



12

INSTRUCTIONS

FOR

METEOROLOGICAL TELEGRAPHY.

ISSUED UNDER THE AUTHORITY OF THE
METEOROLOGICAL COMMITTEE.



LONDON:

LONDON:
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Cat. 59

Composition of Weather Telegrams to be sent each morning at 8 a.m. to the Meteorological Office, London.

The message consists of six groups of five figures each, when rain has fallen. When there has not been any rain the first group is omitted, and the message consists of five groups instead of six. Words or letters are never used in the groups.

FIRST GROUP.

Duration of Rainfall and its Amount.

The first two figures express the number of hours during which rain fell. The observer is to record this to the best of his ability.

The last three figures express the number of inches, tenths, and hundredths of an inch of rain, melted snow, or hail, recorded by the rain gauge.

Example I.—Rain fell during 13 hours and its amount was 1.18 inches.

Report 13118.

Example II.—Rain fell during seven hours, and its amount was 0.63 inches.

Report 07063.

N.B.—It will be seen from this that all blank spaces in the groups, such as that given by the entry 7 hours in Example II. instead of 13 in Example I. should be filled by cyphers. This principle runs through all the groups. Decimal points are always omitted.

SECOND GROUP.

Reading of the Barometer at 6 p.m. and extreme Temperature.

The first three figures are the reading of the barometer taken at 6 p.m. on the previous evening, omitting the first figure. Thus, 30.56 is reported as 056, and so on.

The last two figures are the extreme temperature of the last 24 hours, being the reading taken at 8 a.m. of either the maximum or the index of the minimum thermometer, whichever differs most from the reading of the ordinary thermometer taken at that hour.

The maximum thermometer and index of the minimum should both be read at 8 a.m., and their indications entered in the Register kept by the observer. They should then be reset as directed at pp. 14 and 15.

Example.—Barometrical reading at 6 p.m. 29·38, extreme temperature 35.

Report 93835.

THIRD GROUP.

Reading of Barometer and attached Thermometer at 8 a.m.

The first three figures are the barometrical reading at 8 a.m., reported as in group II.

The last two are the reading of the thermometer attached to the barometer.

Example.—Barometrical reading 30·07. Reading of attached thermometer 51.

Report 00751.

FOURTH GROUP.

Extreme Wind and general Character of Weather during previous 24 hours.

The first two figures are the direction of the extreme wind observed during the previous 24 hours.

The next two are its force.

The last is the general character of the weather during the same period.

N.B.—The *extreme wind report* is always the direction and force of the *strongest* wind which has occurred during the 24 hours previously.

The direction is given in figures, the points being numbered from N. b. E., round by E., S., & W., to N. By this system E. = 08, S. = 16, W. = 24, N. = 32.

A cypher is placed before the figure when it is less than 10.

The direction is to be given according to *true* not *magnetic* bearings. The compass needle in the British Islands does not point to the true north, but to a point lying nearly N.N.W. Hence the direction of the wind

given by compass is not its true direction, but must be corrected by subtracting 2 from the number representing the point from which it blows. Thus a wind reported, by compass, as N. is really N.N.W. The figure representing it is 30 instead of 32.

A Table of the approximate equivalents for compass bearings in true bearings, with the corresponding figures, is here annexed.

Compass } bearings }	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW
True } bearings }	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW
Figures -	30	32	02	04	06	08	10	12	14	16	18	20	22	24	26	28

The force is according to the Beaufort scale, 0 to 12. (See p. 19.)

The general, *not* extreme, character of the weather is reported here; it is by scale 1 to 0. (See p. 19.)

Example I.—There was a severe gale from S.S.W. *true*, force 10, and the general character of the weather was overcast.

Report 18106.

Example II.—The strongest wind felt was N.E., force 6, and the general character of the weather was fine and the sky was unclouded.

Report 04061.

FIFTH GROUP.

The Temperature and Hygrometrical Condition of the Air, and the Direction of the Wind at 8 a.m.

The first two figures are the reading of the dry bulb thermometer at 8 a.m.

