

REPORT
OF
THE METEOROLOGIC OFFICE
OF
THE BOARD OF TRADE.

1863.

Presented to both Houses of Parliament by Command of Her Majesty.



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R E P O R T.

SIR,

April 1863.

1. IN my Reports last year to yourself,—with those of 1857 and 1858,—information was given respecting all details of this department.

2. Since April 1862 continued progress has been made in the principal subjects, for which this office was originally instituted in 1854, and a considerable advance has been effected in the practical application of meteorology to every day use.

3. The results of such utilization of facts observed can scarcely be more clearly and briefly shown than by the two papers appended to this report, which give statements of wind and weather following every instance of making our cautionary signals;—and the opinions of practical men respecting Fishery barometers lent to them by the Board of Trade. The statement of weather was drawn up by my assistant,—from our office records,—and has not been the least altered. The barometer paper is also printed verbatim from the original returns.

4. Applications of a pressing nature have been made for the cautionary signals sent from this office, from no less than fifty-four of the places on our coasts, which are specified in the third paper of the appendix;—and as some of these have been preferred but *recently*, they are evidences of deliberate consideration, and of the value attached to the fact that by means of our regular reporting stations, (offices of the telegraph companies) and the Coast guard, aided by the liberal organization effected locally, in some districts;—all the coasts of Great Britain and Ireland to which the telegraph extends, (including the Isles of Man, Jersey, and Heligoland,) can now be warned in less than one hour.

5. More than this, however, has *already* been effected, and more is in prospect. From France we receive telegrams twice a day. In the early morning from Rochefort, L'Orient, and Brest, which reach London as soon as our own from Ireland or Scotland; and in the afternoon, through Paris, from Lisbon, Bayonne, Brest, Helder, and Copenhagen. In exchange for which we send daily reports to Paris Observatory from seven places; and to Calais—for the French coast specially—at eleven; besides such occasional warnings as may be useful to the French north-west coasts, including our Channel Islands.

6. How the British notices are appreciated in France may be shown by the following extracts of letters received by myself from two officers in the French navy, who have been charged

with the organization of a central office at Paris (similar to this), with corresponding or reporting stations on the north, the west, and the south coasts of France.

Captain Moulac wrote on the 20th of January last :—

“ Bien que les prévisions du temps faites par l'Amiral FitzRoy ne soient que des *probabilités*, et nullement des *prophéties*, il serait facile d'opposer à l'exemple cité, que l'on prétend avoir été pris entre mille, un très-grand nombre de circonstances dans lesquelles l'événement a justifié les prévisions.

“ Depuis le peu de temps, moins de deux mois, que ces avertissements parviennent en France, les trois coups de vent qui se sont fait sentir sur nos côtes ont été annoncés LA VEILLE.”

And Captain Mouchez, now officiating at Paris, said, on the 19th ultimo :—

“ Je n'ai pas besoin, sans doute, de vous dire que pendant tout le mois écoulé vos télégrammes se sont vérifiés d'une manière très-remarquable. Les journaux de divers ports de nos côtes du Nord signalent très-fréquemment l'accord parfait des prévisions et des tems observés. Aussi nous avons grande impatience de voir notre service bien établi. J'espère que cela ne tardera pas.”

And on the 26th the same officer wrote—

“ Je reçois continuellement de nouvelles demandes des ports qui réclament la communication de vos télégrammes.”

He also requested additional information from a few other British ports.

7. Last autumn several cautionary notices of impending bad weather were sent through Heligoland to Hamburg, and even to Rostock, at the special request of Professor Dove ; and lately inquiries about ice and probable cold weather telegraphed from Hamburg were answered so satisfactorily that a cargo of 800 tons was countermanded.

8. During 1862 many foreigners examined the arrangements at this office, and four of those gentlemen (who were accredited to high positions at the Exhibition) expressed intentions of establishing similar arrangements (on a smaller scale) in their respective countries, namely, France, Italy, Hanover, and Russia.

9. In the last autumn France commenced arrangements for a system of coast telegraphy for ordinary weather as well as for storms, and within the last few weeks I have heard from the officer at Paris, appointed to conduct this service, that he has organized 18 stations on the French coasts, and will soon ask for the further reports from hence, which are desired by them. His immediate superior is the Minister of Marine, who takes much personal interest in the subject.

10. Commissioners from the Hanoverian Government have just obtained authority from the Foreign Office and Board of Trade to inspect our meteorologic arrangements, having in view an organization of a similar kind.

11. It is unnecessary to say how willingly any desired information has been invariably given, not only to foreigners, but to all persons entitled to time and attention in a public office; but it may be right to repeat here that the meteorologic publications of the Board of Trade have been extensively though carefully circulated, and that a large scientific as well as ordinary correspondence has grown out of their dissemination.

12. These facts seem to show so conclusively, not only the opinions of foreigners and those by whom they have been gradually informed, chiefly concerned in maritime interests, but of a large number of other persons, that many words here in allusion to different views may seem hardly necessary;—and yet for enabling a fair conclusion to be drawn by high Authorities, some degree of further explanation may seem to be desirable besides what has been already published.

13. Many may ask—"Is this system of weather telegraphy sound and advantageous"?—If so, why is it opposed?

There are no less than four distinct classes of interested opponents, and they should be known. First:—Certain persons who were opposed to the system theoretically at its origin, and having openly expressed, if not published, their objections, are naturally reluctant to adopt other ideas until converted.

Secondly.—A numerous body who cannot have had time and opportunity to look fully into the rationale, but do not realise any want of special information, undervalue the subject, assert it to be a "burlesque," and misquote really great authorities.

Thirdly.—A small but active party which failed in establishing a daily weather newspaper indirectly opposed to the Board of Trade reports, and have since endeavoured, by conversation, by letters, and by elaborate criticisms in newspapers or periodicals, to exaggerate deficiencies, while ignoring merit in the works of this office, however beneficial their intended objects.

And fourthly, those pecuniarily interested individuals or bodies, who would leave the Coasters and the fishermen to pursue their precarious occupation heedlessly—without regard to risk—lest occasionally a day's demurrage should be caused unnecessarily, or a catch of fish missed for the London market.

14. Especially referring now to persons who would have the warning signals, but not the "forecasts" (results of considerations on which the *signals depend*), may I quote from my "Weather Book" the following words?—"Frequently, remarks in favour of the cautionary signals, but in depreciation of the forecasts, have been made. Their author now begs to say that it is *only* by closely forecasting the coming weather, and by keeping atmospheric condition continuously present to mind, that *judicious storm warnings can be given*. Forecasts grow out of statical facts, and signals are their fruit." Weather Book, p. 193. Second edition.

15. To show some of the concordant opinions of such forecasts entertained in France and Scotland, in Ireland and England,

I might quote numerous printed or written passages. In this Report, however, I will only observe that the views and expressions of seafaring men, of the maritime population in general, of the Coast Guard, and of Her Majesty's officers in command, are remarkably favourable.

16. Perhaps it may be asked, "On what meteorologic conditions or changes are the forecasts based"? They depend (may be briefly replied) on considering the atmosphere as a lighter ocean, having currents, elastic expansibility, equilibrium, momentum or inertia, chemical alterations, and extreme sensibility to heat or cold, its *chief motors*; and on knowing the statical conditions of air in this oceanic envelope at many places simultaneously, likewise again similarly after certain intervals of time, by which means intercomparisons are made, showing the relative conditions and causations whence dynamic effects originate. These dynamic motions are proportional to disturbances of level, like those caused by a head of water, to inequalities of temperature and consequent *chemical* changes, with more or less electric action. They are our winds, and may be softly gentle,—or as heavily boisterous as in a *tempest*, of which differences, through all degrees, instrumental means and telegraphy now give available information. To utilize their indications adequately, a central office should know the natural and general atmospheric movements, with their disturbing causes, even as a pilot knows the varieties of streams and eddies in a wide estuary.

The whole map of a region (say the British Islands) should be outlined in the mind, as the estuary with its shoals is mentally visible to the pilot. The normal tendency of the *whole* atmosphere (in our latitudes) to *move eastward* while crossed or variously interfered with by polar or tropical currents, that in course of seasons cause every variety of wind and weather, should be *always* considered, and then, with due allowances made for gradual advances from westward, for effects of land and differences of temperature—good forecasts may be generally drawn.

17. Reverting to Fishery barometers, I would ask for perusal of the replies sent in from places on our coasts to which instruments have been lent by the Board of Trade, gradually increasing in number since 1857. By these instruments, and by the directions (Manuals) that have been so liberally circulated by Government, an extensive amount of good has been done in a manner little known to the public, but not eventually to be the less appreciated. The example thus set has been largely followed, not only on our own sea-coasts, but on those of the French, where their Government has placed similar barometers at all coast stations, and has supplied them with translations of the Board of Trade Manual.

18. While thus endeavouring to realise a few practical results from some of the voluminous accumulations of facts hitherto usually remaining bound up on the shelves of many a library, or stored in observatories, it may be that some insight has been

obtained of the manner in which atmospheric changes are occasioned, and air-currents or winds set in motion, around our world, chiefly by the sun and moon. The luni-solar theory to which I refer appears to be so much in accordance with observed facts, that each month adds to my own impression of its truth; but it would be wrong not to say here, distinctly, that it is not yet admitted by the highest scientific judges.

19. In order to estimate fairly the nature and practical value of these *later* results arising out of the Meteorologic Office, it may be stated summarily that, as the *objects* are to save life and property; to enable small vessels and boats to avoid or prepare for dangerous winds, and to take full advantage of favourable weather; to inform ships about to leave port, or approaching land; and, generally, to inform, if not to caution, the maritime community,—their importance is self-evident.

20. The daily forecasts so extensively, yet without public cost, sent everywhere by the newspapers, (whether the full tables are published by them or not,) together with the regular tabulation of facts observed in numerous and widely separated places, afford general information now highly appreciated by a very large and increasing majority, although they are at present only tentative, and liable to errors of judgment, in drawing conclusions, however reliable the facts.

21. Lastly, Sir, I would request that you will notice a few other papers appended to this Report, with a view of showing that while a new and extensive utilization of meteorology has been pressed forward, for the advantage of all classes, a continuous advance has been made in carrying on the original purposes for which this Office was established.

I have the honour to be, Sir,

Your obedient servant,

To the Right Honourable
T. Milner Gibson, M.P.,

President of the Board of Trade.

R. FITZROY,
Rear-Admiral.

A P P E N D I X.

No. 1.

STATEMENT of all the CAUTIONARY SIGNALS shown between
March 1st 1862 and March 31st 1863, with the CHARACTER of
WIND and WEATHER following, by T. HENRY BABINGTON.

N.B.—This statement is printed verbatim from Mr. Babington's manuscript. No other cautionary signals were directed to be shown, and, excepting the gales specified by him, none of an extensive or important character occurred over the British Islands.—R. F.

CAUTIONARY SIGNALS, March 1st 1862 to March 31st 1863.

Warnings sent—and following weather.

Date.	Warning.	Weather following Warnings.
1862. 7th March, Noon.	Drum (all round the coasts).	The weather all the 7th was strong and squally, with gales in places, which increased and became more general towards night. The winds in the north blew chiefly from E. and N. and elsewhere from S. and W.
8th March, 3 p.m.	South Cone under Drum (on the South and West coasts).	The weather on the 8th was quieter, but it still blew a strong gale in many places from S.E. to S.W. (ships at sea report losing sails, &c.), and <i>at night and during the 9th</i> it blew a <i>severe gale</i> , very generally, from S. to W., more particularly on the <i>S. and W. coasts</i> .
20th March, 11.30 a.m.	Drum (Ireland, West Central, and South coasts).	It blew heavily during part of the 20th and on the 21st in the West Central district, and on the South and East coasts, from N.E. to S.E., and in places from N.W. In Scotland (where no warning was sent) and in Ireland, the winds were not generally so strong.
22nd March, 5 p.m.	South Cone (Ireland, West Central, and South coasts).	It blew a gale from S.W. to S.E. on the night of the 22nd, on the 23rd, and on the 24th, at many places on the coasts warned. In Ireland the wind had more Easting.

