

FOR OFFICIAL USE.

M.O. 255.

AIR MINISTRY

METEOROLOGICAL OFFICE

THE WIRELESS WEATHER MANUAL

BEING A

GUIDE TO THE RECEPTION AND INTERPRETATION

OF

WEATHER REPORTS AND FORECASTS

DISTRIBUTED BY

WIRELESS TELEGRAPHY IN GREAT BRITAIN.

Published by the Authority of the Meteorological Committee.



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1922.

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TABLE OF BRITISH METEOROLOGICAL INFORMATION ISSUED BY WIRELESS TELEGRAPHY.

Revised to June 1st, 1922.

Time of Issue		Call Sign.	Wave- Length.	Nature of Message.	Page.
G.M.T.	Summer Time.				
0200	3.00 a.m.	G.F.A.	1,400 c.w.	Synoptic data for 0100	18
0335	4.35 a.m.	"	1,680 "	Aviation Report - -	7
0435	5.35 a.m.	"	1,680 "	" - -	7
0535	6.35 a.m.	"	1,680 "	" - -	7
0600	7.00 a.m.	"	4,100 "	Synoptic data for 0100	18
0635	7.35 a.m.	"	1,680 "	Aviation report - -	7
0735	8.35 a.m.	"	1,680 "	" - -	7
0800	9.00 a.m.	"	4,100 "	Synoptic data for 0700	18
0835	9.35 a.m.	"	1,680 "	Aviation report - -	7
0900*	10.00 a.m.*	"	1,300 "	Coded district forecasts	7
0915	10.15 a.m.	"	4,100 "	General inference - -	6
0935	10.35 a.m.	"	1,680 "	Aviation report - -	7
0950	10.50 a.m.	M.F.T.	5,750 spk.	Western Seaboard fore- cast and data.	6
1035	11.35 a.m.	G.F.A.	1,680 c.w.	Aviation report - -	7
1135	12.35 p.m.	"	1,680 "	" - -	7
1235	1.35 p.m.	"	1,680 "	" - -	7
1335	2.35 p.m.	"	1,680 "	" - -	7
1400	3.00 p.m.	"	4,100 "	Synoptic data for 1300	18
1435	3.35 p.m.	"	1,680 "	Aviation report - -	7
1500*	4.00 p.m.*	"	1,300 "	Coded district forecasts	7
1535	4.35 p.m.	"	1,680 "	Aviation report - -	7
1635	5.35 p.m.	"	1,680 "	" - -	7
1900	8.00 p.m.	"	4,100 "	Synoptic data for 1800	18
2000	9.00 p.m.	"	4,100 "	General inference - -	6
2000*	9.00 p.m.	"	1,300 "	Coded district forecasts	7
2150	10.50 p.m.	M.F.T.	5,750 spk.	Western Seaboard fore- cast and data.	6

* Approximate times (see p. 7).

WIRELESS WEATHER MANUAL.

1.—Introductory.

Many persons who possess wireless receiving sets desire to know what weather information is issued by wireless telegraphy in Great Britain. Others, to whom the weather may be of great practical importance, wish to know what information they can obtain by the use of a simple wireless receiving set. This pamphlet has been prepared to meet their needs. They can find out by using it what the weather is, what it has been, what rain has fallen, to what heights or depths the thermometer has attained, and last, but not least, what the weather will be in the next 24 hours (sometimes longer).

(a) The simplest class of weather information is the "general inference" which is issued in plain language from the Air Ministry at 9.15 a.m. and 8 p.m. G.M.T. (see section 3b). This "inference" tells how the changes in the weather situation will affect the whole of the British Isles; it is necessary to bear in mind this general character of the "inference" in applying it to local weather of an individual district. The best way of utilising the "inference" is in connection with a weather map; even yesterday's map is better than none.

(b) Similar to the "inference" in simplicity, is the forecast for the Western Seaboard of the British Isles, issued from Clifden at 9.50 a.m. and 9.50 p.m. G.M.T. This is issued primarily for the use of seamen. (See section 3c.)

(c) Next to these plain language messages in suitability to the non-expert, are the coded forecasts for districts issued from the Air Ministry, of which particulars are given in section 3, paragraphs (d) and (e). These forecasts are sent in code simply for the sake of brevity. With the use of the small code book, M.O. Publication 244, it is a simple, straightforward process to put the messages into plain language. Most of the information they contain is of general application, though some of the items are especially for aviation. They give more detail and are more directly applicable to the district concerned than the "general inference."

(d) The messages referred to in paragraphs (a), (b) and (c) are forecasts of coming weather. Another type is the "synoptic message" issued at 8 a.m., 2 p.m. and 7 p.m. G.M.T. This gives in code form the weather conditions at a considerable number of stations in the British Isles, one hour before the time of issue. (See section 3a). The code is a simple one and the

information can be put into plain language by using the Appendix to this pamphlet. The most effective way of using this part of the information is to plot it on a chart. Section 5 gives full instructions in the method of making such charts.*

Broadly speaking, one need not be a meteorologist to utilise the information which has been described in paragraphs (a), (b) and (c), but one must learn some meteorology to make appreciable use of the information described in paragraph (d).

2.—The Wireless Installation for the reception of the messages.

The receiver employed should respond to all classes of wireless transmission—spark and continuous wave—and have a wave length range of from 1,000 to 6,000 metres; these wave lengths covering Air Ministry, Eiffel Tower, and the majority of Continental stations transmitting meteorological messages.

There are many low priced highly efficient instruments on the market, the makers of which will readily demonstrate the capabilities of their sets and give to prospective purchasers every assistance possible regarding the erection of installations.

The approximate cost of an efficient installation complete would be about £30. If, however, the purchaser has a knowledge of wireless apparatus a suitable receiver could easily be constructed from component parts at a much lower cost.

The range of reception will, of course, depend upon the nature of the receiver used, the position of the station &c. It will be found, however, that with a well spread 100 ft. aerial (the length allowed by H.M. Postmaster-General for amateur installations) and a single-valve receiver the Air Ministry, Paris, and most Continental stations can be received anywhere in England.

It should be noted that the Postmaster-General's licence must be obtained before any wireless apparatus can be installed.

For text-books on the subject of elementary wireless, Morse Code, &c., application may be made to the Wireless Press, Ltd., 12-13 Henrietta Street, W.C. 2.

Continuous electricity supply is not essential for the erection of a receiving station. Accumulators necessary for valve-filament lighting, &c., can be charged by a local garage or other convenient source of supply.

* Synoptic messages are issued not only in Great Britain but also in most other European countries. Many of these messages lie within the range of a moderately priced receiving set. Full particulars are given in a pamphlet entitled *Particulars of Meteorological Reports issued by Wireless Telegraphy in Great Britain and by the countries of Europe and North Africa* (M.O. Publication No. 252), obtainable from H.M. Stationery Office, Imperial House, Kingsway, W.C.2.

CODE.—The code is given in a publication entitled FORECAST CODE FOR THE ABBREVIATION OF WEATHER FORECASTS TRANSMITTED BY TELEGRAPHY OR RADIOTELEGRAPHY (M.O. Publication 244), obtainable from H.M. Stationery Office, Imperial House, Kingsway, W.C.2. Price, 1s. net; postage, 1½d.

4.—How to use the Wireless Messages.

Until the study of meteorology becomes more general than it is at present there will be a large number of people interested in the weather who have not the knowledge which would make it possible for them to construct weather maps and to make their own forecasts. They would, however, be glad to have the latest official description of the existing weather conditions and to know what changes are anticipated. As an example, we may take a farmer during the harvest season who has little time for weather maps, but would like to know if there is likely to be any change in the weather either for better or for worse. He may not have a wireless installation himself, but there is very probably in his neighbourhood an amateur wireless operator who would be willing to "listen in" at convenient times for the information required.

For this purpose the "general inferences" (*see* section 1a) broadcasted each day at 9.15 a.m. and 8 p.m. G.M.T. (10.15 a.m. and 9 p.m. Summer Time) are particularly suitable as they are in plain language and contain a general forecast. These "inferences" apply, however, to the country as a whole and it is impossible in them to give detailed information for each part of the country, still they would prove very valuable in enabling anyone to interpret his local weather signs.