The third is the difference between this reading and that of the wet bulb thermometer at the same hour.

N.B.—If this difference exceeds 9 degrees, enter 9 and add a note to the telegram stating what the difference really is.

The last two figures are the direction of the wind at 8 a.m. reported in figures as in group IV.

Example I.—Dry bulb thermometer reading 45°; wet bulb 41°; difference 4°; wind at 8 a.m. North-west.

Report 45428.

Example II.—Dry bulb thermometer reading 74° ; wet bulb 61° ; difference 13° ; wind at 8 a.m. East.
Report 74908.

Note to be added to telegram. Difference wet and dry bulbs 13.

SIXTH GROUP.

Force of Wind, Amount of Cloud, State of Weather, and of Sea Surface at 8 a.m.

The first two figures are the force of the wind as before;
The third the amount of cloud, scale 0 to 9; } (See
The fourth the weather, scale as in Group IV.; } page
The fifth the sea disturbance, scale 0 to 9. } 19.)

N.B.—It will be seen that the scales for *cloud* and *sea* are from 0 to 9; but that for *weather* is from 1 to 0, in consequence of the necessity of reporting lightning when it occurs without thunder.

Example.—Force of wind, 7; sky nearly covered with detached clouds; sea disturbance, 6.
Report 07726.

Complete Report.

13118, 93835, 00751, 18106, 45428, 07726.

Interpretation.—Rain had fallen for 13 hours during the preceding day, and its amount was 1.18 inches. The barometrical reading at 6 p.m. was 29.38 inches, and the temperature of the air during the night fell to 35° . At 8 a.m. next morning the barometrical reading was 30.07, and the attached thermometer read 51° . A severe S.S.W. storm (force 10,) had blown at some time during the preceding day, and the sky had been generally overcast. At 8 a.m. next morning the temperature was 45° , while the wet bulb thermometer reading was 41° ; the wind was N.W. The force of the wind at that hour was 7 (a double-reefed top-sail breeze); the sky was nearly covered with detached clouds, and the sea was rough.

AFTERNOON REPORTS.

Some of the reporters send afternoon reports: these are prepared at 2 o'clock p.m.

They consist of four groups, corresponding to the last four groups of the morning message, the first two being omitted.

Such afternoon reports are extra intelligence, and the morning reports at all stations are composed as if no afternoon report was sent.

NOTES ADDED TO THE TELEGRAMS.

Whenever any very marked change of weather has occurred during the 24 hours, notice of it in words should be added to the report.

Whenever the force of the wind is 8 or upwards, the hour at which the gale commenced or ended should be reported.

Whenever the observer notices that the clouds are moving in a direction different from that of the wind at the surface of the earth, or that the *upper* clouds are moving in a direction different from that of the *lower* clouds, he is to report the direction *from* which the motion takes place, and whether that motion is fast or slow.

Whenever any remarkable reading of the barometer is noticed it should be reported, with the hour of its occurrence.

When fog continues for an hour or more, its duration and character should be registered and telegraphed with the next usual *morning* report, thus, "Five hours of very thick fog till seven p.m.," or, "Three hours of light fog still continuing," &c.

EXTRA TELEGRAMS.

Whenever the level of the mercury in the barometer has fallen one-tenth of an inch in any one hour, or the wind, being strong, has suddenly changed its direction, or has increased to a gale or serious squall, or the sea has suddenly become rough, although the wind has not increased, an immediate report should be sent to London.

REPETITIONS.

Whenever a repetition of any message is asked for, the clerk is requested to look carefully at his register and his instruments, in order to see whether he might have made any error in copying the report from his register for transmission to London.

GENERAL DIRECTIONS.

The morning reports are to be sent off as soon after 8 o'clock a.m. as possible on every week day.

On Sundays and other holidays, of which due notice will be sent whenever they occur, observations should be taken *if possible* at the same hours as on week days, and the reports to be precisely similar in form to those sent on week days. If any observations are not taken at the regular hour, the fact should be noted in the message.