Date.	Warning.	Weather following Warnings.
1862. 26th March, 1 p.m.	South Cone (West Scotland, Ireland, West Central, and S.W. England).	Strong winds prevailed at many places on the 27th, 28th, 29th, and 30th, blowing from various directions, and with a force of 6 and 7 (Beaufort notation), but there is no report of any important <i>gale</i> on our coasts. Gales were heard of, however, all round; in the Shetland Isles, to the Westward and Southward of Ireland, and at Lisbon.
28th March, 11 a.m.	Drum (all round the coasts).	
21st May, Noon.	South Cone on S.E. coast, (Deal to Weymouth).	It blew heavily, with hard squalls, from S. to W. all along the South coast, on the night of the 21st, and during a great part of the 22nd and 23rd. Several ships which sailed from the southern ports <i>on the 22nd</i> were compelled to put back.
6th June, 2 p.m.	Drum (to Scotland, Ireland and West Central). South Cone (to East coast and South England).	Heavy gales from S. to W. set in generally about sunset on the 6th, shifting to N.W. and to S.E. in some parts of Ireland and Scotland. The weather continued very stormy and unsettled all the 7th, and moderated on the 8th.*
11th June, 11 a.m.	Drum (all round the coasts).	Violent gales on the 12th and 13th, chiefly from S.W. and W., but shifting to N. in places.
12th June, 4 p.m.	South Cone under Drum (South coast).	The wind was strongest on the South Coast, especially on the night of the 12th and during part of the 13th, when it is said to have blown a hurricane in places. It was blowing a <i>gale in parts</i> of Ireland and North Britain <i>before</i> the warning of the 11th was received, but the gale was not <i>general</i> till afterwards.
5th July, 11 a.m.	South Cone (Ireland, West Central and South coasts).	The weather <i>generally</i> along the South and West coasts on the 6th and 7th was "strong" and "stormy" from southward. In <i>Ireland</i> the wind was more northerly and moderate. At Deal there was an extraordinary hurricane for about 20 minutes on the <i>evening</i> of the 5th (<i>see extract below</i> †). A boat was blown off the beach, across the carriage way, to a distance of 150 yards.

* "Shields, June 8th.—Soon after the storm signal was hoisted here on Friday (6th), the wind, as indicated, rose to a gale from the South, and all yesterday, at intervals, it blew hard from the S. and S.W., as also during the night."—*Shipping Gazette*.

† "Deal, July 6th.—Yesterday, about 5.30 p.m., we experienced a terrific storm of hail, thunder, and lightning from the S.E. For about 20 minutes it blew a perfect hurricane, taking four boats from off the beach, drove them against the fence of a field. The hail, or rather large pieces of ice, was driven with such fury as to break many windows."—*Shipping Gazette*.

Date.	Warning.	Weather following Warnings.
1862. 24th July, 5 p.m.	Drum (Scotland, Ireland, and West Central).	A strong gale set in <i>at night</i> (on the 24th) in the West Central district, and it blew a very hard gale during the greater part of the 25th, in North Britain and the North of Ireland; the wind shifting from S.W. to N.W.
4th August, Noon. 5 p.m.	South Cone (Ireland, Scotland, and West Central). South Cone (South England).	The gale commenced in some parts of Ireland before the warning was received, blowing from about S.S.E. to S.W., but it did not generally commence elsewhere till the <i>night</i> of the 4th, blowing from the same direction and increasing on the 5th, on which day a schooner off the Lizard rolled both her masts away, and another vessel, in the Bay of Biscay, was thrown on her beam ends. There was not so much wind in Scotland (although it was strong and the weather unsettled) as elsewhere, until the 7th or 8th.
5th August	Drum (East coast and Jersey).	It blew a gale at Bridlington, Staithes, Berwick, and various other parts of the East Coast <i>at intervals</i> , on the 5th, 6th, and 7th, the wind varying from S.E. to N.W. In the Channel the southerly gale continued more or less all the 6th and 7th, extending to London on the 7th and doing much damage.
7th Aug., 11 a.m.	Drum (Scotland, Ireland, and West Central).	In North Britain and the West Central district the weather was stormy and unsettled, with gales at intervals, on the night of the 7th, on the 8th, and on the 9th.* In North Britain more particularly, on the night of the 7th and on the 8th, the wind varying between N.E. and W. Much damage was done to the fishing boats at Wick by the surf, and off Stonehaven there was a strong N.E. gale with heavy sea.

* On the morning of the 8th, the day after the cautionary drum had been, or ought to have been, hoisted in Kingstown harbour, a small schooner yacht left that place for the Isle of Man. The *Mona's Herald* thus describes the voyage :—

“ They were becalmed for several hours about mid-day on Friday, the 8th, but in the evening a strong breeze sprung up, which by midnight increased to a heavy gale. They sighted the lights on the Calf of Man about 1 a.m., when nearly a whole gale was blowing out of the north-east. . . . In shortening sail a heavy sea washed Mr. Casey, one of the party, overboard.”

The *Mona's Herald* goes on to say that the boat was put about, and “ nearly foundered in going about ;” but that owing to the heavy sea no assistance could be rendered. The yacht got into Douglas harbour with her crew “ in a very exhausted condition.”

REPORT OF THE METEOROLOGIC OFFICE.

Date.	Warning.	Weather following Warnings.
1862.		Ships reaching Ireland (Crookhaven) on the 10th from the Westward report "heavy northerly gales, the latter part "of the voyage," with loss of spars, &c.
19th Aug., 11 a.m.	South Cone (Scotland, Ireland, and West Central).	Winds strong, 6-9 (Beaufort notation), from S.W. on the 19th and 20th, particularly in Ireland and West Central;* but no very <i>important</i> gale on our coasts. In the Atlantic, far west, there were furious southerly gales and "hurricanes" on the 19th and 20th.
3rd Sept., 11 a.m.	Drum (Scotland, Ireland, West Central, and East coasts).	Strong winds and squalls S.W. to N. on the 3rd (night especially) and 4th. There were intervals of fine and moderate weather, as well as places which the stormy weather did not reach; but near the Clyde, about midnight on the 3rd-4th a smack was sunk in a N.W. gale; near Belfast a vessel carried away her topmast, and at Yarmouth a Dutch schooner parted her anchors.
25th Sept., 5 p.m.	South Cone (Ireland, West Central, and S.W. England).	Southerly winds, strong in places, but no gale of importance on the coasts warned until the 29th.†
29th Sept., 4 p.m.	Drum; and next day South Cone under Drum (all round the coasts).	A very heavy gale commenced in Ireland and the South-west of England on the night of the 29th, which extended more or less over the whole of Great Britain in the course of the two following days. The wind continued chiefly between S. and W.
12th Oct., 3 p.m.	Drum (all round the coasts).	Strong winds from S.S.E. to S.W., with squalls and much rain over the greater part of the kingdom nearly all the 12th, increasing towards evening to heavy gales from S.W. and N.W.
13th Oct., 4 p.m.	South Cone under Drum (all round the coasts).	On the 13th the weather was still much disturbed, and on the 14th, 15th, and 16th there was a succession of heavy gales, chiefly from S. to W. The following extracts are from the <i>Shipping Gazette</i> :— "The steamer 'Hercules,' from Dantzic for London.—At 1 a.m. October 13th blowing a gale from S.E., the ship being in the Cattegat. At 8 a.m. the wind suddenly shifted to N.W., which compelled us to seek shelter. . . . "Proceeded on the 14th, the weather having moderated. On the 15th the weather again became worse," &c.

* Whitehaven, 19th.—"South cone hoisted this morning. 5.30 p.m., S.W., blowing heavily; dull, with heavy rain."—*Shipping Gazette*.

† In the Baltic there were strong *northerly* gales on the 25th and 26th.

Date.	Warning.	Weather following Warnings.
1862.		<p>The "Trio" "left Queenstown on the 13th at 8 a.m., the wind being W.S.W. "strong; from that experienced a continuation of gales from nearly all "quarters."</p> <p>At Greenock, "early on the 14th a "gale arose from the southward, and "about 3 p.m. increased to a hurricane."</p>
17th Oct., 11 a.m.	North Cone over Drum (all round the coasts).	Strong gales, chiefly westerly, continued on the 17th, but in the afternoon and on the following day the wind shifted in many places to N.W. and N.N.E.
18th Oct., 1 p.m.	South Cone under Drum (all round the coasts).	A succession of violent gales continued to blow on the 18th, 19th, 20th, 21st, and 22nd, the wind varying from N.E. to S.W.
22nd Oct., 11 a.m.	South Cone under Drum (all round the coasts).	"Terrific gales," "hurricanes," and "fearful squalls" were reported from nearly all parts of the coasts on the 23rd and 24th, wind varying from S.W. to N.; and the weather was still stormy and unsettled on the 25th, though somewhat more moderate than it had been.
25th Oct., 6 p.m.	South Cone (all round the coasts). To be hoisted <i>also</i> on the following day.	There were very heavy S.W. gales all round the coasts on the 26th and 27th, but more particularly on the 27th. At Dover, on the 26th and 27th, "a succession of strong gales. . . Since "the wreck of the 'Violet' such weather "cannot be remembered." At Newhaven, "shortly after the storm signals "were hoisted, it blew very heavily."— <i>Shipping Gazette</i> .
8th Nov., 5 p.m.	Drum Lights (to Scotland and North and East Ireland).	Strong and squally on the night of the 8th–9th, with heavy gales in places, especially in North Britain and on the East coast of Ireland. Wind <i>chiefly</i> from S. to W., but shifting in some places.*
9th Nov., 9 a.m.	South Cone under Drum (West Central, South England, East coast, and South Ireland).	On the 9th, 10th, and 11th there were gales or strong winds from S. to N.W., with generally unsettled weather. At sea, to the Westward of Ireland, there were "severe gales" from W.N.W. on the 10th;† and at Londonderry, Porthcawl, Cardiff, Greenock, Shields, &c., there were westerly gales.
18th Dec., 4 p.m.	Drum Lights (Scotland.)	A severe gale (S.W. to N.), began on the evening (or night) of the 18th, and during the night and following days (the 19th and 20th) extended over the whole of North Britain and Ireland and

* Whitehaven, "November 9th.—N.W., strong, stormy. A heavy gale began to blow from S.W. last evening, and raged over the night, shifting from S.W. to N.W. The drum storm signal was hoisted last evening."—*Shipping Gazette*.

† Near the Scilly Isles the barque "Mata" had a "terrific gale" on the 9th from S.W.; and in the afternoon of the same day there was a severe S.W. gale in the North Sea.