Much more detailed and specialised information would be obtained if the wireless operator could intercept the messages described in section 3e, and it is believed that it would well repay anyone who is at all dependent on the weather to arrange for these messages to be taken and for the part referring to his district to be decoded. The reception and decoding would probably take only a quarter of an hour and the result would be a forecast in plain language drawn up a few minutes earlier by a professional forecaster with full information at his disposal.

It is hoped that there are many people who will not be satisfied with the forecasts alone, but who will wish to draw themselves a weather map and to form their own conclusions. There can be no doubt that an interested observer of the weather can interpret local signs with great success if he knows the general weather situation. A weather map is now issued in many London morning newspapers, but by the time these are available the information is already more than twelve hours old. To be able to prepare a weather map with information taken only one hour previously is a great advantage, and this is possible by use of the information contained in the synoptic messages described below.

The following instruction for the preparation of weather maps from the wireless messages has been drawn up to help those who wish to take advantage of these messages, and it is hoped that they will prove useful to many to whom reliable weather information is of practical importance.

5.—Charting the Observations.

The synoptic message as received consists of groups of figures which require to be decoded before the information can be utilised. The message sent out at 0800 G.M.T. on September 2nd 1921, may be taken as typical:—

01	05528	30148	02088	92848	97288
11	10020	30252	04088	62626	00520
44	09525	31154	32579	72695	92579
70	15126	11058	31280	67886	91289
22	12430	31255	04087	65498	93399
15	08402	34055	04680	70705	01189
52	14224	21158	01289	00003	00380
61	12124	31159	01288	08605	02579
07	09228	30651	04689	64646	03089
50	16631	31155	02697	03604	91398
78	15116	34061	00689	70704	01384
03	09600	01149	01178	76486	92070
33	12427	41158	03280	60605	01489
45	10225	31259	51088	68688	00080
20	14528	11054	02287	20209	01189
54	11822	21358	03590	65886	01571
74	12925	31260	31688	60606	97091
Pilot	33	13321	23126	-----	
	66	22825	32723	42718	

The synoptic data with which we are concerned are contained in the portion of the message preceding the word "Pilot."

To interpret the figures reference is now made to the Appendix (pp. 15-24). The pairs of figures are the numbers of the stations shown on the map, Fig. 1.

The group "01" with which the message begins indicates that the groups immediately following refer to observations at Lerwick. Taking these groups in succession we obtain the following information relating to that station:—

FIRST GROUP 05528.

055 Barometer reading reduced to sea level	= 1005.5mb.
28 Wind direction	= NW.

SECOND GROUP 30148.

3 Wind force on Beaufort Scale	= 3.
01 Present weather	= fair.
48 Temperature	= 48° F.

THIRD GROUP 02088.

- | | |
|---|---------------------|
| 0 Characteristic of barometric tendency | = steady or rising. |
| 2 Barometric change in last 3 hours | = plus 2 half-mb. |
| 0 Weather for past 6 hours | = fair or fine. |
| 8 Distance of visibility | = 12.5 to 31 miles. |
| 8 Relative humidity | = 80-89 per cent. |

FOURTH GROUP 92848.

- | | |
|-------------------------------------|------------------------------|
| 9 First form of cloud | = Cumulo nimbus. |
| 2 Amount (in tenths of sky covered) | = 2. |
| 8 Second form of cloud | = Cumulus or fracto-cumulus. |
| 4 Total amount of cloud (tenths) | = 4. |
| 8 Height of lowest cloud | = 6,500-8,000 feet. |

FIFTH GROUP 97288.

- | | |
|------------------------------|---|
| 97 Rainfall during night | = Trace. |
| 2 Sea disturbance | = Heavy swell, slight sea. |
| 8 Visibility towards the sea | = 12.5-31 miles. |
| 8 Time of beginning of rain | = 8 to 10 hours before time of observation. |

When set out in this way the amount of information contained in a single synoptic message assumes unmanageable proportions. It is, therefore, necessary to adopt a method of displaying the data in a form which will be at once compact and comprehensible. The most satisfactory method of doing this is to plot the readings on a blank map and so construct what is known as a *Synoptic Chart*.

For this purpose it is not necessary to enter all the information on one single chart. The data in the synoptic message are of the highly detailed character necessary for the modern practice of weather prediction, but a very informative chart can be made by mapping only the essential elements of wind, weather, temperature, pressure and barometric change. An attempt to put other elements on the same chart will only result in confusion.

Blank charts suitable for the purpose (M.O. Form 2214), on which most of the reporting stations are indicated by a small green dot, are on sale at H.M. Stationery Office, Imperial House, Kingsway, London, W.C.2. Price 2s. 3d. per hundred; postage, 8d. extra.

The method of constructing a chart is shown in Fig. 2, which illustrates the conditions at 7h. G.M.T., September 2nd, 1921, as given by the stations in the synoptic message issued by W/T at 0800 G.M.T. (9 a.m. British Summer Time.)

Wind direction is shown by an arrow flying with the wind and wind force by the number of flèches on the arrow. The point of the arrow should coincide with the position of the station. "Calm" is shown by a circle surrounding the place of observation. The barometric pressure in millibars and tenths and the temperature are written down beside the wind arrow.

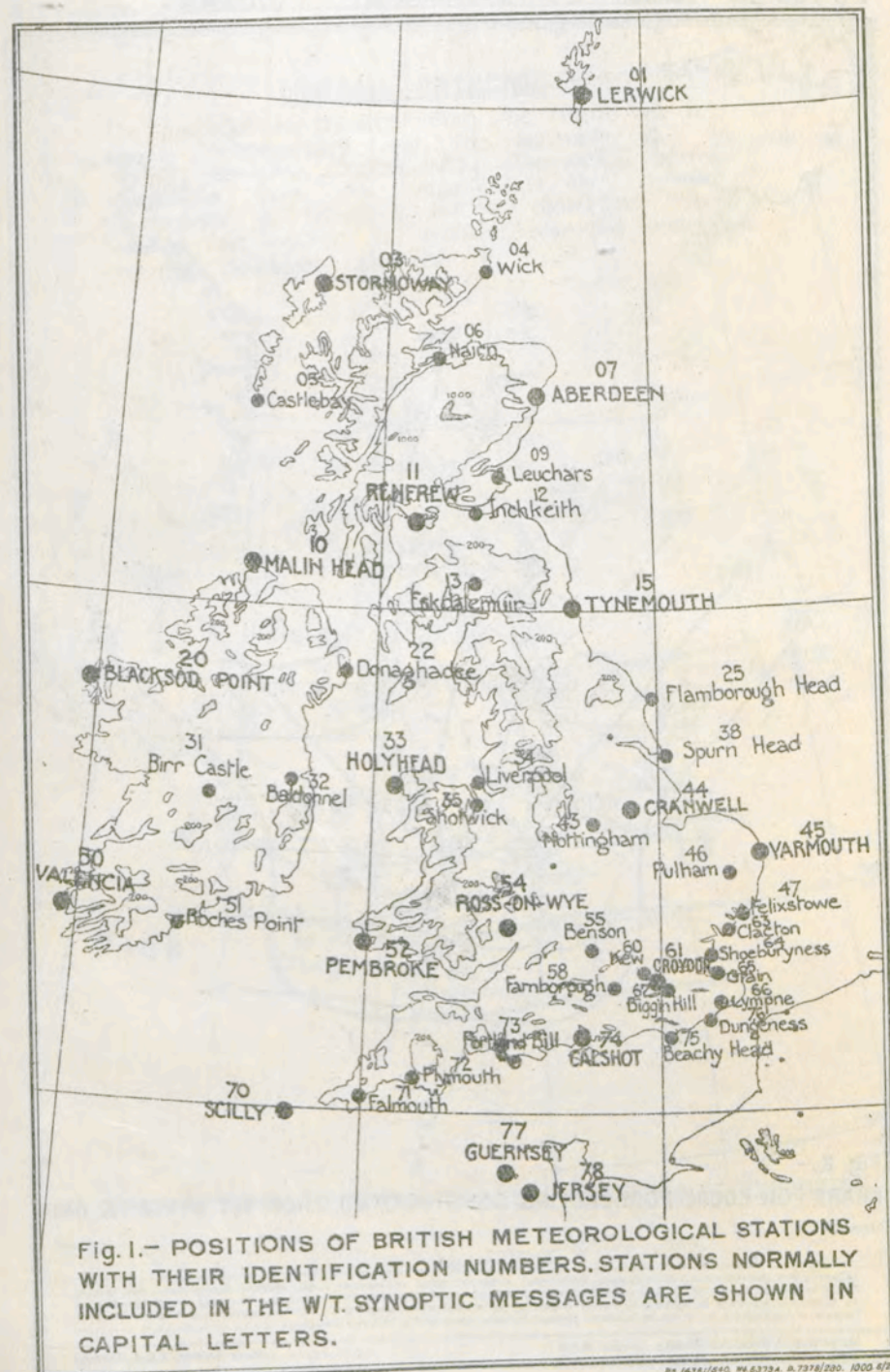


Fig. 1.— POSITIONS OF BRITISH METEOROLOGICAL STATIONS WITH THEIR IDENTIFICATION NUMBERS. STATIONS NORMALLY INCLUDED IN THE W/T SYNOPTIC MESSAGES ARE SHOWN IN CAPITAL LETTERS.