Sunday reports should be despatched by post from stations in Great Britain, and by wire on Monday morning from those in Ireland, so as to reach London at latest by 10 a.m. on Monday. Holiday reports should be treated similarly.

Whenever an observer is temporarily absent from his station, on leave, or owing to any other cause, he is requested to inform the Meteorological Office of the fact by letter.

Directions for using the Instruments.

BAROMETER.

The two barometers should be fixed side by side against firm woodwork, in a good light for observing, but out of the reach of sunshine or the occasional heat of a fire or lamp. They should be exposed as little as possible to sudden changes of temperature, and should be carefully protected from injury. The scale-part of each instrument should be nearly at the level of the observer's eye, or, if anything, rather lower. The height of the cistern of the barometer above High-water Mark Spring Tides should be carefully ascertained, noted, and reported to London.

How to fix a Barometer in position.

A bracket and screws for suspending the barometer are in its box. Screw up the bracket where the barometer is to hang. Then lift the instrument carefully out of its box, bend back the hinged part of the suspension arm, and slip it into the bracket. (The holding screws should not be driven quite home until the instrument is in position.) The mercury will then fall gradually and the instruments will usually be ready for observation in about an hour. The box should be safely stowed away.

How to take down a Barometer.

Whenever it may be necessary to take down a barometer and stow it in its box, *the vernier should be brought down to the bottom of the scale.* Then, having lifted it out of the bracket, place or hold it in an *inclined* position for a few minutes so as to allow the mercury to flow *very gently* up to the top of the glass tube. It should then be taken lengthwise and laid in its box. It is then portable, without any other adjustment whatever; and may be carried with the *cistern end upwards* or *lying flat*, but it must not be subjected to jars or concussions.

How to pack a Barometer for travelling.

Experience shows that it is advisable to give some directions as to packing barometers. The instrument

having been taken down and placed in its box, as directed, if it is to be sent by rail or other conveyance, and will probably have to be handled by persons unacquainted with its delicate and peculiar construction, should be placed in a packing case with two or three inches of soft elastic packing all round it, as hay, straw, shavings, tow, or paper-cuttings. The lid of the case should *never be nailed down*, but should always be fastened with screws. The address label should be *pasted* (not nailed) on the end of the case which is next the cistern, or lower end of the barometer, and it should be marked "Glass and fragile instruments. Keep this box lying flat, or carry it this end upwards." Of course, if two or more barometers are packed together, the cisterns should all be placed at this marked end of the case. Barometers should be transmitted by passenger train, and, in short, always by that route and that conveyance which afford the most easy transit. Transshipment, or change of conveyance should be avoided, if possible.

Barometer Vernier.

The vernier, as usual in standard barometers, reads to the one five hundredth part of an inch ($\cdot 002$). Every long line cut *on the vernier* corresponds to one hundredth ($\cdot 010$), each small division *on the scale* is five hundredths ($\cdot 050$). When the lower edge of the vernier is next above one of the short lines of the scale, the hundredth parts read off from the vernier must be added to $\cdot 050$. When the lower edge of the vernier is next above one of the divisions marked tenths, the figures read on the vernier, only, are to be written down.

The general principle of this moveable dividing scale is that the total number of the smallest spaces or subdivisions of the vernier are made equal, taken together, to one less or more, than that number of the smallest spaces in an equal length of the fixed scale. In these barometers the twenty-five spaces of the vernier are equal to any twenty-four spaces of the scale, which are each half a tenth or five-hundredths of an inch; therefore a space on the scale is larger than a space on the vernier by the twenty-fifth part of $\cdot 05$, which is $\cdot 002$ inch, consequently the vernier exhibits differences of $\cdot 002$ of an inch.

It may be added that in these barometers, the diameter of the cistern is about an inch and a quarter, and that of the tube about a quarter of an inch. The scale, instead of

being divided into inches in the usual way, is shortened in the proportion of about $0\cdot 04$ of an inch for every inch. The object of shortening the scale is to avoid the necessity of applying a correction for difference of capacity between the cistern and the tube.

How to set the Vernier.

