9	75.7	77.2	79.1	81.8	82.8	83.5	83.9	84.2	84.7	81.3
72.3	72.1	72.4	73.0	74.1	75.8	79.5	82.1	83.1	83.9	84.1	84.3	79.6
72.2	71.9	72.2	72.6	73.2	75.0	78.4	82.3	85.1	86.3	86.8	87.2	80.2
73.2	72.9	72.9	73.4	74.2	75.8	78.7	82.9	86.0	87.5	88.2	88.8	81.4
72.4	72.2	72.4	72.8	73.6	75.3	78.6	83.0	86.6	88.0	88.9	89.3	81.6
73.5	73.4	73.4	74.4	75.7	78.1	82.0	85.9	87.8	88.3	89.0	89.5	82.9
76.0	75.8	76.5	77.3	79.2	82.0	85.2	86.6	87.3	87.7	88.2	88.5	84.2
74.8	73.9	74.4	76.6	80.3	83.9	85.9	87.7	87.9	88.7	89.2	89.9	85.2
79.2	79.2	80.0	81.3	83.4	84.2	84.4	84.4	84.5	84.9	85.4	85.2	83.8
81.2	81.1	82.0	83.1	84.0	84.2	84.6	84.4	84.7	84.8	84.8	85.0	84.1
75.6	75.4	75.8	76.7	78.2	79.9	82.1	84.1	85.3	86.0	86.4	86.8	82.5

for the initial and final midnights. The adding half the sum of the values for the the hourly values and dividing by 24.

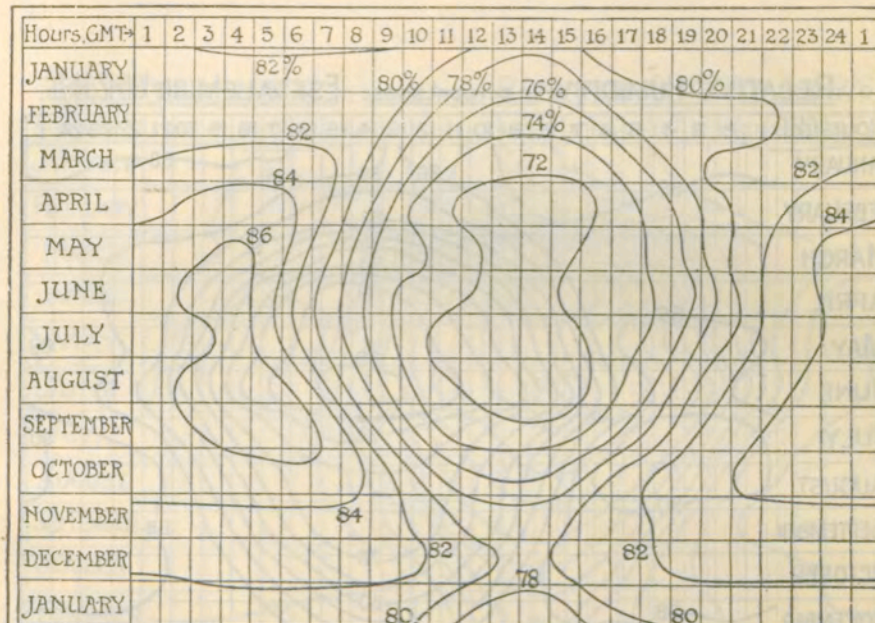




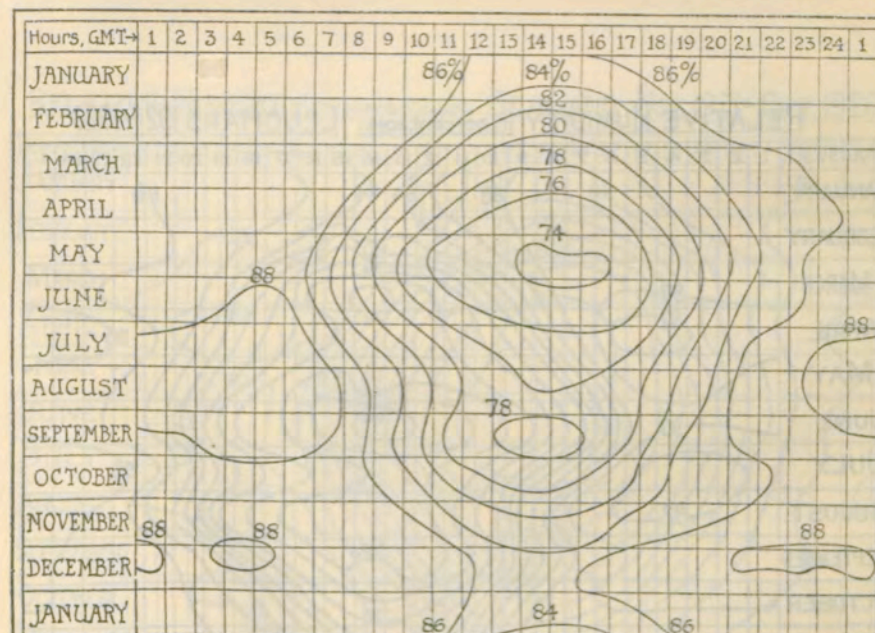
Mean Relative Humidity at KEW for 25 Years 1886-1910.  
Isopleths showing Seasonal and Diurnal Variation.