CHART OF WEATHER IN NORTH-WESTERN EUROPE.

M.O. Form 2214. FRIDAY, 2ND SEPTEMBER 1921. 0700 G.M.T.

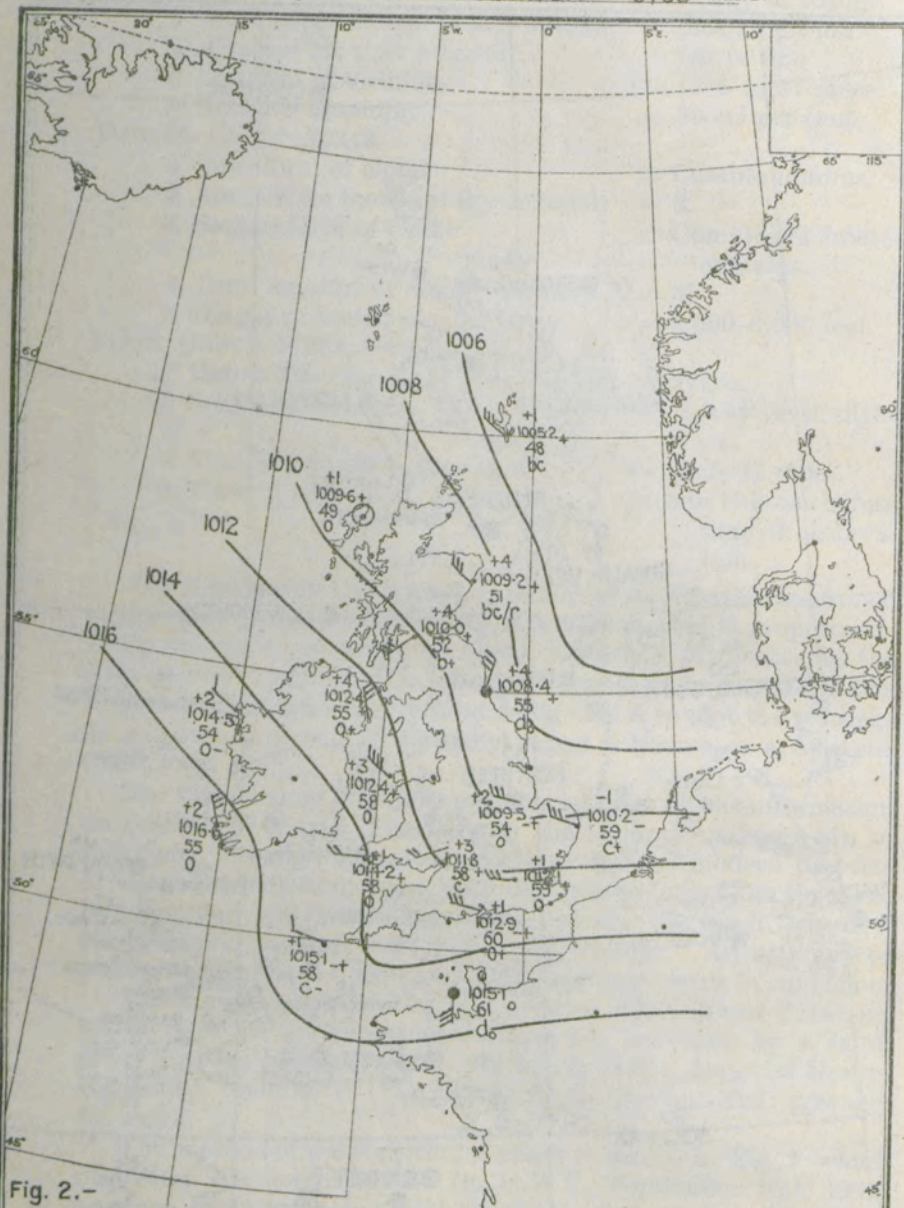


Fig. 2.-
CHART FOR LOCAL FORECASTING, CONSTRUCTED FROM W/T SYNOPTIC DATA

Issued at

Isobars are drawn for every 2 millibars; 1,000 mb. = 29.53 inches of Mercury under standard Temperature and Gravity. If the isobars are 1 cm. (0.4 inch) apart the geostrophic wind speed is 32 kilometres per hour (32 mph.) in latitude 50° and 46 kilometres per hour in latitude 60° under the following conditions: temperature = 50° F., pressure = 1,015 mb. For 5° F. increase of temperature or 10 mb. decrease of pressure increase speed by 1% and vice versa.

Meteorological Office, Air Ministry, London, W.C.2.

G. C. Simpson, F.R.S., Director.

H.M. Stationery Office Litho. Press, Kingsway, W.C.2.

PA 1430/540. W. 6219A. D. 7378/200. 1000. 6/22

To face page 10.

CHART OF WEATHER IN NORTH-WESTERN EUROPE.

M.O. Form 2214. FRIDAY, 2ND SEPTEMBER 1921. 0700 G.M.T.