The vernier is moved by a rack and pinion. Turn the milled-head of the pinion so as to bring the *lower* edge of the vernier on a level with the top of the mercurial column. When set properly, the front edge of the vernier, the top of the mercury, and the back edge of the vernier should be in the line of sight, which line will thus just touch the middle and uppermost point of the column. Great care should be taken to acquire the habit of reading with the eye exactly on a level with the top of the mercury, that is with the line of sight at right angles to the scale.

A piece of white paper held at the back of the tube, so as to reflect the light, assists in accurately setting the vernier. When observing the barometer, it should hang *freely*, not being inclined by holding or even by a touch; because any inclination will cause the column to rise in the tube.

How to read the Barometer.

The mode of reading off may be learned from a study of the following diagrams, in which A B represents part of the scale, and C D the vernier, the lower edge D denoting the top of the mercurial column. The scale is readily understood; B is $29\cdot 00$ inches; the first line above B is $29\cdot 05$; the second line $29\cdot 10$, and so on. The first thing is to note the scale line just below D, and the next is to find out the line of the vernier which is in one and the same direction with a line of the scale. In figure (1), the lower edge of the vernier, D, is represented in exact coincidence with scale line $29\cdot 5$; the barometer therefore reads $29\cdot 500$ inches. Studying it attentively in this position it will be perceived that the vernier line *a* is $\cdot 002$ inch below the next line of the scale. If, therefore, the vernier be moved so as to place *a* in line with *z*, the edge D would read $29\cdot 502$. In like manner it is seen that *b* is $\cdot 004$ inch away from the line next above it *on the scale*; *c*, $\cdot 006$ inch apart from that next above it; *d*, $\cdot 008$ inch from that next above it; and 1, on the vernier,

is $\cdot 010$ below y . Hence, if 1 be moved into line with y , D would read $29\cdot 510$. Thus the numbers 1, 2, 3, 4, 5, on the vernier indicate hundredths and the intermediate lines the even thousandths of an inch. Referring now to figure (2), the scale line just below D is $29\cdot 65$.

Fig. 1.

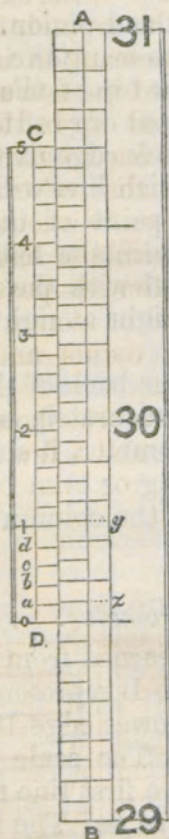
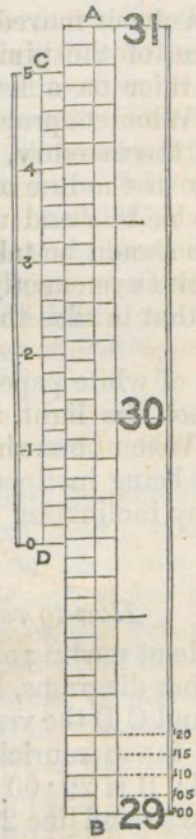


Fig. 2.



Looking carefully up the vernier, the third line above the figure 3 is seen to lie evenly with a line on the scale. The number 3 indicates $\cdot 03$, and the third subdivision $\cdot 006$; and thus we get

Reading on scale	-	29·650
Reading on vernier	{	·030
		·006

Actual reading - $29\cdot 686$ inches.

Sometimes two pairs of lines will appear to be coincident; in which case the intermediate thousandth of an inch should be set down as the reading. Thus, sup-

pose the reading appears to be $29\cdot 684$ or $29\cdot 686$, the mean $29\cdot 685$ should be adopted.