Mean Relative Humidity at FALMOUTH for 25 Years 1886-1910.  
Isopleths showing Seasonal and Diurnal Variation.

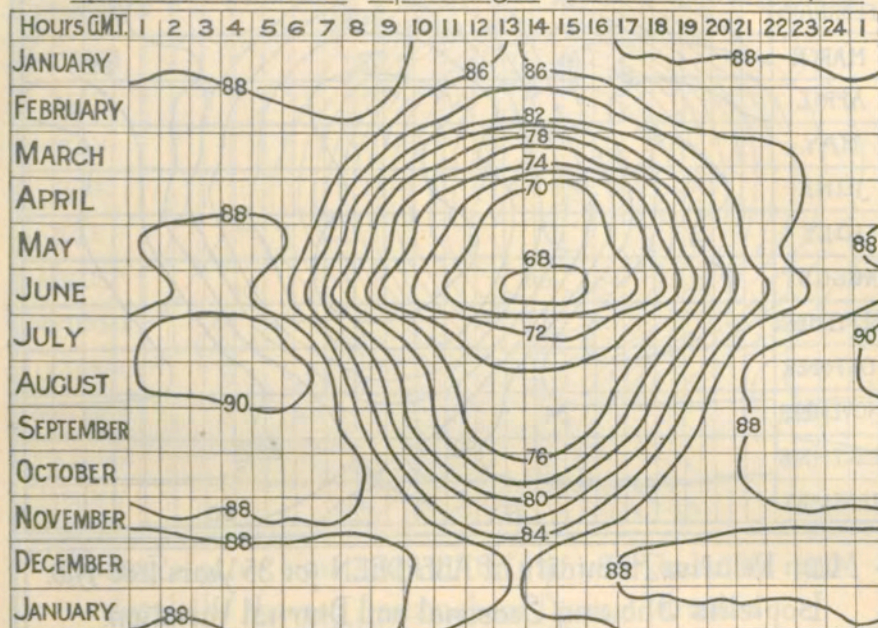
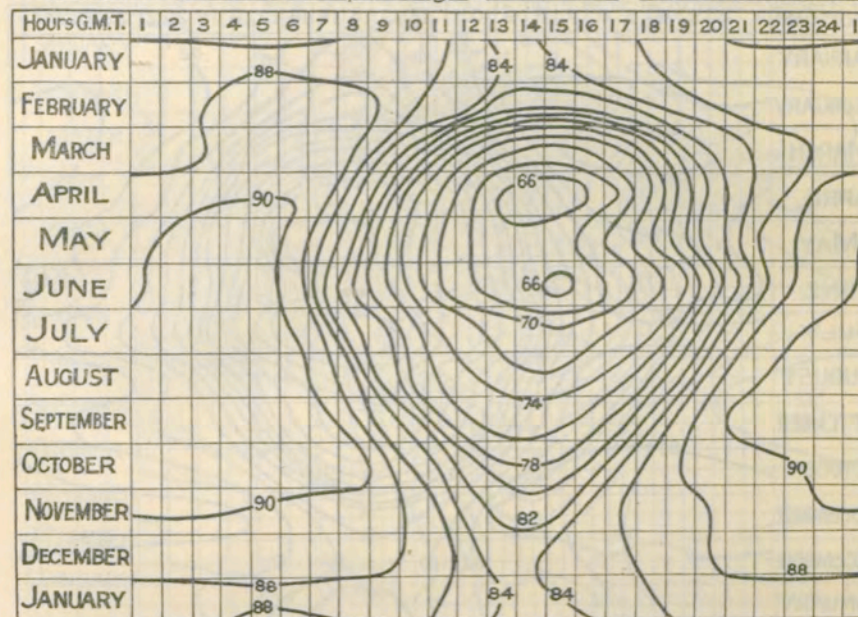