Date.	Warning.	Weather following Warnings.
1862.		the north of England, as well as, in a few instances, to the southern ports. At Kirkwall "on the night of the 18th and " 19th we had a dreadful hurricane from " W. to W.N.W., heavier than has been " experienced for many years." At Greenock there had " not been such a " storm for years" as on the 19th.— <i>Shipping Gazette</i> .
20th Dec., 3 p.m.	Drum Lights, and Drum on following day. (All round.)	Violent northerly (N.N.E. to W.) gales swept over the greater part of the Kingdom on the 21st and 22nd, causing serious damage to shipping both on the eastern* and western coasts. These gales were severely felt in London also. There were also north-westerly gales in the Atlantic to the westward of Ireland at this time.
27th Dec., 5 p.m.	South Cone, and again next day. (Scotland, Ireland, and West Central.)	Heavy gales and squalls, at intervals, or strong winds, from S.W. to N.W. prevailed all round the coasts on the 28th, 29th, and 30th. On the French coast also to which a warning was sent on the morning of the 29th, there was a heavy gale on the night of the 29th and 30th. The following is from the <i>Shipping Gazette</i> : Caernarvon, December 29th. " Yesterday morning the cone, indicating " a gale from the southward was " hoisted as the morning was " fine and threatened no storm it " was laughed at by many sailors " a terrific gale blew through- " out the night from S.W." " The 'Zeester' brigantine, which " arrived at Cuxhaven on the 30th en- " countered a heavy gale in the North " Sea, during which she lost sails, bul- " warks, &c., and was compelled to " throw part of her cargo overboard." On the night of the 31st Dec. to Jan. 1st, it blew very hard from N.W. and from S.W. in Scotland and Ireland.
29th Dec., 9 a.m.	Drum (all round the coasts, and to N.W. France.)	
1863.		
1st January, 11 a.m.	Drum (all round the coasts, (except the East coast), and to N.W. France.)	Heavy gales, at intervals, over nearly the whole Kingdom during the 1st, 2nd, and 3rd. The wind, which moderated, generally, on the morning of the 1st, increased again in the course of the day in the North, West, and South, and in the evening on the East coast also, blowing in most cases from S.W. and shifting to N.W.
3 p.m.	Drum (East coast).	

* The steamer "Life-guard" is supposed to have foundered in the North Sea on the 21st.

Date.	Warning.	Weather following Warnings.
1863.		At Cardiff, on the night of the 1st and 2nd, there was "a terrific gale" from N.W. At Lynn, the same night "a heavy gale, the wind chopped suddenly to N.W. in the morning."* At Guernsey "a perfect gale (on the morning of the 2nd), from S.S.E. caused the brig 'Ann' to drag her anchors, she having <i>two</i> down." At Killibegs (Ireland) on the 3rd "a continuance of S.W. and N.W. gales." The <i>Shipping Gazette</i> contains similar reports from all parts of the coasts.
3rd January, 6 p.m.	North Cone (all round the coasts).	Heavy gales prevailed, more or less, all round the coasts and over a great part of the country on the night of the 3rd, on the 4th, 5th, and 6th; but the wind came chiefly from S. and W. until the 7th, when it blew a northerly and easterly gale in the North. There were, however, exceptions; for instance, at Lerwick, on the 4th at 5 p.m., "it came on a heavy gale at E., veered round to N.E. which lasted two hours, and then backed to South."†— <i>Shipping Gazette</i> .
5th January, 11 a.m.	North Cone over Drum (all round the coasts).	The <i>Shipping Gazette</i> of the 5th, says, "Admiral FitzRoy has despatched telegrams since Saturday evening (the 3rd) to the different out-ports, with notice to hoist warning signals. Heavy gales prevail this morning at Scarborough, Jersey, Lorient, Plymouth, Portsmouth and Heligoland." During the night of the 4th–5th a violent gale swept over London.
17th Jan. 2 p.m.	Drum (Scotland)	There were gales from S.W. to N.W. in Scotland and parts of Ireland on the 18th and 19th. (In the early morning of the 19th (Monday) it blew a gale, from about N.W. generally, on many parts of the English coasts also, but not everywhere until later.
19th Jan. 1 p.m.	Drum, with South Cone under, (all round the coasts.)	On the 20th, 21st, and 22nd, gales chiefly between S.W. and N.W. were violent and (with intervals) universal. On the 20th the "Shamrock" steamer from Sligo to Liverpool was driven into Belfast by "stress of weather." These gales were particularly violent on the West coast of Scotland and in the Irish Channel.‡

* From the *Shipping Gazette*.

† The New York steamer "Bavaria," which reached England on the night of the 8th–9th, had heavy *north-westerly* and *northerly* gales during the *last* part of her voyage.

‡ "Caernarvon, Jan. 21st: It is proper to report the surprising correctness of Admiral FitzRoy's signals, in order that the maritime public may justly appreciate them. On Monday last, about noon, the signal for an expected storm was hoisted at the N.W. Club House, and from that night to the present it has been blowing fearful gales."—*Shipping Gazette*.

Date.	Warning.	Weather following Warnings.
1863. 23rd Jan. 11 a.m.	Drum (all round the coasts).	<p>The warnings of the 23rd, 26th, and 29th intimated a probability of the <i>continuance</i> of the dangerous gales which had prevailed since the warnings of the 17th and 19th from more than one direction; and on every day until the end of the month (except the 28th) there were successive heavy gales, with intervals of moderate weather, all round the coasts. The wind varied for the most part between S.W. and N.W. but in some instances it shifted to N.E., and then back again.*</p> <p>The newspapers (more particularly the <i>Shipping Gazette</i>) of this period contain numerous reports of the violence of these gales and damage done to shipping by dragging, loss of spars, &c.</p> <p>On the 30th the Staithes fleet of fishing boats ventured to sea for the first time for 14 days, but were compelled to return the same day.</p>
26th Jan. 4 p.m.	Drum (all round the coasts).	
29th Jan. 11 a.m.	South Cone (all round the coasts).	
4 p.m.	"Substitute Drum "for South Cone" (all round the coasts) and Drum next day also.	
2nd Feb. (Noon.)	North Cone (Scotland, Ireland, and West Central).	<p>There were heavy gales in the North and West on the 3rd, 4th, and 5th, from S.W. to N., but chiefly from about W. and N.W.</p> <p>In the Atlantic, to the Westward of Ireland heavy N.N.E. gales at this time, were reported by the "Sir R. Peel," and other ships.</p> <p>These gales were not felt (to any extent) in South England, where no warning had been sent; but in the North, in Ireland, and on the Welsh coast they were felt severely.</p> <p>A report from the North of Ireland (dated the 7th) says:—"For the past <i>few days</i> it has been blowing a gale, with snow showers, from W. to N.N.W."</p> <p>The <i>Times</i> of the 9th says:—"During <i>last week</i> there were nothing but gales of wind from the West and N.W.," in the North.</p>
6th March, 11 a.m.	Drum (Scotland, and Ireland). South Cone (West Central, South and East coasts).	<p>It blew hard from S.W. on the night of the 5th-6th in Ireland, but became moderate on the morning of the 6th. In the afternoon and evening of that day it again increased, shifting in many places to N.W., and extending to England and part of Scotland during that night and the two following days; the wind blowing from S. and S.W. chiefly, in South and East England, and varying between S. and N.W. elsewhere. The strength of the wind varied greatly in different places.</p>

* "Peterhead, January 31st: The last few days strong gales from S.W. This morning a terrific gale from N.E."—*Shipping Gazette*.

Date.	Warning.	Weather following Warnings.
1863. 9th March, 5 p.m.	North Cone (all round the coasts). (North Cone to be hoisted next day also).	Weather on N.E. coast (10th–11th) was “stormy, E. and E.S.E., snow, “strong sea on the coast; all appearance of a <i>continued</i> storm.” At Sunderland on the 10th E.S.E. strong squalls, rain and snow; and on the 11th, “N.E. stormy.”*
12th March, 11 a.m.	Drum (all round the coasts).	In the South and West it blew a gale on the night of the 11th† chiefly from the southward, shifting in many places to N.W. and N. on the 12th, and again going back to S. On the Cornish coast, “a perfect hurricane between 2 and 4 a.m. on the “12th from S.; it afterwards shifted to “N.W., and at 2 p.m. blew very strong “from S.W.” On the East coast it blew a gale from S.E. on the night of the 12th–13th;‡ and in Scotland the same night there were <i>strong</i> winds from S. to N.E.
20th March, 11 a.m.	South Cone (Scotland, Ireland, West Central, and S.W. England).	Gales commenced on the afternoon of the 20th, increasing at night and extending over the greater part of the coasts warned, but not, with any violence, elsewhere. In the North it blew chiefly from S.W.;§ in Ireland and elsewhere from W. and N.W.

* All reports of the weather at this period have not yet come to hand, but on the night of the 11th–12th there were violent gales from N.W. to S. on the South coast and elsewhere.

† N.B.—A caution had been sent to those coasts on the 9th.

‡ “Ipswich, 12th.—Received a telegram to “hoist drum,” the wind has since increased to a gale from S.E.”—*Shipping Gazette*.

§ “Greenock, March 21st.—This morning the storm cone was hoisted. The wind (S.W.) gradually increased in force until the afternoon, when it veered to W.S.W., and rose to a fierce gale.”—*Shipping Gazette*.

No. 2.

GENERAL ABSTRACT OF FISHERY BAROMETER REPLIES.*

Place.	Opinions in reply to Circular of Queries.
1. Sandlodge -	Of use; but not sufficiently attended to or generally understood.
2. Lerwick -	Of use; becoming generally understood; no important gale is known to have occurred without warning.
3. Burray -	Of great use to farmers as well as fishermen. No gale of importance has occurred without warning.
4. <i>Thurso</i> -	Of use.
5. <i>Staxigo</i> -	But lately supplied.
6. <i>Wick</i> -	Of the greatest use; understood to a very great extent. No gale has occurred without warning. Manuals of the greatest use, and more wanted.
7. <i>Pulteneytown</i> -	Of the greatest use; has given warning of all gales. Manuals much sought after, and more are asked for.
8. <i>Lybster</i> -	Of very great use; daily and hourly consulted in the fishing season. Has given warning of all gales of importance.
9. <i>Helmsdale</i> -	Of use, and becoming gradually understood. Manuals wanted. (This is only a ship's barometer.)
10. Portmahomack -	Of great use, and beginning to be studied and understood. Has given due notice of all important gales.
11. <i>Cromarty</i> -	No reply.
12. <i>Nairn</i> -	Of use, and understood; has given warning of every gale. Vernier (apparently) out of order.
13. <i>Burghead</i> -	Of great use; has given warning of every gale. Generally understood, and fishermen will not go to sea without consulting it.
14. <i>Hopeman</i> -	No reply.
15. <i>Lossiemouth</i> -	Of great use, and generally understood. Has occasionally misled, but no gale of importance has occurred without warning.
16. <i>Port Gordon</i> -	Of use, and generally understood. No important gale is known to have occurred without warning.
17. <i>Buckie</i> -	Of use, but not generally attended to.
18. <i>Port Essie</i> -	Of great use; well understood; has given 10 or 12 hours warning of every gale. More manuals asked for.
19. <i>Port Knockie</i> -	Of use, and generally understood. Has given warning of every gale.
20. <i>Cullen</i> -	But lately supplied.
21. <i>Banff</i> -	Of great use. In one instance (October 1860) it gave no warning of a gale.†

* At the stations in italics (25) the Barometer was a private gift. At other stations (64) the Barometer was supplied by the Board of Trade as a *loan*, under *special care*.

† Northerly. *Rising* mercury misunderstood.—R. F.