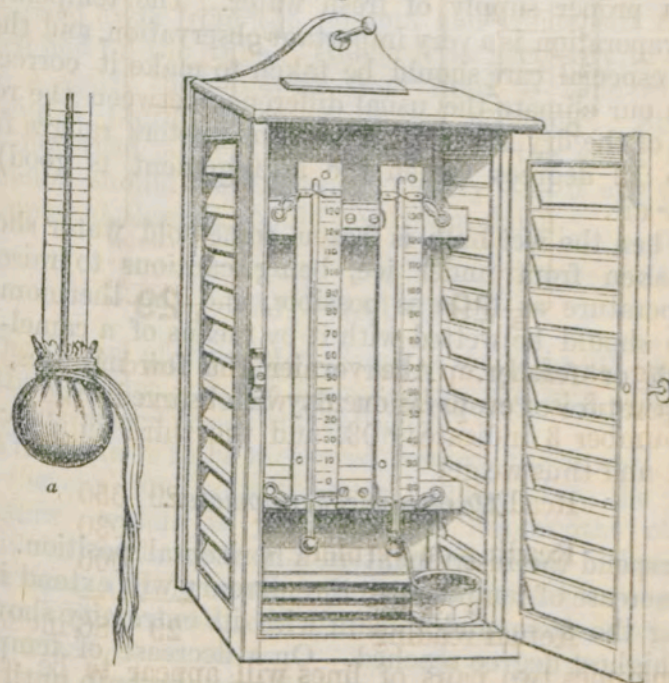
THERMOMETERS.

The thermometers should be suspended in screens (provided for the purpose), freely exposed to the external air, and placed about four feet above the ground, facing the north if possible; otherwise extra precaution is requisite to protect them from the influence of the sun's rays.

Two thermometers should be fitted up in the vertical position and placed in the shade, one to give the temperature of the air, and the other that of evaporation. They should be fixed in the screen, without cases or guards, near each other, but not within a less distance than two or three inches, and as free as possible from radiation from walls, heated ground or stones, and from draughts near windows of warm rooms and kitchen areas.

A piece of the finest muslin or cambric should be tied round the bulb of one thermometer, and a few threads of

Fig. 3.



cotton wick tied round the glass stem close to the bulb (see *a* fig. 3), touching the muslin, and long enough to

reach two or three inches below the lowest part of the bulb, should be carried down so as to dip into and remain in a small vessel of water. By this arrangement the water is slowly conducted, by capillary attraction, to the bulb and evaporated there. See fig. 3.

The cup, glass, or other small holder of water ought not to be under or too near the dry thermometer. This little reservoir should be on the off side of the wet thermometer, that is, as far as possible from the dry thermometer, which of course should not receive any moisture either from rain or otherwise. The water should be either distilled or rain water, or if this be not procurable, the softest pure water which can be had. The water vessel should be replenished *after*, or some little time *before*, observing; because observations are incorrect if made while the water is either colder or warmer than the air.

The muslin and wick should be well washed before being applied, and occasionally while in use. They should be changed once or twice a month, according to quality and exposure to *dust* or *blacks*. Accuracy depends much on the care taken for cleanliness, and for a proper supply of fresh water. The temperature of evaporation is a very important observation, and therefore especial care should be taken to make it correctly.

In our climate the usual difference between the readings of the dry and wet bulb thermometers ranges from 2 to 12 degrees (when the arrangement is good) in *outer* air.

When the wet bulb is frozen, some cold water should be taken from under ice, being cautious to raise its temperature as little as possible, and the thermometer bulb should be wetted with it by means of a camel-hair brush or feather. After waiting a few minutes, the temperature of evaporation may be observed.

Maximum Thermometer.

Suspend the instrument in a horizontal position. On an increase of temperature the mercury will extend itself along the stem and remain with its extremity showing the highest degree reached. On a decrease of temperature the mercury cannot recede into the bulb until it is reset for a future observation, owing to a restriction placed in the bend of the tube. To set the instrument,

hold it, bulb *downward*, and give it one or two jerks. This will send some of the mercury into the bulb, and this treatment should be continued until the existing temperature is shown by the upper end.

Minimum Thermometer.