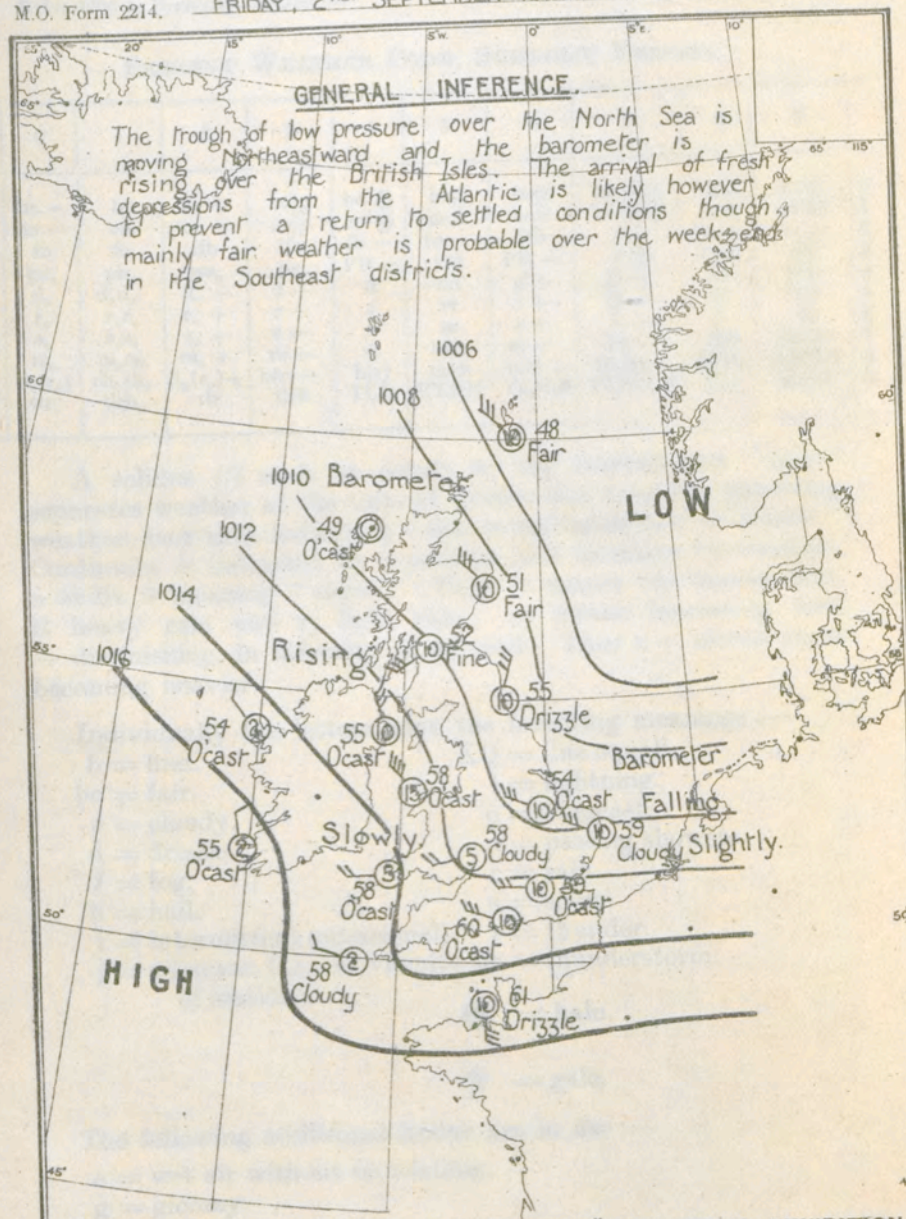


Fig. 3.-CHART AND "GENERAL INFERENCE" FOR PUBLIC EXHIBITION.

Issued at

Isobars are drawn for every 2 millibars; 1,000 mb. = 29.53 inches of Mercury under standard Temperature and Gravity. If the isobars are 1 cm. (0.4 inch) apart the geostrophic wind speed is 32 kilometres per hour (32 mph.) in latitude 50° and 46 kilometres per hour in latitude 60° under the following conditions: temperature = 50° F., pressure = 1,015 mb. For 5° F. increase of temperature or 10 mb. decrease of pressure increase speed by 1% and vice versa.

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To face page 11.

Weather is shown by Beaufort letters. For this purpose the "present weather" code (Appendix, p. 19) may be abbreviated into the following table:—

PRESENT WEATHER CODE, SYMBOLIC VERSION.

	0	1	2	3	4	5	6	7	8	9	
0	bc —	bc	bc +	bcjp	bc ⊕	bc/f	bc/r	bc/s(h)	bc/tl	bc/tlr	0
1	co —	co	co +	cojp	co ⊕	co/f	co/r	co/s(h)	co/tl	co/tlr	1
2	fb	fo	ifb	ifo	fb —	fo —	ffb	ffo	fb +	fo +	2
3	pr _o	ph _o	pr _o +	ps _o	PR —	PR	PR +	PH	PRS	PS	3
4	d _o	d _o d _o	d _o +	d —	d	dd	d +	D —	D	DD	4
5	r _o	r _o r _o	r _o +	r —	r	rr	r +	R —	R	RR	5
6	s _o	s _o s _o	s _o +	s —	s	ss	s +	S —	S	SS	6
7	rs _o	rs _o rs _o	rs _o +	rs —	rs	rsrs	rs +	RS —	RS	RSRS	7
8	h _o (r _o)	rh _o rh _o	h _o (r _o) +	h(r) —	h(r)	hrh	h(r) +	H(R) —	H(R)	RHRH	8
9	tlr _o	tlrh _o	tlr	tlrh	TLR	TLRH	TLR ⊕	TLRH ⊕	KQ	KQH	9

A solidus (/) such as occurs in the combination "bc/r" separates weather at the time of observation from the preceding weather, bc/r thus indicating "fine or fair after rain or drizzle." Continuity is indicated by repetition and intensity by capitals, a suffix 0 meaning "slight." Thus rr means continuous rain, R heavy rain and r_o light rain; + means increasing, and — diminishing, in intensity or amount. Thus s + means snow becoming heavier.

Individually the letters have the following meanings:—

b = fine.	KQ = line squall.
bc = fair.	l = lightning.
c = cloudy.	o = overcast.
d = drizzle.	p = passing showers.
f = fog.	r = rain.
h = hail.	s = snow.
i = intermittent (occasional).	t = thunder.
j = adjacent (i.e., in vicinity of station).	tlr = thunderstorm.

⊕ = halo.

⚡ = gale.

The following additional letters are in use:—

e = wet air without rain falling.
 g = gloomy.
 m = mist.
 q = squally.
 u = ugly, threatening.
 v = extreme visibility.
 w = dew.
 x = hoar frost.
 y = dry air (humidity below 60 per cent.).
 z = haze.

To use the table the first figure of the "Present Weather" group is found in the first column. Run along the corresponding line as far as the column headed by the second figure of the group when the required weather symbol is found. Thus to decode the group 45, we move along the line beginning with 4 as far as the column headed 5, when the symbol "dd" meaning continuous moderate drizzle is found.

It is desirable to indicate places where precipitation is occurring by means of the signs ● for rain, showers or drizzle,

* for snow, ✱ for sleet, and ▲ for hail.

In certain cases it is necessary to refer to the figure giving the total cloud amount (4th figure of 4th group) in order to specify the weather exactly. For example, the code figures 11 mean "cloudy or overcast" and the correct entry is either c or o, 6 to 8 tenths of the sky covered with cloud being equivalent to c, 9 or 10 tenths to o. Similarly b should be entered if the cloud amount is 0, 1, 2 or 3 tenths, bc if it is 4 or 5 tenths.

In the same way the visibility figure (fourth figure of 3rd group) is used as a criterion to distinguish between mist and fog when the present weather figures lie between 20 and 29; m, not f, should be entered on occasions when the visibility figure is 4 or above. Such points as these, however, are of minor importance unless it is desired to make a detailed local forecast.

Barometric tendency in half-millibars is entered above the figures representing the barometer reading. It is advisable to differentiate between positive and negative tendencies by using ink of different colours. In the Meteorological Office the positive tendencies are distinguished by red ink, blue or black being used for negative values. The *characteristic of tendency* is indicated by means of the following "shorthand" version of the code (Appendix, p. 21) 0 indicates steady, + rising, - falling, and u unsteady:—

0 = 0 or +	} Tendency zero or positive.
1 = + 0	
2 = + -	
3 = 0 +	
4 = u +	
5 = -	} Tendency negative.
6 = - 0	
7 = - +	
8 = 0 -	
9 = u -	

The appropriate sign should be written as a suffix to the figures representing the barometric reading.

Isobars are normally drawn at 2-millibar intervals, the even values 1000, 1002, 1004, &c., being usually adopted.

Drawing the isobars is usually a simple matter after a little practice. It is best to begin near the areas of highest and lowest pressure and work from both directions towards the intermediate values. The fundamental point to remember is that an isobar is the line of separation between areas of higher and lower pressure than the value which it represents. Thus the 1010 mb isobar shown on Fig. 2 separates all pressures above 1010 mb. from those below that value. It must pass between Cranwell and Holyhead because the pressure at Cranwell is 1009.5 mb. and that at Holyhead 1012.4. The 1012 mb. isobar must obviously pass between Holyhead and the 1010 isobar. In cases of difficulty the course of an isobar can often be settled by the direction of the wind since in the Northern Hemisphere if you stand with your back to the wind pressure is lower on your left hand than on your right. (Buy's Ballot's Law.) Too much reliance must not be placed on this rule, however, in the case of light winds which are often much influenced in direction by local factors. Certain stations exhibit peculiarities which soon become evident after drawing a number of charts.

6.—Charts for Public Exhibition.

A chart constructed on the lines just described is the most suitable form for use by a private individual wishing to make the best possible use of the meteorological data broadcasted by the Air Ministry. It is the form of chart used for forecasting by professional meteorologists. When the object of the chart is to exhibit the latest information to the public certain modifications are, however, desirable. A chart for the latter purpose should exhibit the necessary information as far as possible in plain language and much of the detail can be eliminated. This can be done by omitting the barometer readings, translating the Beaufort letters into plain language and substituting for the figures denoting barometric change such expressions as "barometer rising slowly" "barometer changing little" and the like written across the appropriate areas.