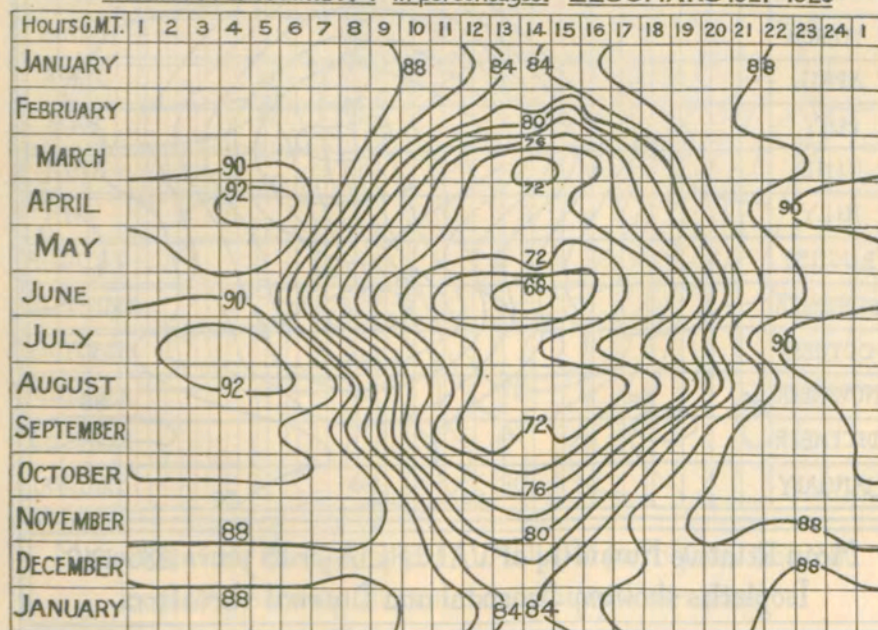
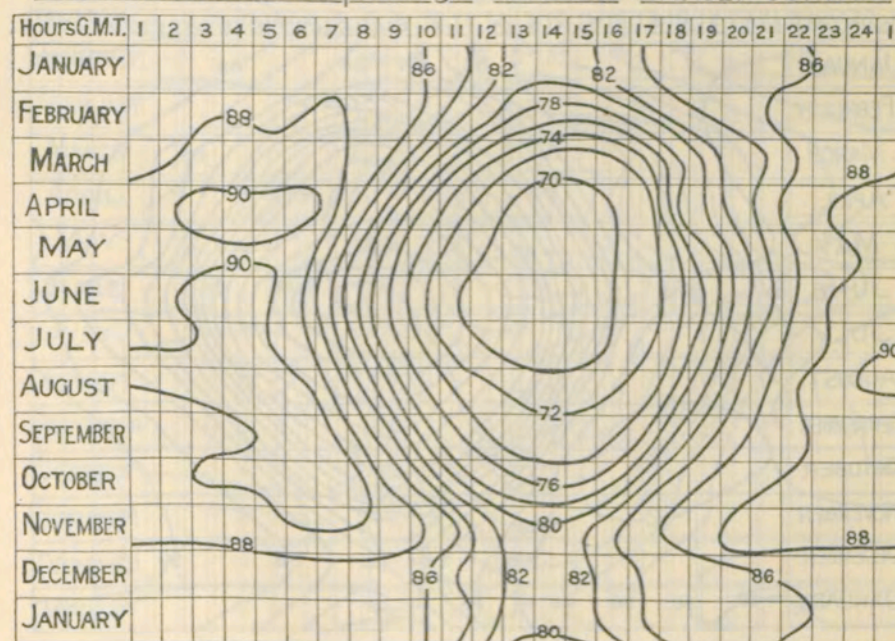


Mean Relative Humidity at ABERDEEN for 25 Years 1886-1910.  
Isopleths showing Seasonal and Diurnal Variation.