Suspend the instrument in a horizontal position, below the maximum thermometer, in the same screen. To set the index, hold the thermometer bulb uppermost until it descends to the end of the spirit. With a decrease of temperature the alcohol will draw the index towards the bulb; but on an increase of temperature the fluid will advance beyond the index, leaving it so that the end remote from the bulb will show whatever extreme of cold may have occurred. If the spirit becomes separated, hold the thermometer bulb downward, and give it one or two good swings with the arm. This will cause the detached portions to flow towards the bulb and unite.

Owing to the volatility of alcohol, with which spirit this thermometer is made, a little will in course of time be carried away from the column and condensed at the sealed end of the tube. Hence it is necessary to compare a spirit thermometer from time to time with a mercurial thermometer of known accuracy. Should they not read alike, the upper end of the spirit thermometer should be examined closely, and if any spirit be apparent there it should be shaken down.

RAIN GAUGE.

The funnel of this rain gauge is made to lift on and off the cylinder. A can for receiving the rain from the funnel is placed inside the cylinder.

When rain is to be measured, remove the funnel, take out the can, and pour the rain collected into the glass measure, which is graduated to hundredths of an (artificial) inch, up to 0.50, or half an inch. Place the glass upon a table or other horizontal surface for support and steadiness; and read off with the eye on a level with the surface of the water.

Should more than half an inch of rain have been collected, successive measurements will be necessary. For instance, having measured half an inch or 0.50, empty

the glass, fill up again from the collecting can, and add the result of this second measurement to the half inch measured previously. For example, should the second reading be 0.34, the two readings added together will give for the total rainfall 0.84 of an inch.

Rain gauges should be placed on the ground, or in any position exposed to a free fall of rain, snow, or hail, where no houses, walls, or trees shelter them from the wind or cause eddies. They should be supported by a frame or other means, admitting of their being emptied daily, but preventing their being blown down, taking care that the receiving aperture is horizontal. Generally, on or near the ground is preferable to an artificial elevation; but if so raised, the height above ground should be registered and officially reported.

From day to day, in the morning, the quantity of water from rain, snow, or hail (melted), should be measured very carefully and recorded.

The gauge should not be opened more than once a day. The glass measure should be used with great care, because, if broken, some delay may occur in replacing it. It should not be left in the gauge, especially in winter, when it would be liable to be broken by frost.

The accuracy of rain gauges depends upon the correct graduation of the glass and the perfect form of the circular opening of the funnel. In the gauge supplied by this office the diameter of the receiver is eight inches; it is tested, and the glass verified before issue. If the circular opening gets bent or knocked out of shape, the indications of the gauge are no longer perfectly correct. Such defects should be reported as soon as they are discovered. The funnel should be kept clean and free from the accumulation of dust, leaves, &c.

General Directions.

The official numbers of all the instruments used should be reported to London, and any change of any kind, such as the substitution of one instrument for another, should be at once reported.

All observations should be sent up *as made*, no alterations or corrections of any kind are to be applied.

Telegraphic Weather Intelligence.

DRUM SIGNAL.

The Meteorological Office is prepared to issue to ports or fishing stations notice of serious atmospherical disturbance on the coasts or in the vicinity of the British Islands.

Signal.

The fact of such notice having been received at any station is made known by the use of a DRUM, which is hoisted on the receipt of the message, and remains hoisted for the space of 36 hours and no longer.

The Drum (or cylinder) has the appearance of a black square of (not less than) three feet seen from any point of view when suspended.

Meaning of Signal.

The hoisting of the Drum does not imply *any prophecy of wind or weather*, it is only intended to convey information that there is an atmospherical disturbance somewhere which may possibly reach the place where the signal is hoisted, and the knowledge of which is likely to be of use to the mariners and fishermen of that part of the coast.

It must be remembered that only the greater and more general disturbances of the atmosphere can be made known by this method. Local changes of less extent may be indicated to observers by their own instruments and by locally accredited signs of the weather. A regular study of the Weather Reports published in the London daily papers will also be found very useful as showing what weather has been prevalent at other stations.

Supply of Weather Intelligence.

A copy of the Daily Report will be supplied by the Office free of cost to any port the authorities of which apply for it, and will undertake to exhibit it to the public as soon as it is received. This copy will be despatched by post.