For this purpose we may use the words "slow" as equivalent to tendencies of 1 to 3, "brisk" to tendencies of 4 to 7 and "rapid" to higher tendencies. It is also desirable, since the Beaufort wind scale is not familiar to the general public, to give the equivalent speed of the wind in miles per hour. This may be done by inserting the appropriate figures in small circles surrounding the station, using the following equivalents:—

Calm	= 0.				
Force 1	= 2 m.p.h.	Force 5	= 21 m.p.h.	Force 9	= 49 m.p.h.
" 2	= 5 "	" 6	= 27 "	" 10	= 59 "
" 3	= 10 "	" 7	= 35 "	" 11	= 68 "
" 4	= 15 "	" 8	= 42 "	" 12	= 75 "

In drawing the isobars it assists the eye to locate areas of high and low pressure if red is used for 1014 mb. and higher pressures and black for pressures below 1014 mb. If only one colour is to be used the isobars of 1014 mb. and above may be thickened, as in Fig. 3, p. 11, to serve the same purpose. The words Low and High should be written over areas of minimum and maximum pressure.

Making these changes we obtain a chart similar to that shown in Fig. 3, which follows the lines of the charts published daily in the Daily Weather Report (British Section). The "General Inference" may be written in above the space covered by the British Isles.

7.—Interpretation of the Charts.

A weather chart constructed in the manner described in the previous sections serves two distinct functions. Firstly, it forms a convenient graphical representation of the conditions existing at the time of the observations. Secondly, in conjunction with previous charts, it forms a means of estimating the coming weather. While a single chart tells the enquirer a very great deal, its value is greatly increased if it has been preceded by a series of charts, for then the course of events becomes much clearer. It is highly desirable, therefore, that an individual who wishes to forecast the weather for his district should keep a regular series of charts. Also, since the meteorologists at headquarters have a great deal more information at their disposal than the local forecaster, the latter would be wise to attempt little more than the adaptation to his own locality of the official opinion as represented by the "General Inference." The charts at intermediate hours, 1 a.m. and 1 p.m. G.M.T. will be specially useful for the purpose of seeing to what extent the changes are following the course foreshadowed in the previous General Inference.

For such purposes the W/T synoptic messages will furnish all the information that is required and the necessary amount of technical knowledge is reduced to a minimum. An outline of the method of forecasting from synoptic charts is given in *The Weather Map* by Sir Napier Shaw, published by H.M. Stationery Office. Price, 1s. 3d. by post 1s. 5d. net.

Reference may also be made to the following text books:—

Weather Science, by R. G. K. Lempfert, M.A. (London, T.C. & E.C. Jack, Ltd., 1s. net).

Meteorology, by R. G. K. Lempfert, M.A. (London, Methuen & Co., Ltd., 7s. 6d. net).

A short Course in Elementary Meteorology, by W. H. Pick, M.A. (London, H.M. Stationery Office, 1s. 6d. net).

Forecasting Weather, by Sir Napier Shaw, F.R.S., Sc.D. (London, Constable & Co., Ltd., New edition in preparation).

APPENDIX.

THE CODE FOR SYNOPTIC MESSAGES ISSUED FROM THE AIR MINISTRY.

The synoptic messages, which contain the data to be used for the preparation of the charts as described in section 5, contain also particulars of upper winds (preceded by the word "Pilot"), of upper air temperatures (preceded by the word "Temp"), and of conditions in the Atlantic as shown by reports from ships (preceded by the word "Ships"). Complete details of these sections of the messages are given in M.O. Publication 252: "*Particulars of Meteorological Reports issued by Wireless Telegraphy in Great Britain and the Countries of Europe and North Africa*." The following particulars relating to the synoptic part of the messages have been extracted from that publication.

I.—THE SYMBOLS AND THEIR MEANINGS.

A = Form of *predominating cloud lowest* in the scale of cloud forms (see Code VI., p. 23).

a = Form of *predominating cloud highest* in the scale of cloud forms when more than one type of cloud exists (see Code VI., p. 23).

BBB = Pressure in millibars and tenths (initial 9 or 10 omitted). The values refer to sea-level and include all corrections for index error, temperature and gravity.

b = Amount of barometric tendency during the three hours preceding the time of observation expressed in half-millibars or half-millimetres. For tendencies 10–19 the *second* figure only is reported and 33 is added to the wind direction number (DD). For tendencies greater than 19 the second figure only is reported and 67 is added to the wind direction number. Tendencies greater than 29 are reported as 29.

C₁ = Form of cloud observed by nephoscope; usually one of the two highest layers present (see Code VI., p. 23).

c = Characteristic of barometric tendency during the period of 3 hours preceding the time of observation (see Code II., p. 21).

DD = Direction of the wind near the ground on the scale (01–32) in which 08 = East, 16 = South, &c., 00 = calm.

dd = Direction of wind in the upper air, or of cloud movement, on the scale (01-36), *i.e.*, degrees from North divided by 10 and rounded off to the nearest whole number (00 = calm).

F = Force of the wind on the Beaufort Scale. (Forces above 9 are reported as 9 in telegrams, with the actual force in a word at the end, *e.g.*, force 10 is reported at the end as "Storm ten," force 11 as "Storm eleven.")

H = Relative humidity of the air (*see* Code V., p. 22).

h = Height of base of lowest cloud present (*see* Code VII., p. 23).

I_nI_n = Index number of station.

jj = Meaning varies according to time of observation and between inland and coastal stations, as follows:—

	Inland Stations.	Coastal Stations.
At 0700 G.M.T. - -	jj = mm	jj = SV _s
At 1800 G.M.T. - -	jj = MM	jj = SV _s

L = Amount of sky (scale 0-10) covered by cloud form A and all forms of the same layer (*i.e.*, low, medium, or high) as A, if "a" refers to a different layer.

MM = maximum temperature during the day.

mm = minimum temperature during the night.

N = Total amount of sky covered with cloud (scale 0-10).

RR = Rainfall [at 7 a.m. for preceding 13 hours and at 6 p.m. for preceding 11 hours (*see* Code VIII., p. 23)].

r = Time of commencement of precipitation (*see* Code X., p. 24).

S = sea disturbance.

V = Visibility or distance at which objects can be seen in daylight (or at which lights can be seen at night) (*see* Code IV., p. 22).

V_s = Visibility towards the sea (from coast stations) (*see* Code IV., p. 22).

VV = The relative speed of clouds as determined by nephoscope and such that the actual speed of the cloud will be given in kilometres per hour by the equation

$$vv = \frac{h}{1000} \times VV, \text{ if "h," the height of the cloud, is expressed in metres. This unit is the "radian per hour."}$$

W = The weather in the interval since the preceding time of report. This interval is 5, 6, or 7 hours for stations reporting 4 times daily.

ww = The actual weather at the time of observation with which is combined, whenever possible, the general character of the weather (*see* Code I., p. 19).