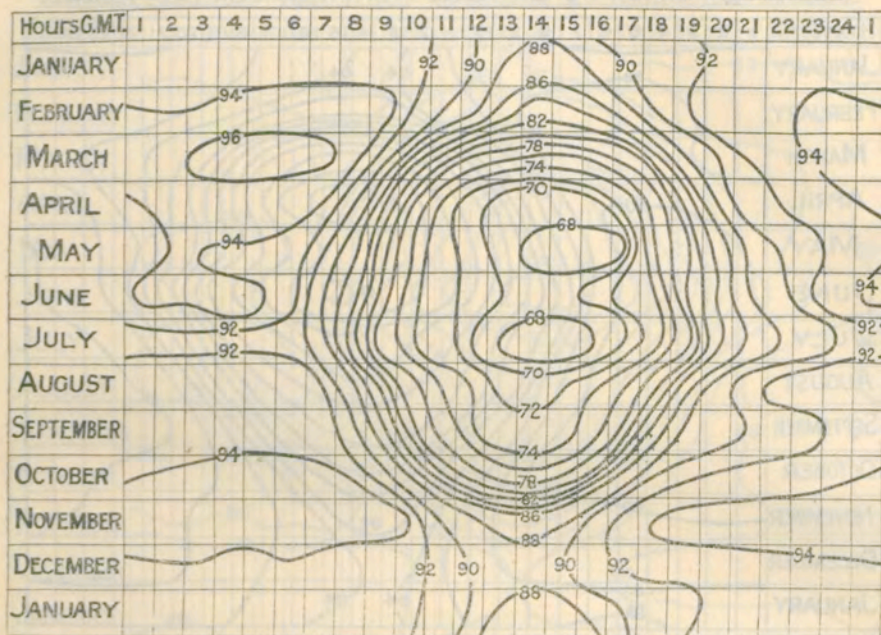
Mean Relative Humidity at VALENCIA for 25 Years 1886-1910.  
Isopleths showing Seasonal and Diurnal Variation.



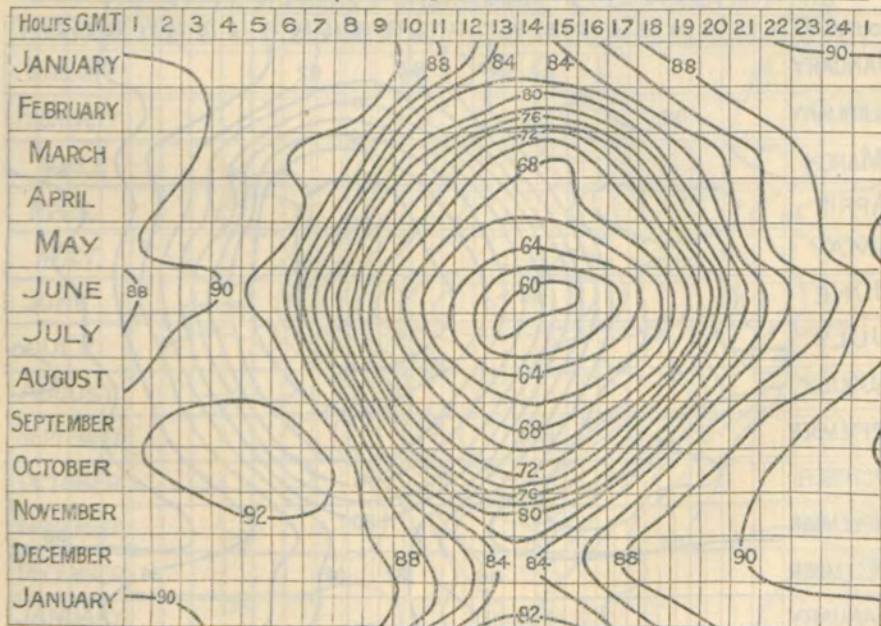
RELATIVE HUMIDITY in percentages. ESKDALEMUIR 1911-12, 14-26.RELATIVE HUMIDITY in percentages RENFREW SEPT. 1920-AUG. 1926RELATIVE HUMIDITY in percentages. LEUCHARS 1921-1926RELATIVE HUMIDITY in percentages SEALAND Nov. 1921-OCT. 1926.