If any port requires occasional telegraphic intelligence, the authorities can obtain any information which reaches

the Meteorological Office, if they will state the precise nature of the information required and will undertake to bear half the cost of transmission of the messages.

Such messages would reach the port, at latest, soon after noon each day.

While giving notice of considerable general atmospheric disturbance, the warning intelligence is not intended to interfere with local knowledge. It implies, "Look out, bad weather may be approaching you."

Example.

SPECIMEN of DAILY WEATHER REPORT as printed in the Second Edition of the London Daily Newspapers for July 6.

EIGHT A.M.

WEATHER REPORT.

July 6, 1868.

Monday

	Barometer	Tem.	Wet Bulb.	Wind.	Force 1 to 12	Extreme		Weather.	Rain.	Sea 1 to 9.*
						Force.	Direction.			
Nairn -	30·01f.	58	54	W.N.W.	1	3	N.E.	c	0·02	1
Aberdeen -	30·00r.	57	52	N.N.W.	1	2	N.	b o	—	2
Leith -	30·02r.	61	57	N.N.W.	2	1	E.	r b	0·14	—
Shields -	30·05r.	58	55	N.E.	2	2	N.E.	c	—	4
Scarborough -	—	55	51	N.E.	2	2	N.N.E.	b	—	2
Yarmouth -	30·02r.	58	55	N.N.W.	3	3	N.W.	o	—	3
Helder -	29·89	56	—	N.W.	6	—	—	—	—	5
Skudesnaes -	29·73	50	—	N.N.W.	7	5	N.N.W.	o	—	3
Ardrossan -	30·06r.	68	65	N.W.	2	2	E.N.E.	o	—	1
Greencastle -	30·09f.	61	57	N.W.	1	3	N.	c o	—	—
Holyhead -	30·12r.	59	56	N.N.W.	1	2	W.N.W.	c	—	—
Liverpool -	29·98	61	58	W.	2	2	W.	b c	—	1
Valencia -	30·21f.	67	61	N.	2	2	N.N.W.	r c	—	2
Cape Clear -	30·15f.	59	57	N.N.W.	2	4	N.W.	b c	—	2
Roche's Point -	30·15s.	60	57	N.	2	3	N.	b	—	1
Penzance -	30·13r.	63	61	N.N.W.	3	3	N.N.E.	c	—	2
Plymouth -	30·12r.	55	52	N.	1	2	N.	m	—	1
Weymouth -	N.B.—Reporter absent.									
Portsmouth -	30·07r.	61	56	N.N.E.	1	4	W.S.W.	o c	—	1
London -	30·06r.	60	56	N.N.W.	1	4	N.W.	b r o	—	—
Cape Gris Nez -	30·03s.	61	54	N.N.W.	5	5	N.N.W.	c	—	3
Brest -	30·12s.	61	59	N.N.W.	4	4	N.N.W.	b	—	2
L'Orient -	30·05r.	59	55	N.	4	3	N.	b	—	2
Rocheport -	30·04f.	64	60	N.W.	4	5	N.W.	o	—	1
Biarritz -	30·11s.	63	59	S.W.	3	3	S.W.	f	—	2
Corunna -	30·09	69	—	N.E.	6	—	—	b	—	2
Brussels -	29·99	58	—	W.S.W.	3	—	—	c	—	—
Paris -	30·05	59	—	W.S.W.	2	—	—	o	—	—
Strasbourg -	—	61	—	W.	3	—	—	c	—	—
Lyons -	30·16	61	—	N.	3	—	—	b	—	—
Toulon -	29·84s.	59	59	N.W.	8	8	N.W.	b	—	6
Heart's Content (6 a.m. local time.)	30·23s.	52	52	W.	2	3	W.	t f o	0·17	3

Barometer corrected and reduced to 32° at sea level. The letters r. (rising), f. (falling), s. (steady), indicate direction of motion of the mercury within last 14 hours. Thermometer exposed in shade. Extreme Force with its direction during last 24 hours. Z.—calm. Weather: b.—blue sky; c.—clouds (detached); f.—fog; h.—hail; l.—lightning; m.—misty (hazy); o.—overcast (dull); r.—rain; s.—snow; t.—thunder. Rain-fall, snow or hail (melted), during last 24 hours. Sea disturbance.