II.—STATIONS.*

Index.	Name.	Latitude.	Longitude.	Height above M.S.L. in feet.
01	LERWICK (C)	60° 09' N.	01° 08' W.	54
02	Orkney (C)	58° 56' N.	03° 11' W.	—
03	STORNOWAY (C)	58° 11' N.	06° 22' W.	51
04	Wick (C)	58° 27' N.	03° 06' W.	81
05	Castlebay (C)	56° 57' N.	07° 29' W.	37
06	Nairn (L)	57° 36' N.	03° 52' W.	82
07	ABERDEEN (C)	57° 10' N.	02° 06' W.	46
09	Leuchars (L)	56° 23' N.	02° 53' W.	20
10	MALIN HEAD (C)	55° 23' N.	07° 24' W.	72
11	RENFREW (L)	55° 52' N.	04° 24' W.	40
12	INCHKEITH (C)	56° 02' N.	03° 08' W.	190
13	Eskdalemuir (L)	55° 19' N.	03° 12' W.	794
15	TYNEMOUTH (C)	55° 01' N.	01° 25' W.	71
20	BLACKSOD POINT (C)	54° 06' N.	10° 04' W.	327
22	Donaghadee (C)	54° 38' N.	05° 32' W.	37
25	Flamborough (C)	54° 07' N.	00° 05' W.	190
31	Birr Castle (L)	53° 06' N.	07° 56' W.	175
32	Baldonnell (L)	53° 18' N.	06° 26' W.	280
33	HOLYHEAD (C)	53° 18' N.	04° 39' W.	15
34	Liverpool (C)	53° 24' N.	03° 04' W.	188
35	Shotwick (L)	53° 14' N.	03° 00' W.	16
36	Manchester (L)	53° 26' N.	02° 13' W.	98
38	Spurn Head (C)	53° 34' N.	00° 07' E.	26
42	Castle Bromwich (L)	52° 31' N.	01° 48' W.	270
43	Nottingham (L)	52° 56' N.	01° 09' W.	82
44	CRANWELL (L)	53° 02' N.	00° 31' W.	256
45	YARMOUTH (C)	52° 35' N.	01° 43' E.	10
46	Pulham (L)	52° 24' N.	01° 14' E.	125
47	Felixstowe (C)	51° 56' N.	01° 20' E.	21
50	VALENCIA (C)	51° 56' N.	10° 15' W.	30
51	Roche's Point (C)	51° 47' N.	08° 15' W.	32
52	PEMBROKE (C)	51° 41' N.	05° 11' W.	149
54	ROSS-ON-WYE (L)	51° 54' N.	02° 34' W.	202
55	Benson (L)	51° 37' N.	01° 07' W.	186
56	Larkhill (L)	51° 11' N.	01° 48' W.	470
57	Andover (L)	51° 12' N.	01° 31' W.	250
58	Farnborough (L)	51° 15' N.	00° 45' W.	234
60	Kew (L)	51° 28' N.	00° 19' W.	18
61	CROYDON (L)	51° 21' N.	00° 07' W.	242
62	Biggin Hill (L)	51° 19' N.	00° 03' E.	610
63	Clacton (C)	51° 47' N.	01° 09' E.	54
64	Shoeburyness (C)	51° 32' N.	00° 47' E.	11

* The stations are shown on the map, Fig. 1, p. 9.

Index.	Name.	Latitude.	Longitude.	Height above M.S.L. in feet.
65	Grain (C) - - -	51° 27' N.	00° 43' E.	7
66	Lympne (L) - - -	51° 05' N.	01° 01' E.	340
70	SCILLY (C) - - -	49° 56' N.	06° 18' W.	131
71	Falmouth (Pendennis) (C)	50° 08' N.	05° 03' W.	238
72	Plymouth (C) - - -	50° 22' N.	04° 08' W.	147
73	Portland (C) - - -	50° 32' N.	02° 27' W.	19
74	CALSHOT (C) - - -	50° 49' N.	01° 18' W.	12
75	Beachy Head (C) - - -	50° 44' N.	00° 15' E.	525
76	Dungeness (C) - - -	50° 55' N.	00° 58' E.	21
77	GUERNSEY (C) - - -	49° 26' N.	02° 33' W.	318
78	JERSEY (C) - - -	49° 12' N.	02° 11' W.	25

C = Coastal Station. L = Inland Station.

III.—FORM OF INDIVIDUAL MESSAGES.

0200 Message—

Part I.— $I_n I_n$ BBBDD FwwTT cbWVH ALaNh C₁ddVV.

*Part II. (preceded by word "Pilot.")—Upper winds.

*Part III. (preceded by word "Temp.")—Upper air temperatures and humidities.

*Part IV. (preceded by word "Ships.")—Ship reports from the Atlantic.

0600 Message.—Repetition of the 0200 message (revised and completed if further information available).

0800 Message—

Part I.— $I_n I_n$ BBBDD FwwTT cbWVH ALaNh RRjjr C₁ddVV.

Parts II., III., IV.—Same form as 0200 message.

1400 Message.—Same form as 0200 message.

1900 Message.—Same form as 0800 message. (Note, however, variation in meaning of jj (see p. 16).

Note.—(1) Stations regularly included are printed in capital letters in the list above. If a regular station should be missing on any occasion a neighbouring station is inserted if available. Guernsey is only included at 0100 and 1300 G.M.T. and Jersey at 0700 and 1800 G.M.T.

(2) Nephoscope observations (group C₁ddVV) of medium or high cloud do not always refer to the station to which the group is assigned in the synoptic message, but may have been made at a neighbouring station, not included in the message, if

* For particulars see M.O. 252.

no nephoscope observations are available from the synoptic station itself. Nephoscope groups are usually not given for more than 6 or 8 stations, which are normally sufficient to give a representation of the upper cloud motion over the British Isles.

(3) At British Stations, for reports at the standard hours (0100, 0700, 1300 or 1800 G.M.T.), the figure W (past weather) always refers to the preceding period of 5, 6 or 7 hours since the last standard hour.

IV.—SPECIFICATION OF THE SCALES.

CODE I.

Weather at actual time of observation and general character of weather (ww).

(In interpreting reports it is to be noted that, as a rule, the greatest number in the scale which is appropriate to the weather is reported.)

	Code figures.
Cloud decreasing - - - -	00
No apparent change - - - -	01
Cloud increasing - - - -	02
Precipitation within sight - - - -	03
With solar or lunar halo - - - -	04
After fog or mist (or dust storm) - - - -	05
After rain or drizzle - - - -	06
After snow, sleet or hail - - - -	07
With or after thunder and lightning in neighbourhood - - - -	08
After thunderstorm - - - -	09
Cloud decreasing - - - -	10
No apparent change - - - -	11
Cloud increasing - - - -	12
Precipitation within sight - - - -	13
With solar or lunar halo - - - -	14
After fog or mist (or dust storm) - - - -	15
After rain or drizzle - - - -	16
After snow, sleet or hail - - - -	17
With or after thunder and lightning in neighbourhood - - - -	18
After thunderstorm - - - -	19
Fog or mist but clear in zenith - - - -	just 20
" and apparently overcast. - - - -	begun 21
" but clear in zenith - - - -	inter- 22
" and apparently overcast. - - - -	mittent 23
" but clear in zenith - - - -	for some 24
" and apparently overcast. - - - -	time, be- 25
	coming thinner.

Fog or Mist

		Code figures.
<i>Fog or Mist (continued).</i>	Fog or mist but clear in zenith -	for some 26
	„ and apparently overcast. -	
	„ but clear in zenith -	for some 28
	„ and apparently overcast. -	
<i>Passing Showers.</i>	Slight with rain -	30
	„ hail or rain and hail -	31
	„ sleet -	32
	„ snow -	33
	Heavy with rain becoming better -	34
	„ rain -	35
	„ rain becoming worse -	36
	„ hail or rain and hail -	37
	„ sleet -	38
	„ snow -	39
<i>Drizzle</i> -	Slight occasional -	40
	„ continuous -	41
	„ but increasing -	42
	Moderate but decreasing -	43
	„ occasional -	44
	„ continuous -	45
	„ but increasing -	46
	Thick but decreasing -	47
	„ occasional -	48
<i>Rain</i> -	„ continuous -	49
	Slight occasional -	50
	„ continuous -	51
	„ but increasing -	52
	Moderate but decreasing -	53
	„ occasional -	54
	„ continuous -	55
	„ but increasing -	56
	Heavy but decreasing -	57
	„ occasional -	58
<i>Snow or Snow and Hail.</i>	„ continuous -	59
	Slight occasional -	60
	„ continuous -	61
	„ but increasing -	62
	Moderate but decreasing -	63
	„ occasional -	64
	„ continuous -	65
	„ but increasing -	66
	Heavy but decreasing -	67
	„ occasional -	68
	„ continuous -	69

		Code figures.
<i>Sleet or Rain and Snow.</i>	Slight occasional -	70
	„ continuous -	71
	„ but increasing -	72
	Moderate but decreasing -	73
	„ occasional -	74
	„ continuous -	75
	„ but increasing -	76
	Heavy but decreasing -	77
	„ occasional -	78
	„ continuous -	79
<i>Hail or Rain and Hail.</i>	Slight occasional -	80
	„ continuous -	81
	„ but increasing -	82
	Moderate but decreasing -	83
	„ occasional -	84
	„ continuous -	85
	„ but increasing -	86
	Heavy but decreasing -	87
	„ occasional -	88
	„ continuous -	89
<i>Thunderstorm or Line squall</i>	Slight thunderstorm without hail -	90
	„ „ with hail -	91
	Moderate thunderstorm without hail -	92
	„ „ with hail -	93
	Heavy thunderstorm without hail -	94
	„ „ with hail -	95
	„ „ without hail -	96
	„ „ with hail -	97
	Line squall without hail -	98
	„ „ with hail -	99

CODE II.