Place.	Opinions in reply to Circular of Queries.
22. <i>Macduff</i> -	Of use; never misleads but in <i>north</i> winds.* Has given warning of every gale of importance.
23. <i>Whitehills</i> -	Has been of use, but is now out of order.† No gale of importance occurred without warning being given.
24. <i>Gardenstown</i> -	Has given warning of every important gale. More manuals asked for.
25. <i>Rosehearty</i> -	Very useful and very well understood. More manuals wanted.
26. <i>Sandhaven</i> (Pittullie).	Useful; generally understood. No important gale without warning.
27. <i>Fraserburgh</i> -	Of great use; has never misled. Every gale has been foretold.
28. <i>Peterhead</i> -	The barometer has given warning of every gale of importance.
29. <i>Boddam</i> -	Of use, and pretty generally understood.
30. <i>Findon</i> -	But lately supplied.
31. <i>Port Leithen</i> -	Of great use. Has given good warning of every important gale. More manuals asked for.
32. <i>Stonehaven</i> -	Of use; has never misled. Becoming generally understood.
33. <i>Gourdon</i> -	Of use, and becoming generally understood.
34. <i>Arbroath</i> -	Of great use, and has never misled.
35. <i>Broughty Ferry</i> -	Of great use and generally understood. Has given warning of every important gale. The fishermen now are very seldom driven into strange harbours.
36. <i>St. Andrews</i> -	Of much use and much resorted to by the fishermen.
37. <i>Crail</i> -	Of great use; has <i>always</i> given warning of storms. Not yet <i>generally</i> understood.
38. <i>Anstruther</i> -	No gale of importance has occurred without warning being given by the barometer.
39. <i>Pittenweem</i> -	Of use, but not generally studied by the fishermen.
40. <i>St. Monance</i> -	No public barometer; one is much wanted.
41. <i>Buckhaven</i> -	Of great use, and has never misled.
42. <i>Burntisland</i> -	Barometer and manuals of great use.
43. <i>Newhaven</i> -	No gale has occurred without warning being given by the barometer.
44. <i>Leith</i> -	Generally understood, and has given warning of every gale of importance.
45. <i>North Berwick</i> -	Useful and generally understood. Has given warning of every gale this winter.
46. <i>Dunbar</i> -	Of great use, and has never misled. Manuals of great use, and more are wanted.
47. <i>Cove of Dunglass</i> -	No reply yet.
48. <i>Eyemouth</i> -	Barometer of great service; manuals of great use; more asked for.
49. <i>Burnmouth</i> -	Barometer and manuals of use, but the former not <i>generally</i> understood at present.

* Misunderstood.—R. F.

† Will be exchanged.—R. F.

Place.	Opinions in reply to Circular of Queries.
50. <i>N. Sunderland</i> -	Very useful and very generally understood. Has given warning of every important gale.
51. Beadnell -	Barometer and manuals of great use. Barometer gave notice of a tremendous gale last autumn.
52. Hartlepool -	Barometer of use, and becoming generally and better understood. More manuals wanted. No gale of consequence has occurred without due warning given by barometer, which is consulted day and night.
53. Staithes -	Of very great use, and has always given warning. Is a great boon to the fishermen, who would often go to sea but for its timely warning. Since the barometer was placed not one fisherman has lost his life, which was frequently the case formerly.
54. Scarborough -	Very useful.
55. Filey -	Barometer and manuals of use.
56. Flamborough -	Of great use. No gale has occurred without notice being given by barometer.
57. Bridlington -	Barometer constantly referred to. Would be a great advantage if it were self-registering.
58. Hull -	Of very great use, and much valued.
59. Lynn -	Barometer unquestionably of use. The more intelligent seamen have undoubted faith in its indications. No gale occurred without its having given unmistakable warnings. More manuals wanted.
60. Gorleston -	Highly valued, and much consulted.
61. Deal -	Barometer of great use, thought much of, and is becoming better understood. More manuals wanted.
62. Kingsdown ,	Barometer most valuable and useful, and is consulted about 500 times daily. No boat goes to sea without first consulting it. Manuals thought too scientific for the majority of fishermen.*
63. Dover -	Of great use; consulted frequently by masters of vessels in harbour. A few manuals would be of service for distribution among the <i>less prejudiced</i> seamen and masters.
64. St. Helens, I. W.	But lately supplied.
65. Gorey -	Barometer of great use, especially to coasters and fishermen, and is now very generally understood. No gale has occurred without warning being given. Manuals of very great use.
66. Budleigh Salterton.	Lately supplied.
67. Cawsand -	Barometer has never misled when properly attended to. Fishermen slightly prejudiced at first, but not now. More manuals wanted. Barometer has always foretold strong gales when consulted as manual directs.
68. Mevagissey -	Of very great use and now much better understood: highly appreciated by seafaring community.

* Kingsdown was supplied with the shilling Manuals—of a less plain kind than the sixpenny ones since sent there.—R. F.

Place.	Opinions in reply to Circular of Queries.
69. Gorranhaven	- Barometer of very great use ; great attention paid to it by the fishermen, to whom it has given timely warnings. Manuals of great use ; more wanted.
70. Penryn	- Barometer and manuals of use. Will shortly be made accessible at all times, day and night.
71. Falmouth	- Barometer of great use, and is constantly consulted by seafaring persons. More manuals would be advisable.
72. Newlyn	- No reply yet.
37. Mousehole	- Barometer of use, and now better understood.
74. St. Ives	- Of <i>great</i> use, but once <i>very</i> low without gale, January 3 to 7, 1863.
75. Port Isaac	- Often used by seafaring inhabitants, and is becoming better understood. Manuals of use. No gale of importance has occurred without warning.
76. Burnham	- But lately supplied.
77. Swansea	- Barometer now better understood, and more reliance is placed on it every day. Has given notice of all gales of importance.
78. Milford	- Of great use, much valued, and consulted.
79. Fleetwood	- Barometer of use, and has never misled. No gale of importance has occurred without due warning.
80. Maryport	- Of use, and has been more consulted lately, and now better understood. More manuals wanted.
81. Peel (Isle of Man)	- Recently supplied.
82. Dundalk	- Barometer of use ; has never misled ; is becoming generally and better understood. More manuals could be usefully distributed.
83. Howth	- Barometer has not yet been suitably placed, but soon will be so.
84. Dungarvan	- But recently supplied.
85. Valentia	- Of great importance and very faithful.
86. Dingle	- Of very great use and much appreciated by the fishermen, who have been amply forewarned by it in every case.
87. Dunfanaghy	- Barometer and manuals of use. No gale of importance occurred without warning given by barometer. Would be more useful if warning signal was hoisted when necessary.
88. Rathmullan	- Barometer of use, and becoming better understood ; also manuals. No gale of importance has occurred without barometer giving due warning.
89. Sarclet	- No reply yet.

QUESTIONS.	<i>Replies from Sandlodge (1).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for Diagrams), would any one keep up a daily registered trace (curve or zigzag) for local reference?—For your own use,—not for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of importance occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. So far of use that fishermen often come to look at it in doubtful weather, and would be more cautious in proceeding to sea on any sudden change taking place. 2. Is not sufficiently studied to answer this question; never heard any complaint. 3. No. The inhabitants, with the exception of the minister and myself, are common fishermen, and don't trouble themselves with the study of it. 4. Some of my family would do it. 5. The men read the two sheets pasted up alongside of the barometer, but never ask to see the manual. 6. Not at present. 7. Yes, except that there are a few small globules of quicksilver sticking to the glass in the upper vacuum, probably from a rough shake of the instrument. 8. Not been studied. <p style="text-align: right;">JOHN BRUCE.</p> <p>Sandlodge, Zetland, February 1863.</p>
<i>Replies from Thurso (4).</i>	<i>Replies from Staxigo (5).</i>
<ol style="list-style-type: none"> 1. Yes. 2. No. 3. Yes. 4. None, that I know of at present. 5. There are none. 6. — 7. Yes. 8. No barometer in this quarter indicated the gale of 19th and 20th December last. 9. The barometer here for the guidance of fishermen and sailors is the property of Alex. Miller, Esq. <p style="text-align: right;">JOHN SWANSON, Stone Merchant.</p> <p>Thurso, 10th February 1863.</p>	

<i>Replies from Lerwick (2).</i>	<i>Replies from Burray (3).</i>
<p>1. Yes.</p> <p>2. No.</p> <p>3. Yes.</p> <p>4. For a small payment a person could be got.</p> <p>5. I do not know whether they have ever been consulted or not, having been only recently appointed to the magistracy.</p> <p>6. —</p> <p>7. Yes.</p> <p>8. I do not know of any.</p> <p>9. The barometer is much consulted, and is found very useful.</p> <p style="text-align: right;">JOSEPH LEASK, Chief Magistrate of Lerwick.</p>	<p>1. The barometer is of great use.</p> <p>2. I have not understood it to mislead at any time.</p> <p>3. It is generally understood; fishermen and farmers pay great attention to it, and are profited thereby.</p> <p>3. I know of no person here that would undertake to keep a daily register.</p> <p>5. Manuals of great use to all those that take an interest in the barometer.</p> <p>6. No person as yet has been enquiring after any.</p> <p>7. I believe it is in excellent order.</p> <p>8. No gale has occurred of importance without due notice being given by glass when proper attention was given.</p> <p>9. I have nothing particular to mention, but would return my humble gratitude for the barometer.</p> <p style="text-align: right;">ANDREW LAIRD. Burray, February 7, 1863.</p>
<i>Replies from Wick (6).</i>	<i>Replies from Pulteneytown (7).</i>
<p>1. Of the greatest.</p> <p>2. No.</p> <p>3. To a very great extent it is, and appreciated.</p> <p>4. A daily register is kept at the Harbour Office of the British Fishery Society; and if papers be sent, they shall be filled up and returned as required.</p> <p>5. Of the greatest.</p> <p>6. Yes; during the herring season 1,300 boats seek shelter in this harbour, and the manuals are much sought after.</p> <p>7. Yes.</p> <p>8. None that I am aware of.</p> <p>9. More barometers would be of great service along the coast, but as heavy rents are expected for the Curing stations, I think the proprietors of those stations ought to be shamed into providing them.</p> <p style="text-align: right;">JOHN TUDOR, Captain R.N.</p>	<p>1. Yes, of the greatest.</p> <p>2. No.</p> <p>3. For a great extent it is, and appreciated.</p> <p>4. A daily register is kept at the Harbour Office of the British Fisheries Society, and if papers be sent they shall be filled up and returned as required.</p> <p>5. Of the greatest.</p> <p>6. Yes; during the herring fishing season 1,300 boats seek shelter in the harbour, and the manuals are much sought for.</p> <p>7. Yes.</p> <p>8. None that I am aware of.</p> <p>9. More barometers would be of the greatest service along the coast, but heavy rents are expected for the Curing stations, and I think the proprietors ought to be ashamed of not providing them.</p> <p style="text-align: right;">Pro Harbour Master, Pulteney. WILLIAM CROW.</p>

QUESTIONS.	<i>Replies from Lybster (8).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—not for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. I consider it to be of very great use, and it is daily and hourly consulted by the fishermen during the fishing seasons. 2. Not that I am aware of. 3. It is now becoming so, and the more it is understood the more its indications are attended to. 4. If furnished with the papers I would try and do what I could to keep them. 5. They are of use to some, say ship masters; but they are not much looked to by fishermen. 6. I have still got a few on hand. 7. It does. 8. Not any of importance. <p style="text-align: right;">JAMES SUTHERLAND. Lybster, February 6, 1863.</p>
<i>Replies from Cromarty (11).</i>	<i>Replies from Nairn (12).</i>
	<ol style="list-style-type: none"> 1. Yes. 2. Cannot say that it has. 3. Yes. 4. Yes, if paid. 5. If studied would be of use. 6. None at present. 7. It is in good order. 8. No gale has occurred without warning being given by the barometer.