* The scale for sea disturbance is now 0 to 9 (see p. 19), instead of 1 to 9 as heretofore.

REMARKS.

Monday.

Since Saturday morning the changes in barometrical pressure have been very small. Yesterday morning a diminution had occurred in the North (accompanied by an increase in the South), but this had almost recovered itself again by 6 p.m. Since 11 p.m., however, a fresh decrease has commenced at Nairn, but the mercury is rising in London and at several southern stations this morning.

Temperature had risen over the British Isles yesterday, but this morning it has again fallen at several stations.

The winds since Saturday have remained light to moderate from the N.W. and N; except at Toulon where they are strong.

The weather is cloudy, and some rain has fallen in places.

SCALES USED IN THE REPORTS.

WIND.

Beaufort Scale.

- | | | | |
|---------------|--------------------|-------------|--|
| Close-hauled. | 0. Calm. | - | Just sufficient to give steerage way. |
| | 1. Light Air. | - | With which a Ship with all |
| | 2. Light Breeze | - | sail set would go in smooth |
| | 3. Gentle Breeze | - | water - - - - |
| | 4. Moderate Breeze | - | Royals, &c. |
| | 5. Fresh Breeze | - | Single Reefs and T. G. |
| | 6. Strong Breeze | - | Sails. |
| | 7. Moderate Gale | - | Double Reefs and Jib, &c. |
| | 8. Fresh Gale | - | Triple Reefs, &c. |
| | 9. Strong Gale | - | Close Reefs and Courses. |
| | 10. Whole Gale | - | Close-reefed Main Topsail and reefed Foresail. |
| | 11. Storm | - | Under Storm Staysails or Trysails. |
| 12. Hurricane | - | Bare Poles. | |

WEATHER.

Extract from Beaufort Scale; with additions.

- | | |
|----------------------------|------------------------------------|
| 1 = b = blue (sky). | 6 = o = overcast. |
| 2 = c = clouds (detached). | 7 = r = rain, rainy. |
| 3 = f = fog, foggy. | 8 = s = snow. |
| 4 = h = hail. | 9 = t = thunder. |
| 5 = m = misty (haze). | 0 = l = lightning without thunder. |

CLOUD.

Scale for amount of cloud, being proportion of sky covered, 0 to 9.
0. No clouds. 9. Entirely overcast.

SEA DISTURBANCE.

Scale for sea disturbance 0 to 9.

- | | |
|---------------|--------------------|
| 0. Dead Calm. | 9. Very heavy sea. |
|---------------|--------------------|

Note.—The attention of observers is directed to the fact that storms in these islands are rarely, if ever, as violent as they are in tropical latitudes.

Accordingly, great caution should be used in the insertion of extreme figures, such as 12 for the wind and 9 for the sea in the telegraphic reports sent up.

Meteorological Telegraphy with the Continent.

In telegraphing with the Continent, some modification of these arrangements is indispensable on account of variety of scales and expressions.

The metrical scale may be easily substituted for that of inches on the barometer, as three figures of either are sufficient to express equivalent measures; but as the Centigrade and Reaumur thermometers are graduated both ways from the Freezing Point (32° of Fahrenheit), and as *minus* quantities are inconvenient in telegraphing figures, it is expedient to add a *constant* quantity, say *twenty* degrees, to the reading of a Centigrade, or Reaumur thermometer. Thus, $+9^{\circ}$ would be *telegraphed* as 29° , $+13^{\circ}$ as 33° , -7° as 13° , -11° as 9° , from which the numbers to be used may be immediately obtained by subtracting 20, the constant.

A harmonious system may then be general, each observer reading as he is accustomed to do, and telegraphing on a uniform method of five or six groups of five figures each. The recipient may convert and reduce as requisite, being informed of the necessary corrections, or supplied with observations already corrected, if not also reduced, for inter-comparison.

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