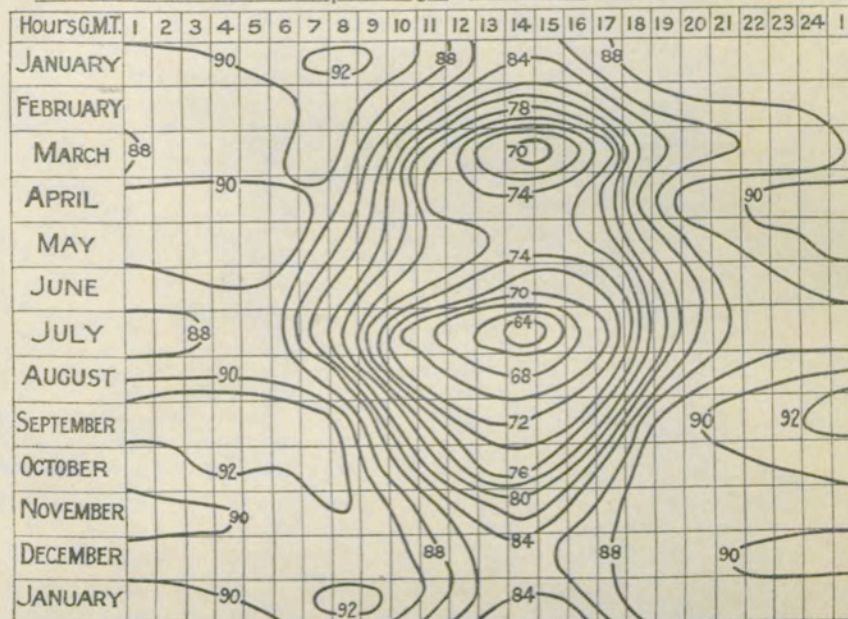
RELATIVE HUMIDITY in percentages, CRANWELL 1921-1926.



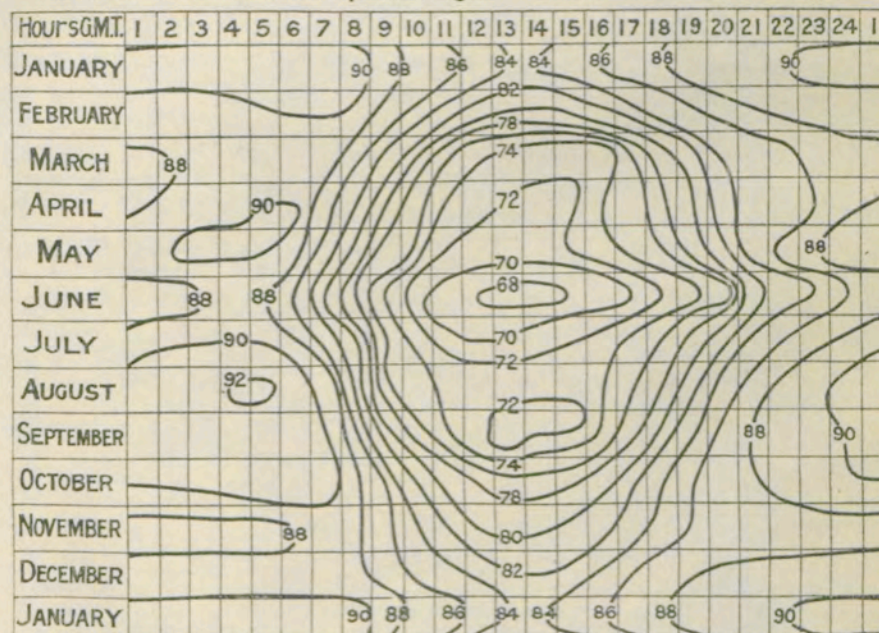
RELATIVE HUMIDITY in percentages CROYDON Nov. 1920-Oct. 1926



RELATIVE HUMIDITY in percentages LYMPNE Nov. 1920-Oct. 1926



RELATIVE HUMIDITY in percentages CALSHOT 1921-1926





## 1. HANDBOOKS, TEXTBOOKS, TABLES—cont.

### Meteorological Observer's Handbook—cont.

**Supplement No. 3.** Instructions to Observers at Normal Climatological Stations. (No. 191/3. 1927.) (8vo.) 4d. Postage 1d.

**Supplement No. 4.** Instructions to Observers at Climatological Stations at Health Resorts. (No. 191/4. 1927.) (8vo.) 4d. Postage 1d.

**Meteorology, Elementary.** A Short Course in. By W. H. Pick, B.Sc. (No. 247. 2nd edition. 1927.) (8vo.) 1s. 6d. Postage 2d.

**Meteorological Reports issued by Wireless Telegraphy** in Great Britain and the Countries of Europe and North Africa. (No. 252. 6th edition, 1928.) (8vo.) 4s. Postage 2½d.

*(Supplements issued as necessary and priced separately.)*

**New International Code for Meteorological Messages.** Reprint of Section IV of No. 252. (1st Ed.) (No. 253. 1922.) (8vo.) 4d. Postage 1d.