<i>Replies from Helmsdale (9).</i>	<i>Replies from Portmahomack (10).</i>
<ol style="list-style-type: none"> 1. Yes. 2. Seldom. 3. Gradually. 4. Probably, if a proper barometer, and one more generally understood, was supplied. 5. Yes. 6. A few more desirable. 7. Yes. 8. Not that I am aware of. Indication of barometer generally true. 9. The one in use is a ship's barometer; it would be desirable to furnish a Board of Trade barometer to this station. <p style="text-align: right;">DONALD MACKAY, Harbour Office, Helmsdale, February 4, 1863.</p>	<ol style="list-style-type: none"> 1. Yes, it is of much importance in this locality. 2. No. 3. Yes, our fishermen are beginning to study and understand it. 4. No, there is no one here that will undertake it, and I am seldom at home. 5. None here; a few would be of great use. 6. Two or three might be sent. 7. Yes. 8. No, it has given due notice. <p style="text-align: right;">ALEXANDER ROSS, Pilot.</p>
<i>Replies from Burghead (13).</i>	<i>Replies from Hopeman (14).</i>
<ol style="list-style-type: none"> 1. Yes. Fishermen do not now go to sea without consulting it, especially during changeable weather. 2. Only once since we received it, when it fell suddenly, and very low, and no gale occurred here, but I am aware that a heavy gale blew at the same time beyond our horizon. 3. Yes, generally so. 4. I shall be most happy to do so. 5. Very much so. 6. We are well supplied. 7. Very good. 8. Our barometer has given indications of every gale of wind which has occurred since it was received here. <p style="text-align: right;">C. F. MORRISON, Harbour Master.</p>	

QUESTIONS.	<i>Replies from Lossiemouth (15.)</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—<i>not</i> for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. Great use to fishermen and seamen. 2. Some times, but kept no record. 3. Generally so. 4. Harbour master cannot attend to this regularly. 5. Among a few of the fishermen. 6. None at present. 7. Yes. 8. None of any importance. 9. — <p style="text-align: right;">GEORGE SHAND, Harbour Master, Lossiemouth.</p> <p>February 21, 1863.</p>
<i>Replies from Port Essie (18).</i>	<i>Replies from Port Knockie (19).</i>
	<ol style="list-style-type: none"> 1. Yes. 2. No. 3. Yes. 4. None that I can find. 5. Yes. 6. No. 7. Yes. 8. None. 9. — <p style="text-align: right;">JAMES MAIR. Port Knockie, February 21, 1863.</p>

Replies from Port Gordon (16).

1. Yes ; fishermen and seamen consult it frequently.
2. No ; on the contrary its predictions may be generally trusted.
3. Yes, plain printed instructions are framed and fixed beside the barometer.
4. Having had charge of the barometer since its being placed at this port I should be perfectly willing to do so.
5. Not much ; the printed outside instructions seem to be thought sufficient.
6. As there is but one copy of each manual here, one or two more might be useful.
7. Yes.
8. Not within my experience.
9. The position of the barometer is rather unfavourable to the obtaining of exact results—being unshaded and exposed to the action of the sun. This remark applies especially to the thermometer.

(Signed) WILLIAM LAMONT.
Teacher,
Port Gordon,
Banffshire.

Replies from Buckie (17).

1. Yes.
2. No.
3. Yes, but not often looked at.
4. Yes.
5. Yes.
6. —
7. Yes.
8. —
9. I am opinion that if our fishermen would put themselves to a little trouble and look oftener to the barometer it would save them from a few storms.

WM. MILNE.

*Replies from Cullen (20).**Replies from Banff (21).*

1. It is considered to be of great use.
2. In one or two instances it has done so.
3. Yes.
4. If sent it will be attempted.
5. We have none.
6. See above.
7. Very good.
8. The heavy gale in October 1860 was not indicated.*
9. —

JAMES SMITH,
Clerk to Harbour Trust.

* Northerly ; rising glass misunderstood.—R. F.

QUESTIONS.	<i>Replies from Macduff (22).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference? —For your own use,—<i>not</i> for this Office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. Yes. 2. Never but in north winds. 3. Yes. 4. — 5. Yes. 6. If you please send three. 7. Yes. 8. No. 9. As for keeping a register of the barometer it is out of our power owing to the fishing; but if you would apply to Mr. James Farquharson, harbour master, he might do it. <p style="text-align: right;">GEORGE WEST.</p>
<i>Replies from Roseheartly (25).</i>	<i>Replies from Pittullie (26).</i>
<ol style="list-style-type: none"> 1. Yes; very useful. 2. No; never. 3. Yes; very well understood by the fishermen in general. 4. With the greatest pleasure. 5. Yes, especially for explaining the barometer. 6. I believe a few would be gladly accepted. 7. Yes, in very good order. 8. No; sometimes the barometer has been very low in fine weather, but we have always in such instances heard of bad weather not far distant. 9. Sometimes with wind from north to north-east there has been very bad weather, with the barometer standing high, but the thermometer was low. <p style="text-align: right;">ALEXANDER RITCHIE, Harbour Master. Roseheartly, February 5, 1863.</p>	<ol style="list-style-type: none"> 1. Yes. 2. No. 3. It is. 4. Yes. 5. They are. 6. Six or seven copies. 7. Good. 8. No. 9. — <p style="text-align: right;">GEORGE HEPBURN. Pittullie, July 5, 1863.</p>

<i>Replies from <u>Whitehills</u> (23).</i>	<i>Replies from <u>Gardenstown</u> (24).</i>
<ol style="list-style-type: none"> 1. Yes. 2. No. 3. Yes. 4. No. 5. Yes. 6. No. 7. Out of order since 30th January 1863.* 8. None. 9. No. 	<ol style="list-style-type: none"> 1. Yes. 2. No. 3. Yes. 4. Would be kept if sent. 5. Yes. 6. Yes. 7. Yes. 8. No. 9. None other.
<p style="text-align: right;">JAMES WATSON, Fish Curer.</p>	<p style="text-align: right;">JAMES NICOLSON, Fish Curer.</p>
<i>Replies from <u>Fraserburgh</u> (27).</i>	<i>Replies from <u>Peterhead</u> (28).</i>
<ol style="list-style-type: none"> 1. Great use. 2. Never. 3. It is. 4. I would. 5. They are of use. 6. Ten wanted. 7. Very good. 8. Every gale has been foretold by barometer. 9. — 	<ol style="list-style-type: none"> 1. Yes, to those interested. 2. Seldom when well studied. 3. Yes. 4. I don't know. 5. Yes. 6. Not here. 7. Yes. 8. No. 9. —
<p style="text-align: right;">GEORGE MACKIE, Fraserburgh, February 6, 1863.</p>	<p style="text-align: right;">DONALD MANSON, Harbour Master.</p>

QUESTIONS.	<i>Replies from Boddam (29).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—not for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. Yes. 2. No. It has been observed to indicate a gale but seldom when it did not come. 3. Pretty generally. 4. Perhaps so. If you please send one. 5. Yes. 6. One would be acceptable. 7. Yes. 8. No, not if properly understood; but a pretty smart gale has occurred from N.E. with the barometer rising. 9. I have kept a daily register of the state of the barometer, direction of wind, &c., during the last 10 years. No attached thermometer. <p style="text-align: right;">J. MACKIE, Teacher.</p>
<i>Replies from Stonehaven (32).</i>	<i>Replies from Gourdon (33).</i>
<ol style="list-style-type: none"> 1. Yes. 2. Never. 3. Yes. 4. I will try. 5. I have none. 6. I have none. 7. First-class barometer. 8. No. 9. I have no thermometer.* <p style="text-align: right;">WILLIAM BOWMAN.</p>	<ol style="list-style-type: none"> 1. Yes. 2. No. 3. Yes. 4. No. 5. Seldom consulted. 6. — 7. Yes. 8. — 9. Our barometer is consulted to confirm rather than guide our fishermen, and they seem satisfied with it. <p style="text-align: right;">JOHN MOIR, Coal Merchant.</p>

* Will be lent.—R. F.

<p><i>Replies from Findon (30).</i></p> <hr/>	<p><i>Replies from Port Leithen (31).</i></p> <hr/> <ol style="list-style-type: none"> 1. Yes. 2. No. 3. It is generally understood and has been of great use to us ever since it was placed at Port Leithen. 4. As yet we have kept no register, nor have any been sent for the purpose. 5. We have few manuals in the village, but what we have are of much use to us. 6. It would be taking too much on me to ask for one for every house in the village, therefore please to send a few. 7. It is in good order, and in a tight house which we built for it. 8. It has given us good warning before the gale came on. 9. No other particulars. <p style="text-align: right;">GEORGE WOOD. No. 22, Port Leithen.</p>
<p><i>Replies from Arbroath (34).</i></p> <hr/> <ol style="list-style-type: none"> 1. Yes. 2. Never. 3. Yes. 4. The harbour master keeps a daily register of the barometer and thermometer, to which reference is often made. 5. They are of use. 6. No more wanted. 7. Yes. 8. None has occurred without warning. 9. No more to state. <p style="text-align: right;">JAMES STORMONT, Harbour Master.</p>	<p><i>Replies from Broughty Ferry (35).</i></p> <hr/>

QUESTIONS.	<i>Replies from St. Andrews (36).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? <ul style="list-style-type: none"> . Is it becoming better understood? . If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference? —For your own use,—not for this Office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? <p>Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual?</p> 9. State any other particulars. 	<ol style="list-style-type: none"> 1. It is much resorted to by the fishermen, and they find it of much use. 2. I have not such information as to enable me to give a definite answer. 3. A number of the fishermen seem to understand it very well. 4. If ruled papers are furnished there will be no difficulty in keeping a tracing, as the index is adjusted every morning. 5. There is only one manual, which lies in the fishermen's reading room. 6. Three, or say four, might be rendered of use. 7. It is in good condition. I compare it occasionally with another good one. 8. This has not been particularly attended to. 9. The barometer is attended to every morning between 8 and 9 o'clock; the index is set, and the readings have been tabulated in a rough way ever since it was put up, but having no forms or instructions as to any use they might be put to, a proper system has not been attended. <p style="text-align: right;">D. SMITH.</p> <p>February 9, 1863.</p>
<i>Replies from Pittenweem (39).</i>	<i>Replies from St. Monance, Fife. (40.)</i>
<ol style="list-style-type: none"> 1. Yes. 2. No. 3. The majority of the fishermen never study it. 4. No one in this locality will take in hand to keep a daily register. 5. None in use. 6. — 7. Very good. 8. None that I have observed. 9. — <p style="text-align: right;">THOS. BALFOUR, Innkeeper.</p>	<ol style="list-style-type: none"> 1. There is no public barometer at St. Monance. 2. — 3. Most of the fishermen have wheel barometers for their own private use, but they keep no systematic record of the changes indicated by them, nor do they use the thermometer at all as an indication of weather. 4. If a barometer were placed at St. Monance the Town Council would guarantee its being properly attended to, and the changes registered by lines traced on the squared papers. 5. The fishermen were not previously aware of the existence of this valuable manual. 6. Many, no doubt, will henceforward provide themselves with copies. 7. — 8. — 9. The want of a barometer for public benefit is very much felt, and the Town Council would gladly co-operate with the Board of Fisheries in getting the deficiency remedied. <p style="text-align: right;">WILLIAM MARR, Bailie.</p>

Replies from Crail (37).

1. It is of great use.
2. It has never misled.
3. Not generally understood by the fishermen.
4. I can find no person as yet that will undertake to keep a statement of the barometer.
5. They are of great use.
6. About a dozen manuals would be acceptable.
7. It is in first-rate order.
8. It has always given warning.
9. I set the barometer every day at 10 a.m., and always inform the fishermen when I see any indication of a coming storm.

JAMES LINDSAY,
Crail.

Replies from Anstruther (38).

1. Yes.
 2. No; occasionally the barometer is low without a corresponding storm, but it is occasioned by westerly gales, which are not so severe on this coast.
 3. Yes.
 4. Not unless for a small remuneration. These diagrams require the greatest care.
 5. Yes.
 6. I have delivered them to boat skippers and requested to have them returned, so as they might be lent to others, but I never got them back.
 7. Yes.
 8. No.
 9. We have sometimes been surprised at the low state of the barometer without a gale here; especially about five weeks ago, when there was a severe gale at Liverpool.
- Gales from the south-east to the north-east are most severely felt on this coast.

A. YOURLAY,
Harbour Master.

Replies from Buckhaven (41).

1. Of great use.
2. We are not aware of its misleading in any single instance.
3. Yes, almost every fisherman studies it very closely, and, of course, understands it.
4. We have those papers, but have not as yet got a competent person to keep up a registered trace.
5. —
6. —
7. It is considered by those able to judge to be in the very best order.
8. From the frequency of the gales of late and the close study of the barometer, our fishermen can foretell pretty correctly as to what is coming without consulting the manual.
9. No other particulars.

ROBERT THOMPSON,
Harbour Light Keeper.

Replies from Burntisland (42).