Characteristic of Barometric Tendency during the three hours preceding the time of observation (c).

Code figure.		
0 = 0 or +	-	Steady or rising -
1 = + 0	-	Rising then steady -
2 = + -	-	Rising then falling -
3 = - + or 0 +	-	Falling or steady then rising.
4 = unsteady +	-	Unsteady but rising -
5 = - -	-	Falling -
6 = - 0	-	Falling then steady -
7 = - +	-	Falling then rising -
8 = 0 - or + -	-	Steady or rising then falling.
9 = unsteady -	-	Unsteady but falling -

The barometer is now higher than or the same as three hours ago.

The barometer is now lower than three hours ago.

CODE III.

Past Weather in interval since last report (W).

Code figure.	
0	Fair or fine.
1	Cloudy.
2	Overcast continuously.
3	Fog or mist.
4	Thick fog.
5	Passing showers.
6	Rain or drizzle.
7	Snow or sleet.
8	Hail or rain and hail.
9	Thunderstorm.

CODE IV.

Horizontal Visibility (V) and (V_s).

Code figure.	
0	Objects not visible at 50 metres (55 yards).
1	Objects not visible at 200 metres (220 yards).
2	Objects not visible at 500 metres (550 yards).
3	Objects not visible at 1,000 metres (1,100 yards).
4	Objects not visible at 2,000 metres (1½ miles).
5	Objects not visible at 4,000 metres (2½ miles).
6	Objects not visible at 10,000 metres (6¼ miles).
7	Objects not visible at 20,000 metres (12½ miles).
8	Objects not visible at 50,000 metres (31¼ miles).
9	Objects visible at 50,000 metres or more.

CODE V.

Relative Humidity (H).

Code figure.	
0	95 to 100 per cent.
9	90 to 94 per cent.
8	80 to 89 per cent.
7	70 to 79 per cent.
6	60 to 69 per cent.
5	50 to 59 per cent.
4	40 to 49 per cent.
3	30 to 39 per cent.
2	20 to 29 per cent.
1	10 to 19 per cent.

CODE VI.

Cloud Form (A, a, C₁).

Code figure.		
1	- Cirrus	- Ci.
2	- Cirro-Stratus	- Ci. St.
3	- Cirro-Cumulus	- Ci. Cu.
4	- Alto-Cumulus	- A. Cu.
5	- Alto-Stratus	- A. St.
6	- Strato-Cumulus	- St. Cu.
7	- Nimbus	- Nb.
8	- Cumulus or Fracto-Cumulus	- Cu. or Fr. Cu.
9	- Cumulo-Nimbus	- Cu. Nb.
0	- Stratus or Fracto-Stratus	- St. or Fr. St.

CODE VII.

Height of Base of Lowest Cloud present (h).

Code figure.	Metres.	Feet.
0	0 to 50	0 to 150
1	50 to 100	150 to 300
2	100 to 200	300 to 600
3	200 to 300	600 to 1000
4	300 to 600	1000 to 2000
5	600 to 1000	2000 to 3000
6	1000 to 1500	3000 to 5000
7	1500 to 2000	5000 to 6500
8	2000 to 2500	6500 to 8000
9	No low cloud	No low cloud

CODE VIII.

Amount of Rainfall (RR).

This is expressed in whole millimetres with the following exceptions:—

Specification of certain meanings.

Code figures.	
91	0.1 mm.
92	0.2 mm.
93	0.3 mm.
94	0.4 mm.
95	0.5 mm.
96	0.6 mm.
97	Some rain but not measurable.
98	More than 90 mm.
99	Measurement impossible or unreliable.

CODE X.

Time of Commencement of Precipitation (r).

Code figure.

0	-	-	-	No rain.
1	-	-	-	0 to 1 hour before time of observation.
2	-	-	-	1 to 2 hours before time of observation.
3	-	-	-	2 to 3 hours before time of observation.
4	-	-	-	3 to 4 hours before time of observation.
5	-	-	-	4 to 5 hours before time of observation.
6	-	-	-	5 to 6 hours before time of observation.
7	-	-	-	6 to 8 hours before time of observation.
8	-	-	-	8 to 10 hours before time of observation.
9	-	-	-	above 10 hours before time of observation.
-	-	-	-	No observation.

FOR OFFICIAL USE.

M.O. 255.

Supplement No. 1.

AIR MINISTRY.

METEOROLOGICAL OFFICE.

SUPPLEMENT No. 1 TO M.O. 255.

The Wireless Weather Manual.

May, 1923.

- p. 3. Wave length of 0200 issue is now 4100 c.w., not 1400 c.w.
 p. 3. *Further amend* table as follows:—*Delete* issues at 0950 and 2150. *Substitute*

Time of issue.		Call sign.	Wave length.	Nature of message.	Page.
G.M.T.	Summer Time.				
0900	10.00 a.m.	GMH	600 spk.	} Western Seaboard. Forecast and data.	6
0915	10.15 a.m.	GLD	600 spk.		6
2100	10.00 p.m.	GMH	600 spk.		6
2115	10.15 p.m.	GLD	600 spk.		6

- p. 4. Par. (b) Forecast for Western Seaboard is now issued from Malin Head and Land's End.

- p. 6. Section (c) Western Seaboard reports.

Transmitting station	-	-	Malin Head	-	Land's End.
Call sign	-	-	GMH	-	GLD.
Wave length	-	-	600 m spk.	-	600 m spk.
Time of issue (7h. obs.)	-	-	0900 G.M.T.	-	0915 G.M.T.
Time of issue (18h. obs.)	-	-	2100 G.M.T.	-	2115 G.M.T.

- p. 16. *Add* TT = temperature in whole degrees Fahrenheit.

- p. 18. *List of Icelandic stations.*

<i>Add</i> 91	Thorshavn	-	-	62° 00' N.	06° 45' W.
92	Seydisfjord	-	-	65° 20' N.	13° 40' W.
93	Akureyri	-	-	65° 40' N.	18° 00' W.
94	Isafjord	-	-	66° 15' N.	23° 30' W.
95	Reykjavik	-	-	64° 08' N.	21° 59' W.
96	Vestmanna	-	-	63° 30' N.	20° 20' W.

Form of message for Icelandic stations.

Barometer readings are given in millimetres, initial 7 being omitted.

Barometric tendencies are given in half millibars for 3 hours.
 Temperature readings are given in degrees centigrade.

* (5)19989 Wt 1853—8730 1250 5/23 E & S

p. 3. Wavy length of 0200 hours is now 4100 c.w. not 1400 c.w.
p. 3. Further amended table as follows: Table issued at 0030
and 0130 hours.

Time of issue	Summary	Call	Wave	Station of message	Page
0200	10.00 a.m.	GMB	600 spk.	Western Sea-board	5
0215	10.15 a.m.	GLD	600 spk.	Forecast and data	5
2100	10.00 p.m.	GMB	600 spk.		5
2115	10.15 p.m.	GLD	600 spk.		5

p. 4. Part (b) Forecast for Western Sea-board is now issued from
Main Head and Land's End.

Transmitting station	Main Head	Land's End
Call sign	GMB	GLD
Wave length	600 m spk.	600 m spk.
Time of issue (7h. obs.)	0800 G.M.T.	0915 G.M.T.
Time of issue (15h. obs.)	2100 G.M.T.	2115 G.M.T.

p. 10. All T.F. temperature in whole degrees Fahrenheit.

Lat. of Icelandic station	Lat. of Icelandic station
62° 00' N	62° 00' N
62° 30' N	62° 30' N
63° 00' N	63° 00' N
63° 30' N	63° 30' N
64° 00' N	64° 00' N
64° 30' N	64° 30' N
65° 00' N	65° 00' N
65° 30' N	65° 30' N

Form of message for Icelandic stations.