**Observer's Primer,** being Short Instructions in the Method of Taking and Reporting Readings of Temperature and Rainfall, specially prepared for Meteorological Observers in the British Colonies. (No. 266. 1924.) (8vo.) 6d. Postage ½d.

**Seaman's Handbook of Meteorology.** A Companion to the Barometer Manual for the use of Seamen. (No. 215. 3rd edition, 1917.) (8vo.) 3s. 6d. Postage 2d.

**Tables for the Reduction of Meteorological Observations.** Published by the Indian Meteorological Department. Includes Tables for finding the Absolute and Relative Humidities from Readings of Wet and Dry Bulb Thermometers. (4to.) 2s. Postage 5d.

**Tropical Africa.** Hints to Meteorological Observers in. With Instructions for taking Observations, and Notes on Methods of recording Lake Levels. (No. 162. 2nd edition, 1907.) (8vo.) 9d. Postage 1d.

**Weather Forecasts Transmitted by Telegraphy or Radio-telegraphy.** Forecast Code for the Abbreviation of. (No. 244. 1922.) (8vo.) 1s. Postage 1d.

**Weather Map.** An introduction to Modern Meteorology. By Sir Napier Shaw, F.R.S. (No. 225i. 6th issue, 1925.) (Royal 16mo.) 1s. 3d. Postage 1½d. *(See also Meteorological Glossary, in continuation of the Weather Map.)*

**Wireless and Weather—An Aid to Navigation.** By Captain L. A. Brooke Smith, R.D., R.N.R. Reprinted from the **Marine Observer**, Vol. IV. (No. 297.) (4to.) 5s. Postage 6d.

**Wireless Weather Manual,** being a Guide to the Reception and Interpretation of Weather Reports and Forecasts distributed by Wireless Telegraphy in Great Britain. (No. 255. 1922.) (8vo.) 9d. Postage ½d. *(Supplements issued as necessary and priced separately.)*

## 2. JOURNALS.

**Marine Observer.** From January, 1924, in substitution for the monthly issues of Meteorological Charts of the North Atlantic Ocean and East Indian Seas. (No. 262.) (12½ in. by 9½ in.) Published monthly. 2s. Postage 2d. *(Annual subscription, 25s., post free.)*

**Meteorological Magazine.** Symons's Meteorological Magazine, incorporated with the Meteorological Office Circular. (8vo.) Published monthly. 6d. Postage ½d.

*(Annual subscription, from February to January, 6s. 6d., post free.)*



### 3. PUBLICATIONS OF DATA (CURRENT PERIODICAL ISSUES).

**British Rainfall.** (8vo.) A Report upon the progress of Rainfall Investigations and full records of the Rainfall of each year, with Maps and Illustrations :—

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**Monthly Weather Report.** (4to.) The publication of the Monthly Weather Report began in 1884. Contains summaries of observations from about 330 Stations in the British Isles, with Charts. Monthly Parts and Annual Summary, each 9d. Postage  $\frac{1}{2}$ d.

*(Annual subscription, including Introduction and Annual Summary, 10s., post free.)*

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**Réseau Mondial.** (4to.) Monthly and Annual Summaries of Pressure, Temperature, and Precipitation at Land Stations, generally two for each 10 degree square of Latitude and Longitude. From 1910 :—  
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**Weekly Weather Report.** (4to.) Published in weekly numbers from February, 1878, to February 25, 1928 (at prices ranging from 2d. to 9d. each) and thereafter in annual volumes referring to the Seasonal Year (i.e. from the beginning of Spring to the end of Winter.)

### 4. PUBLICATIONS OF NORMALS OR AVERAGES.

**Normals of Meteorological Elements for the British Isles.** Book of. (No. 236.) (8vo.) :—

**Section I.** Monthly Normals of Temperature, Rainfall and Sunshine for Stations. 2s. Postage  $1\frac{1}{2}$ d.

**Section II.** Normals, Weekly, Monthly, Quarterly and Seasonal for Districts. 9d. Postage  $\frac{1}{2}$ d.

**Section III.** Maps of the Normal Distribution of Temperature, Rainfall and Sunshine. 1s. 6d. Postage 1d.

**Section IV.** (a) Range of Variation of Temperature and Rainfall ;  
(b) Frequency Tables for Hail, Thunder, Snow, Snow Lying and Ground Frost. 3s. 6d. Postage 1d.

**Section V.** Monthly Normals of Rainfall. 4s. Postage 1d.