1. Of great use.
2. Has not misled yet.
3. It is becoming generally understood.
4. If furnished with squared papers, ruled, I would keep up a daily register trace.
5. Of great use.
6. Two more are wanted.
7. It appears to be in very good order.
8. There has not been any change, but the barometer and thermometer have indicated it, when consulted according to the manual.
9. We have not had long experience of the barometer.

JAMES WALKER,
Shore Dues Office.

QUESTIONS.	<i>Replies from Newhaven, N.B. (43).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference? —For your own use,—<i>not</i> for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. Yes. 2. No. 3. Yes. 4. Yes, with a little remuneration. 5. Yes. 6. Yes; say 12. 7. Yes, very good order. 8. Never. 9. I have attended to this barometer since it was erected, and my circumstances are such that a little remuneration would be acceptable. <p style="text-align: right;">JAMES YOUNG, Light Keeper.</p> <p style="text-align: center;">Newhaven, February 4, 1863.</p>
<i>Replies from Dunbar (46).</i>	<i>Replies from Cove of Dunglass (47).</i>
<ol style="list-style-type: none"> 1. Of great use. 2. It acts very correctly; is very true. Keeper says never saw a mistake. 3. Yes. 4. The harbour master keeps it, and, according to instructions, sets it once a day about 10 a.m. He would fill up squared papers at setting time if furnished with them, and keep any other register that may be wished. 5. Yes. 6. Send 10, please. 7. In good order. 8. None. Barometer sometimes affected when gale does not come forward, but they are always known to exist at no great distance. 9. The barometer in this town was procured by private subscription, and not from the Fishery or any other Board. <p style="text-align: right;">H. L. RITCHIE, Town Clerk.</p>	

<i>Replies from Leith (44).</i>	<i>Replies from North Berwick (45).</i>
<p>1. Yes.</p> <p>2. No.</p> <p>3. Yes.</p> <p>4. Yes.</p> <p>5. Yes.</p> <p>6. No.</p> <p>7. Yes.</p> <p>8. No.</p> <p>9. —</p> <p style="text-align: right;">J. BALBIRNIE, Superintendent of Docks.</p>	<p>1. It is so.</p> <p>2. No.</p> <p>3. Generally, and becoming more so.</p> <p>4. Yes; furnished by the Royal National Life Boat Institution, and regularly traced and kept up by Mr. Woodrow, chief officer.</p> <p>5, 6. We have no other diagrams than the above.</p> <p>7. It works well.</p> <p>8. The barometer has always indicated any gale that has occurred this season.</p> <p>9. —</p> <p style="text-align: right;">Principal Coast Officer. North Berwick, February 4, 1863.</p>
<i>Replies from Eyemouth (48).</i>	<i>Replies from Burnmouth (49).</i>
<p>1. It is of great service.</p> <p>2. It seldom misleads, though from inattention to it our fishermen are often caught in gales of wind.</p> <p>3. It is understood by the majority of the fishermen.</p> <p>4. Yes.</p> <p>5. They are of great use.</p> <p>6. There are 33 white fishing boats here; and a manual to the master of each boat would be of much service.</p> <p>7. Yes.</p> <p>8. The barometer has generally indicated important gales.</p> <p>9. —</p> <p style="text-align: right;">JAMES WHILLIS, Harbour Master.</p>	<p>1. Yes.</p> <p>2. No.</p> <p>3. Not generally. Some of the more intelligent consult it.</p> <p>4. I fear not.</p> <p>5. Yes.</p> <p>6. Yes, two or three.</p> <p>7. Yes, in good order.</p> <p>8. It always indicates some change.</p> <p>9. No.</p> <p style="text-align: right;">PETER MARTIN, Fish Curer.</p>

QUESTIONS.	<i>Replies from North Sunderland (50).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—not for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. It is becoming very useful. 2. No. 3. It is now very generally understood. 4. Squared papers and ruled diagrams are furnished, and a daily register kept. 5. The manuals are useful. 6. Yes, ten or twelve copies of the manual wanted for distribution amongst the fishermen. 7. Perfectly good. 8. No.
<i>Replies from Staithes (53).</i>	<i>Replies from Scarborough (54).</i>
<ol style="list-style-type: none"> 1. Very great use; the fishermen seldom go off without consulting it first. 2. Not in any one instance. 3. It is much better understood now than when first placed here. 4. Yes; the undersigned will do so. 5. Yes; the only one I have is often referred to by the fishermen. 6. A few more (say six) would be thankfully received by the leading fishermen. 7. Yes, in very good order. 8. Not one. 9. The barometer has been a very great boon to the fishermen of this place, as I know they would often go to sea but for the timely warning given by it, and since it has been here not one fisherman has lost his life, which formerly was very frequently the case. <p style="text-align: right;">JAMES EXTON, Chief Boatman in charge.</p> <p>Staithes Station, March 24, 1863.</p>	

<p><i>Replies from Beadnell (51).</i></p> <ol style="list-style-type: none"> 1. Yes, of great use. 2. No, not often, but sometimes, though very rarely. 3. Yes. 4. Yes, Isaac Dixon, fisherman, of Bradnell, Windmill Stead, would undertake to keep such a daily registered trace. 5. Yes, very useful in furnishing the requisite information. 6. No. 7. Yes, it is now in very good order. 8. Yes, sometimes. 9. Last autumn (about the latter end of it) the barometer gave notice of a tremendous gale, but <i>here</i> the weather continued for several weeks unusually fine and calm. <p style="text-align: right;">T. W. CRASTER.</p>	<p><i>Replies from Hartlepool (52).</i></p> <ol style="list-style-type: none"> 1. Yes. 2. Not to the knowledge of the dock master, Hartlepool, in whose charge it is. 3. He says it is becoming generally better understood, and every day more appreciated. 4. The dock master has a printed book ruled for diagrams of his own, in which he keeps a trace for local reference. 5. He has a manual, and finds the instructions therein very useful. 6. It would be desirable for him to have more manuals at his disposal, say a dozen. 7. It is in good order, and well taken care of. 8. No gale of consequence has occurred without warning, and the dock master, in consequence of the indications of the barometer, has frequently given orders to have ships extra moored in the docks, and thereby prevented casualties. 9. The barometer is consulted day and night by shipmasters and others interested, who pay considerable attention to its warnings. At West Hartlepool a similar barometer is kept by the dock master there with the same results. It has been provided by the Dock Company. <p style="text-align: right;">T. MACKENZIE, Collector of Customs. West Hartlepool, March 24, 1863.</p>
<p><i>Replies from Filey (55).</i></p> <ol style="list-style-type: none"> 1. Yes. 2. No. 3. Yes. 4. Mr. White, late chief officer of the coast guard, would keep up a register for local use. 5. Yes. 6. No. 7. In good order. 8. Very generally correct. 9. Mr. White forwarded to your Board a quarterly return of the readings of barometer, thermometer, &c., as long as was required. I merely mention this as an indication that the barometer is appreciated. <p style="text-align: right;">T. N. JACKSON, Incumbent of Filey. March 30, 1863.</p>	<p><i>Replies from Flamborough (56).</i></p> <ol style="list-style-type: none"> 1. The barometer has been of very great use to this place. 2. Always proved to be correct. 3. Generally understood by fishermen. 4. Yes. 5. Very useful. 6. Four. 7. Very good order. 8. None whatever. <p style="text-align: right;">Coast Guard, Flamborough.</p>

QUESTIONS.	<i>Replies from Bridlington Quay (57).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—not for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. Certainly; it is referred to constantly by sailors and boatmen. 2. I think not. 3. Only its simple indications as of rise and fall without reference to the thermometer. 4. It would be inconvenient for the harbour master, who has charge of the barometer, to do so. 5. Yes. 6. At present I need not trouble you for more. 7. Yes. 8. I cannot say. 9. It would be a great advantage if the barometers were self-registering. <p style="text-align: right;">GEO. S. BRAMBLES, March 26, 1863. Bridlington Quay.</p>
<i>Replies from Gorleston (60).</i>	<i>Replies from Deal (61).</i>
	<ol style="list-style-type: none"> 1. Of great use. 2. Not once to my knowledge. 3. Yes. 4. Yes. A daily register has been kept in a book ever since the receipt of the barometer. 5. Yes. 6. Fifty. 7. Very good order. 8. Not that I am aware of. 9. The barometer is thought so much of in this neighbourhood, that I understand the inhabitants of Sandwich (a creek under this port), purpose making application to the Board of Trade for one. <p style="text-align: right;">JOHN D'A DUMARESQ, Collector. Customs, Deal, 24th March 1863.</p>

Replies from Hull (58).

Replies from Lynn (59).

1. Yes, unquestionably.
2. I do not think it. We may have occasionally wrongly judged from its change or position.
3. I am not quite sure it is greatly; but the faith in its indications is undoubted among the more intelligent mariners, &c., and their constant attention is ever drawn to it.
4. Yes, I should be glad of them; they could hardly fail to be extensively useful when seen by an ever-changing seafaring public. Indeed I had already prepared a paper on purpose for the ensuing month.
5. Yes, no doubt of it.
6. Fifty of the larger one at 1s. I should be thankful for a "Weather Book," if not asking too much.
7. I believe, from the careful position of the barometer, and from its sensitiveness to atmospheric change, that it is in perfect order.
8. I believe no gale has occurred without the barometer giving unmistakeable warning; but whether the interpretation we should have put on the change in accordance with the manual instructions has always been correct, I am not prepared to say; undoubtedly the manuals have been of great assistance.
9. The harbour master also has recently been furnished with a barometer.

JAMES TURNER,
Collector of Customs.

Replies from Kingsdown (62).

Replies from Dover (63).

1. I think that it is most valuable and useful to the fishing population of this village; there being only one other glass for their use at one of the public houses.
2. Not to my knowledge or belief.
3. I have every reason to think so. It is consulted *about 500 times a day*, and forms quite a topic of conversation amongst the men, which naturally engenders thought, and reflection, and renders barometers and their use more familiar to the men and boys.
4. I am afraid not. I could not undertake it myself, and my gardener, who sets the glass every day, is hardly up to these papers. I still should like a few as an experiment.
- 5, 6. I sent the manuals to a few of the leading men in fixing up the glass, but considering them rather too scientific for the majority of our men, I prepared a small abstract of same, and put it in simple terms, had it printed on cards, and distributed to every man in the village; they hang it up in their cottages, and consult it when required; and it has fully answered my object. I enclose one of the cards for Admiral FitzRoy's inspection.
7. The barometer is in perfect order. I had an oak external case made for it to preserve it from unnecessary wear, and it is quite perfect.
8. I cannot answer this question, but from the general accuracy of the barometers I have no doubt that it has always been true.
9. I consider that the loan of the barometer is a great boon to the inhabitants of this purely fishing village; and I believe no boat goes to sea without the glass being consulted in the first place. The men are very fond of comparing the appearance of the clouds, sea, atmosphere, &c., with the glass, and seeing how far their natural observation harmonizes with the variations of the glass, and this sharpens their observation and corrects many an idle myth and vulgar notion.

THOMAS SYDENHAM CLARKE,
Kingsdown House, near Dover, March 23rd 1863.

1. Yes, of great use, and is consulted very frequently by the masters of various craft in the harbour.
2. No.
3. Yes, much better. A notice board is placed in a conspicuous part of the harbour advising the masters of vessels to consult the barometer before sailing.
4. The superintendent at the home would try.
5. Yes; they only require to be better known and more frequently referred to.
6. A few would be of service if circulated among the better informed and *less prejudiced* sailing masters.
7. In perfect order. It is exposed to atmospheric influence in the porch of the Home and is very sensitive. It is set at 9 a.m., and that in the reading room at 9 p.m.
8. None whatever. There was a stiff breeze last summer of which it did not give any indication, but nothing approaching a gale.

9. The Government barometer in the park is much more sensitive than that in the reading room although they work together remarkably well and are almost sure indicators of coming storms. The commanders of the Admiralty packets compare their barometers every morning with those at the Home.