Barometric readings are given in millimetres, initial 7 being

omitted.

Barometric readings are given in half millibars for 3 hours.

Temperature readings are given in degrees centigrade.

A group of 10 observations is given at 0100 hours.

0800 message : for Reykjavik and Thorshavn.

I_nI_n BBcbb BBBDD FwwTT cbWVH ALaNh RR -- r
For Seydisfjord, Akureyri, Isafjord and Vestmanna.

I_nI_n BBcbb BBBDD FwwTT cbWAN.
(First group contains 0100 observations, the barometer
reading being given in whole millimetres).

1400 message (all stations except Reykjavik and Thorshavn).

I_nI_n BBBDD FwwTT cbWAN.
Reykjavik and Thorshavn
I_nI_n BBBDD FwwTT cbWVH ALaNh.

1900 message : for Reykjavik and Thorshavn.

I_nI_n BBBDD FwwTT cbWVH ALaNh RR -- r.
For remaining stations as 1400 message.

May, 1923.

LONDON:
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AIR MINISTRY.
METEOROLOGICAL OFFICE.

SUPPLEMENT No. 2 TO M.O. 255.

The Wireless Weather Manual.

May, 1924.

The following corrections to M.O. 255, which supersede those issued in Supplement No. 1, indicate the principal modifications in British Meteorological messages, introduced since June 1922.

p. 3. TABLE OF METEOROLOGICAL INFORMATION
ISSUED BY WIRELESS TELEGRAPHY IN
GREAT BRITAIN.

Substitute the following table:—

Revised to May 1st, 1924.

Time of issue.		Call sign.	Wave length. (Metres.)	Nature of Message.
G.M.T.	Summer Time.			
0200	3.00 a.m.	G.F.A.	4,100 c.w.	Synoptic data for 0100.
0336*	4.36* "	"	1,680 "	Aviation Report.
0436*	5.36* "	"	1,680 "	" "
0536*	6.36* "	"	1,680 "	" "
0600	7.00 "	"	4,100 "	Synoptic data for 0100.
0636*	7.36* "	"	1,680 "	Aviation Report.
0736	8.36 "	"	1,680 "	" "
0800	9.00 "	"	4,100 "	Synoptic data for 0700.
0836	9.36 "	"	1,680 "	Aviation Report.
0840	9.40 "	"	4,100 "	Ships Reports, etc.
0850	9.50 "	"	4,100 "	Foreign Collective report.
0900	10.00 "	"	4,100 "	Weather Shipping forecasts.
0918	10.18 "	GCK	600 spk.	Western Seaboard forecast.
0930	10.30 "	GMH	600 "	" " "
0936	10.36 "	GFA	1,680 c.w.	Aviation Report.
1036	11.36 "	"	1,680 "	" "
1136	12.36 p.m.	"	1,680 "	" "
1236	1.36 "	"	1,680 "	" "
1336	2.36 "	"	1,680 "	" "
1400	3.00 "	"	4,100 "	Synoptic data for 1300.
1436	3.36 "	"	1,680 "	Aviation Report.
1450	3.50 "	"	4,100 "	Foreign Collective Report.
1536	4.36 "	"	1,680 "	Aviation Report.
1636	5.36 "	"	1,680 "	" "
1900	8.00 "	"	4,100 "	Synoptic data for 1800.
1940	8.40 "	"	4,100 "	Ships Reports, etc.
1950	8.50 "	"	4,100 "	Coded forecast.
2000	9.00 "	"	4,100 "	Weather Shipping forecasts.
2118	10.18 "	GCK	600 spk	Western Seaboard forecast.
2130	10.30 "	GMH	600 "	" " "

* These messages are discontinued during the winter months and are not usually issued on Sundays.

p. 4. *Introductory :*

(a) The "general inference" is now transmitted at the beginning of a new issue entitled "Weather Shipping," transmitted from the AIR MINISTRY (G.F.A., 4100 m. c.w.) at 9 a.m. and 8 p.m. G.M.T.

"Weather shipping" also includes forecasts in plain language of wind and visibility for 12 hours for the waters round the British Isles divided into the Western, Southern and Eastern areas, and subdivided, when necessary, into smaller districts, *e.g.*, "Wight," "Dogger," etc. The name of the "area" or "district" precedes each forecast.

The last part of the message gives an outlook indicating the weather beyond the period of 12 hours.

(For complete list of districts etc., see Supplement No. 1 to M.O. 252 (2nd edition).)

(b) "Western Seaboard" reports are issued from VALENCIA (GCK 600 m. spk.) at 0918 and 2118 G.M.T. and MALIN HEAD (GMH 600 m. spk) at 0930 and 2130 G.M.T.

(c) —

(d) Additional synoptic messages containing British and Icelandic observations are now issued, the full list of times of transmission from Air Ministry (GFA, 4100 m. cw.) being as follows:—

0200, 0600, 0800, 0840, 1400, 1900, and 1940 G.M.T.

Further synoptic messages containing observations from a selection of foreign stations spread over Europe are transmitted from the Air Ministry (GFA 4100 m. cw.) at:—

0850 and 1450 G.M.T. (for code and list of stations see M.O. 252 (2nd edition) p. 10).

(e) In addition to the reports mentioned in this manual, forecasts in plain language, prepared by the Meteorological Office, are distributed by wireless telephony from the various stations of the British Broadcasting Co.

p. 6. (a) *Synoptic Reports.*

See note under p. 4 (d) above.

(b) *General Inference.*

See note under p. 4 (a) above.

(c) *Western Seaboard Reports.*

See note under p. 4 (b) above.

p. 7. (d) *Aviation Reports and Forecasts.*

These messages now commence at 36 minutes past each hour.

The 0336, 0436, 0536 and 0636 messages are discontinued during the winter months and are not usually issued on Sundays.

(e) *Coded Forecasts for Various Districts in the British Isles.*

A general forecast in code (see publication M.O. 244) for England and Southern Scotland for the period of 24 hours from time of issue is transmitted at 1950 G.M.T. (GFA, 4100 m., cw.).

The other coded forecasts are no longer issued according to a regular schedule.

p. 16. After S = Sea disturbance, insert:—

TT = Temperature of the air in whole degrees Fahrenheit (for Iceland, ° C.).

p. 17. *List of Stations.*

Add the following stations:—

British Stations.

Index.	Name.	Latitude.	Longitude.	Altitude (feet).
41	Birmingham (L)	52° 28' N.	01° 56' W.	525
53	Leafield (L)	51° 50' N.	01° 33' W.	556

Icelandic Stations.

91	Thorshavn	62° 03' N.	06° 45' W.	84
92	Seydisfjord	65° 20' N.	13° 40' W.	26
93	Akureyri	65° 40' N.	18° 04' W.	13
94	Isafjord	66° 15' N.	23° 30' W.	13
95	Reykjavik	64° 09' N.	21° 55' W.	92
96	Vestmanö	63° 26' N.	20° 15' W.	433

p. 18. *Form of Individual Messages.*

Insert the following particulars of the code for Icelandic Stations.

Barometer Readings are given in millimetres, initial 7 being omitted.

Barometric tendencies are given in half-millimetres for 3 hours.

Temperature readings are given in degrees centigrade. 0800 message: for Reykjavik and Thorshavn.

I_nI_n BBbb BBBDD FwwTT cbWVH ALaNH RR -- r (C₁ddVV).

For Seydisfjord, Akureyri, Isafjord and Vestmanö.

I_nI_n BBbb BBBDD FwwTT cbWAN.

(First group contains 0100 observations, the barometer readings being given in whole millimetres.)

1400 message (all stations except Reykjavik and Thorshavn).

I_nI_n BBBDD FwwTT cbWAN.

Reykjavik and Thorshavn.

I_nI_n BBBDD FwwTT cbWVH ALaNH (C₁ddVV).

1900 message: for Reykjavik and Thorshavn.

I_nI_n BBBDD FwwTT cbWVH ALaNH RR - - r
(C₁ddVV).

For remaining stations as 1400 message.

Note (4).—Ship reports may be added to any of the synoptic messages, except those at 0850 and 1450 G.M.T. For code see M.O. 252 (2nd edition) and supplements.

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