WILLIAM YATE.
Hon. Sec. Sailors' Home.

QUESTIONS.	<i>Replies from St. Helen's I. W. (64).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use—not for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	
<i>Replies from Cawsand Bay (67).</i>	<i>Replies from Mevagissey (68).</i>
<ol style="list-style-type: none"> 1. Yes. 2. Never when properly attended to. 3. Fishermen do not understand the vernier, but watch the rising and falling to tenths, and ask questions relative thereto. They were a little prejudiced at first, not in the least now. 4. Yes. 5. Yes. 6. A dozen more distributed among the fishermen, &c., would call their attention more to its use. 7. Yes; only a few little globules adhering to the glass above the mercury, but no more than I see in other Board of Trade barometers about the coast. 8. I have never known a strong gale that the barometer has not foretold when consulted as the manual directs. A great many fishermen here have a bottle of water, with an empty bottle inverted with its neck in the water of the other bottle, the atmosphere in the inverted bottle acting like a spring against the external atmosphere, and, although it is not a true metre, it is very sensitive. I have endeavoured to show them that it may err by placing my hand on the inverted bottle, the heat of which expands the atmosphere in it, and consequently the water falls in the neck. Condensation happens in the inverted bottle in damp weather. These glasses induced them to pay more attention to the Board of Trade barometer, in which they have great faith. <p>ISAAC PEARSE, Pilot.</p>	<ol style="list-style-type: none"> 1. Very great use. 2. Not once, to my knowledge, when consulted with the manuals. 3. Very much better understood. 4. Yes. 5. Yes. 6. Nil. 7. Excellent. 8. Nil. 9. The barometer is highly appreciated by the seafaring community of this place. <p>COAST GUARD STATION.</p>

<p style="text-align: center;"><i>Replies from Gorey (65).</i></p> <hr style="width: 10%; margin: auto;"/> <p>1. Yes, of great use; especially to coasters and fishermen.</p> <p>2. No.</p> <p>3. It is now very generally understood by fishermen and coasters frequenting this port.</p> <p>4. Yes, would be very acceptable.</p> <p>5. Not of very great use.</p> <p>6. None at present.</p> <p>7. Very good.</p> <p>8. None.</p> <p>9. Instances have occurred during this winter when the barometer was low with the weather fine and continuing so.</p> <p style="text-align: right;">JOHN AMY, Harbour Master and Inspector of Fisheries at Gorey.</p>	<p style="text-align: center;"><i>Replies from Budleigh Salterton (66).</i></p> <hr style="width: 10%; margin: auto;"/>
<p style="text-align: center;"><i>Replies from Gorranhaven (69).</i></p> <hr style="width: 10%; margin: auto;"/> <p>1. Of very great use.</p> <p>2. Not once.</p> <p>3. The fishermen pay great attention to it, and are beginning to understand it pretty well.</p> <p>4. The chief officer of the station will do it.</p> <p>5. Of great use; it is by studying them the fishermen understand the barometer.</p> <p>6. One dozen.</p> <p>7. Very good.</p> <p>8. No, not one.</p> <p>9. The fishermen prize it very much; it has kept them from risk they otherwise would have run if they had not the barometer to warn them of the coming storm. They express their gratitude for so great a favour.</p> <p style="text-align: right;">Principal Coast Officer.</p>	<p style="text-align: center;"><i>Replies from Penryn (70).</i></p> <hr style="width: 10%; margin: auto;"/> <p>1. Yes.</p> <p>2. Not at all.</p> <p>3. Yes.</p> <p>4. The principal coast officer now keeps a meteorologic register, and will, with my assistance, keep a registered trace for <i>local</i> reference,—for our own use.</p> <p>5. Yes.</p> <p>6. We have some still in stock.</p> <p>7. It is in excellent order.</p> <p>8. Not that we are aware of.</p> <p>9. Arrangements are being made for making the barometer more accessible than it has hitherto been, by fixing it <i>outside</i> the custom house.</p> <p style="text-align: right;">THOMAS ROGERS.</p>

QUESTIONS.	<i>Replies from Falmouth (71).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—not for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. It is of very great use. 2. Not that I am aware of. 3. It appears to be generally understood and appreciated. 4. The papers referred to, if furnished, would be kept at this house for public reference. 5. They are occasionally referred to, and are valuable as explanatory of the atmospheric changes. 6. A dozen more would be of use. 7. It is in the best possible condition. 8. I think not. 9. The public, that is, master mariners and pilots, and others connected with shipping, frequent the long room constantly to examine the instruments, to whom they are guides of the greatest value in regard to the weather. <p style="text-align: right;">J. HUGHES, Collector.</p> <p>Falmouth, March 24th 1863.</p>
<i>Replies from St. Ives (74).</i>	<i>Replies from Port Isaac (75).</i>
<ol style="list-style-type: none"> 1. Yes, of great use. 2. Occasionally. 3. Yes. 4. Yes. 5. Yes. 6. One dozen; and one dozen weather table meteorologic registers. 7. Yes; but requires varnishing, and the case painting. 8. None of importance. 9. Barometer very low on the 25th and 26th September last; also from the 10th to 18th February 1863. <p style="text-align: right;">Principal Coast Officer, H. M.'s Customs, St. Ives, Cornwall.</p>	<ol style="list-style-type: none"> 1. It is often used by the seafaring men and fishermen. 2. No. 3. Yes. 4. Yes, by myself and crew. 5. Yes. 6. At present there are two at the station. 7. Very good. 8. No. 9. The inhabitants of Port Isaac are mostly mariners and fishermen, and visit the barometer often. <p style="text-align: right;">RICHARD MINERS, Chief Boatman.</p> <p>Port Isaac.</p>

<p><i>Replies from Newlyn (72).</i></p>	<p><i>Replies from Mousehole (73).</i></p> <ol style="list-style-type: none"> 1. Yes. 2. No. 3. Better. 4. — 5. — 6. — 7. Very good. 8. No. 9. — <p>WRIGHT & ANGUIN.</p>
<p><i>Replies from Burnham (76).</i></p>	<p><i>Replies from Swansea (77).</i></p> <ol style="list-style-type: none"> 1. Yes. 2. It is pretty correct, and generally agrees with the telegrams as forwarded from your department. 3. It is better understood and more reliance placed in it every day. 4. If furnished with forms so as to exhibit the indications of barometer and thermometer, a daily registered trace would be kept. 5. The few we have have been of use. 6. As many as can be spared and you may consider necessary, would be distributed among the masters of vessels and others concerned at this port. 7. In good order. 8. It has not, and when our barometer and thermometer have indicated rough weather it has almost invariably happened that a warning telegram to that effect has been received from you. 9. Any other instruments that may be considered of use, in addition to the barometer, in showing the state of the weather, would be regularly kept and carefully preserved. <p>THOMAS FERRIS, Collector.</p> <p>Custom House, Swansea, March 23, 1863.</p>

QUESTIONS.	<i>Replies from Milford (78).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—<i>not</i> for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. Yes. The masters of coasting vessels and others value it much, and consult it regularly. 2. Once only, I believe, and on that occasion no vessel that I am aware of put out to sea. 3. Most decidedly so. 4. Yes. If furnished with the necessary papers the manager of the Sailors' Home will see that they are regularly filled. 5. Yes; frequent application has been made for them. 6. About 24; also about 50 of the storm signal cards. 7. Yes. 8. Once referred to in No. 2 query on the occasion of the great gale, wind being northerly, which took place on or about the 24th of January, when great damage was done to the Shipping here, Liverpool, and other places. The glass continued to rise as the gale increased. 9. The barometer has been most useful. On one occasion one of our best pilots, who is occasionally employed by the Trinity Board to visit the light ships, &c., for the purpose of relieving the watch, desired to go to Cardigan Bay, his glass looked up, he came in to see ours, which had fallen considerably, he made some remark disparagingly of ours and went to sea. He had only proceeded about 15 miles when a heavy gale came on and he ran back with difficulty, and has since acknowledged the superiority of our glass, and that had he taken warning from it he would have been wise. <p style="text-align: right;">J. N. MORGAN.</p> <p>Hamilton Terrace, Milford Haven.</p>
<i>Replies from Peel, Isle of Man (81).</i>	<i>Replies from Dundalk (82).</i>
	<ol style="list-style-type: none"> 1. Yes. 2. Never. 3. It is. 4. Yes. 5. Yes. 6. We could place one dozen usefully. 7. Yes. 8. Never. 9. The Lifeboat Institution has got a similar one at the harbour office; they are always alike. <p style="text-align: right;">(Signed) J. E. CAVANER, U.S. Consul.</p>

Replies from Fleetwood (79).

1. Yes.
2. Never known to have done so.
3. Yes.
4. Yes, if furnished, such a journal might be kept.
5. Yes.
6. No more required.
7. Very good.
8. No.
9. —

Harbour Office, Fleetwood.

Replies from Maryport (80).

1. It is.
2. It has not.
3. Since the storm signals were employed here the barometer has been more consulted, and its movements better understood.
4. I have kept a daily registered trace since those supplied to the Meteorologic Department were discontinued. I should be glad to be furnished with squared papers.
5. They are.
6. I should like to have a dozen more.
7. Yes.
8. No.
9. I would only state my satisfaction at the increasing interest manifested by seafaring men in meteorologic science, tending as it does to dissipate the prejudices that environ the path to enlightenment.

H. LINDSAY.

March 24, 1863.

Replies from Howth (83).

1, 2, 3. The barometer has been kept out of sight and of no public use, but a good place for its being generally seen will shortly be available.

4. Yes.
5. Yes.
6. No.
7. Yes.
8. No.
9. Having but lately joined Howth, I am not in a position to communicate any particulars.

M. HUGHES,
Inspecting Chief Officer.
Howth, March 25, 1863.

Replies from Dungarvan (84).

1. It is of most practical use.
2. No.
3. It is.
4. I have kept a *journal* or *trace* myself for last month, March, which went as low as 28·98. On the 6th continued in a *zigzag* manner until the 15th, when a rise from 15th to the 16th was $\frac{3}{4}$ of an inch; from the 17th a decrease to the 20th, and alternately an increase to the 27th, then fell to the above.
5. They are.
6. I would require, if possible, six.
7. At present in good working order.
8. There has not.
9. As having charge of the barometer since Christopher O'Brien, Esq., has left Dungarvan, I can say it is in good working order. The above documents would be of practical use to me in order that I might be enabled to give every information possible to the merchants and masters, fishermen, &c. of this town.

Dungarvan.

JAS. DUNNE,
Chief Boatman.

QUESTIONS.	<i>Replies from Valentia (85).</i>
<ol style="list-style-type: none"> 1. Is your barometer of use? 2. Has it often misled? 3. Is it becoming better understood? 4. If furnished with squared papers, (ruled for diagrams), would any one keep up a daily registered <i>trace</i> (curve or zigzag) for <i>local</i> reference?—For your own use,—<i>not</i> for this office. 5. Are the barometer manuals of use? 6. If more manuals are wanted, how many? 7. Does the barometer appear in good order? 8. Has any gale of <i>importance</i> occurred without warning given by your barometer and thermometer, if consulted in accordance with the manual? 9. State any other particulars. 	<ol style="list-style-type: none"> 1. Yes ; the masters of vessels and seafaring men consider it of great importance, and frequently refer to it. 2. Very rarely. 3. Yes. 4. The telegraph clerk (who is quite competent) will keep any diagrams that may be sent. 5. They have as yet been little made known. 6. A dozen would be gladly received. 7. Very good order; and on occasional comparison with the Standard barometer at telegraph station it is found quite correct. 8. No; its indications have been very faithful. <p style="text-align: right;">FITZGERALD, Knight of Kerry.</p>
<i>Replies from Dingle (86).</i>	<i>Replies from Dunfanaghy (87).</i>
<ol style="list-style-type: none"> 1. Yes, of very great use. 2. Not to my knowledge. 3. Very much appreciated by the fishermen here. 4. At present I am keeping a diagram register for our own use, but I shall be very glad to get ruled paper for the purpose. I have intelligent men here ready and willing to assist me in keeping the diagrams. 5. Yes. 6. No more required. 7. Very good indeed. 8. In almost every case I consider we have been amply forewarned. 9. — <p style="text-align: right;">J. B. FIELD, Inspecting Commander R.N. Dingle Division.</p>	<ol style="list-style-type: none"> 1. Yes. 2. No. 3. I think it would be more useful if the coast guard would take charge of it, and hoist some simple kind of warning signal when necessary. 4. I will arrange to have such kept. 5. Yes. 6. No more wanted. 7. Yes. 8. No. 9. See answer to No. 3. <p style="text-align: right;">E. MURPHY, Ards Estate Office.</p>

<i>Replies from Rathmullan (88).</i>	<i>Replies from Sarclet (89).</i>
1. I consider the barometer of great use to crews of wind-bound ships and fishermen.	
2. I am not aware of it; I believe it has not.	
3. It is.	
4. I think I can get it done correctly.	
5. Their use is becoming more general than of late.	
6. No more at present.	
7. It is being enclosed by me in a mahogany case.	
8. Certainly not.	
9. ———	
THOMAS BATT, Rathmullan, Lough Swilly.	

No. 3.

PLACES WARNED BY TELEGRAPH.

CAUTIONARY STORM SIGNALS. BY BRITISH AND IRISH MAGNETIC TELEGRAPH.

PLACES and PERSONS addressed, besides respective Telegraphers.

	Stations.	
Lloyd's - -	—	Secretary.
		WEST CENTRAL.
Liverpool - -	2	Observatory. Exchange. Collector of Customs.
		Mersey Yacht Club.
Runcorn - -	1	Bridgewater Agent.
Preston - -	1	Lytham.
Fleetwood - -	1	Harbour Master. Collector of Customs.
		SOUTH ENGLAND.
Jersey - -	2	Gorey.
Dover - -	4	Harbour Master. Collector of Customs. Cornhill. St. Margaret's.
Deal - -	3	Collector of Customs. Kingsdown.
		EAST COAST.
Middlesboro' -	1	Mr. Tallows, Dock Office.
Redcar - -	1	Mr. Joseph Dove.
Heligoland -	1	The Governor.
No. of Stations	17	

Stations warn nearest Coast Guard.

CAUTIONARY STORM SIGNALS. BY ELECTRIC AND INTERNATIONAL
TELEGRAPH.

PLACES and PERSONS addressed, besides respective Telegraphers.

	Stations.	
Lloyd's - -	—	Secretary.
		SOUTH-EAST ENGLAND.
Hurst Castle -	1	
Cowes - -	1	Mr. White, Docks. Secretary R.Y.S.
Ryde - -	2	Victoria Yacht Club.
Southampton -	2	Exmouth.
Portsmouth -	3	Commander-in-Chief.
Shoreham - -	1	
Brighton - -	1	
Newhaven - -	1	
Eastbourne -	1	
Hastings - -	2	H. Stevenson, jun., Fishmarket.
Rye - -	1	
Folkestone -	1	Collector of Customs.
Ramsgate - -	6	Mr. Whitehead. Broadstairs. Newgate. Epple Bay. Reculvers.
		EAST COAST.*
Harwich - -	6	Ipswich. Landguard Fort. Woodbridge. Orfordness. Orfordhaven.
Aldborough -	2	
Lowestoft - -	2	Harbour Master.
Yarmouth - -	6	Collector of Customs. Sailors' Home. Winterton. Corton. Kessingland.
Lynn - -	2	Collector of Customs. Harbour Master.
Hull - -	3	Collector of Customs. Trinity House (warns "Spurn"). Grimsby.
Bridlington -	4	Sewersby. Flamborough Head.
Scarborough -	2	Collector of Customs.
Whitby - -	1	
Hartlepool -	2	Collector of Customs.
South Shields -	1	Sunderland.
North Shields -	5	Collector of Customs. Tynemouth. Cullercoats. Seaton Sluice. Blyth.
Belford - -	1	Budle.
No. of Stations	60	

Stations warn nearest Coast Guard.

CAUTIONARY STORM SIGNALS by ELECTRIC and INTERNATIONAL TELEGRAPH.

PLACES and PERSONS addressed, besides respective TELEGRAPHERS.

	Stations.	
Lloyd's - -	—	Secretary.
SCOTLAND.		
Nairn - -	1	Mr. Penny. Receiver of Wreck.
Aberdeen - -	7	Collectors of Customs, Aberdeen, Peterhead, and Montrose. Harbour Master, Montrose. Bridge of Don. Burghead.
Dundee - -	3	Collector of Customs. Chamber of Commerce. Broughty Ferry.
Glasgow - -	1	Exchange Rooms.
Greenock - -	1	Collector of Customs.
Berwick - -	5	Holy Island. N. Sunderland. Links. Dunbar.
IRELAND.		
Roche Point (Cork)	1	
Passage East	2	Dungarvan.
(Waterford).		
Wexford - -	1	
WEST CENTRAL.		
Newport - -	1	
Cardiff - -	2	Harbour Master. Penarth.
Swansea - -	2	Mr. Sydney Hall. Collector of Customs. Mumbles.
Llanelly - -	2	Harbour Master. Lloyd's Agent. Pembrey.
Milford - -	1	
Pembroke - -	2	Captain Superintendent Dockyard.
Bangor - -	5	Holyhead, Admiralty Office. Beaumaris. Port Penrhyn. Carnarvon. Port Dinorwic.
Chester - -	3	Queen's Ferry. Connolis Quay. Mostyn.
Barrow - -	2	Mr. Ramsden. Morecambe.
Whitehaven - -	1	Collector of Customs.
Workington - -	1	Collector of Customs. Harbour Office.
Maryport - -	1	Collector of Customs.
Douglas—Man - -	1	
SOUTH-WEST ENGLAND.		
Barnstaple - -	2	Ilfracombe. Instow. Appledore.
Penzance - -	5	Collector of Customs. Hayle. Mousehole. St. Ives.
Falmouth - -	3	Collector of Customs. Mr. Duckham. Pen- dennis. St. Mawes.
Plymouth - -	5	Commander-in-Chief. Collector of Customs. Stonehouse. Bovisand. Cawsand.
Dartmouth - -	2	Brixham. Rickham.
Torquay - -	4	Exmouth. Teignmouth.
Weymouth - -	5	Senior Officer in Command. Portland. St. Alban's Head. Flaghead. Christchurch.
No. of Stations	72	

Stations warn nearest Coast Guard.

CAUTIONARY STORM SIGNALS by BRITISH and IRISH MAGNETIC TELEGRAPH.

PLACES and PERSONS addressed, besides respective TELEGRAPHERS.

	Stations.	
Lloyd's - -	—	Secretary.
SCOTLAND.		
Leith - -	4	Collector of Customs, Edinburgh. N. Berwick. Granton Harbour Master.
Ardrossan - -	1	Greenock.
IRELAND.		
Portrush - -	3	Ballycastle. Port Ballintrae. Greencastle.
Galway - -	1	Collector of Customs.
Tralee - -	1	Harbour Office.
Valentia - -	1	Knightstown.
Queenstown - -	1	Commander-in-Chief. Collector of Customs.
Waterford - -	1	
Kingstown - -	5	Harbour Master. Dublin. Wicklow. Howth. Clontarf.
Drogheda - -	1	
Dundalk - -	3	Collector of Customs. Soldier's Point. Giles Quay.
Belfast - -	3	Collector of Customs, Harbour Master. Carrick- fergus. Cultra.
No. of Stations	25	

Stations warn nearest Coast Guard.

No. 4.

LIST OF WORKS EXECUTED.

METEOROLOGIC PAPERS, as here enumerated.

Reports of Meteorologic Department, years 1857, 1858, 1862.
 Wind Charts, in sets, 28 in each set.
 Papers on Marine Barometer.
 Papers on Deviation.
 Instructions for Correcting Deviation of Compass.
 Reports of Liverpool Compass Committee.
 Papers on Great Circle Sailing.
 Papers on Herring Fisheries (translation from the Dutch).
 Barometer Guides.
 Barometer Manuals.
 Passage Tables and Sailing Directions.
 Notes on Meteorology.
 Barometer Cards and Storm Warning Signal Instructions.
 Arrangements for Meteorologic Telegraphy.
 Weather Book Instructions and Register.
 List of Ports, Harbours, and Creeks around British Isles, by Mr. W.
 Patrickson.
 Numbers FIRST to ELEVENTH of Meteorologic Papers, as follow here.

No. 5.

METEOROLOGIC PAPERS, PUBLISHED BY AUTHORITY OF THE BOARD OF TRADE. Written or edited by REAR-ADMIRAL FITZROY, F.R.S.

During 1861 six numbers of these papers, namely, Nos. 5 to 10 inclusive, a second edition of the third number, and a fifth of the Barometer Manual were published. A volume of Charts, by Mr. Babington, accompanies the tenth number; and during the years 1855–57 a series of Wind Charts was completed and circulated in the Navy and Mercantile Marine.

A brief notice of the nature and contents of all these papers is now given for the information of the President.

FIRST NUMBER, 1857. 4to. 182 pp. Sixteen plates.

The contents are:—"Indicatory Letters and Figures to denote the State of the Weather and Force of the Wind." "Meteorological Observations at Bermuda, 1853–54; at Halifax, 1854–55; at Ascension, 1854–55; at Valparaiso, 1853–55; at Ceylon, Point de Galle, 1854; Trincomalee, 1854; and Colombo, 1854:" diagrams, in illustration of these observations, are included among the plates. "Notice of a Typhoon in the China Sea on May 19, 1855; Abstract of Deep-Sea Temperatures, obtained on board H.M. Surveying Schooner 'Saracen,' from Madeira to the Cape of Good Hope, February 25 to April 17, 1858." "Directions for making Meteorologic Observations at Sea, in accordance with the decision of the Brussels Conference, in 1853." "Meteorology of New Zealand; of the Cape of Good Hope; of Mauritius (with diagrams); of the Isthmus of Darien and Carthage." The volume concludes with "Memoranda on the Use and Adjustment of Instruments at Sea," namely, compasses, sextants, chronometers, barometers, and thermometers. In addition to the subjects already mentioned, the plates include Forms for Registering Observations—Specimens of Wind Charts—Trade-Wind Chart—Black Sea Wind-Chart—and Diagrams of Balaclava Storm of November 14, 1854. Many of these are large folding lithographed plates.

SECOND NUMBER, 1858. 4to. 40 pp.

"Introductory Remarks by the Writer." Then follows a Table by Mr. Babington, arranged in alphabetic order, intended to show the shortest and the average length of passages (in days) between any ports frequented by sailing ships, by full-power steamers, and by mixed or auxiliary steamers, using sails; and giving also the shortest track in sea miles. Next a Table of Distances or Arcs of Great Circles, in geographical miles. "An Abstract of General Sailing Directions, by the Writer," containing remarks on:—Preparing for Sea—Swinging Ships for Deviation—Chronometers—Putting to Sea or approaching Land—Tides—Wind and Weather—Weather-glasses—Thermometer and Hygrometer—Common Signs of Weather—Aneroid Barometer—Sympiesometer—Great Circle Sailing—and General Oceanic Directions. To which is added a "Comparison of Sailing (only), and Sailing with Auxiliary Steaming in long voyages," by Lieut. M. F. Maury, LL.D., U.S.N., with added remarks.

THIRD NUMBER, 1858. 4to. One plate.

The greater portion of this number (73 pages) is occupied by a translation, made by the authority of the Board of Trade, of Professor Dove's "Law of Storms," with Notes by the Editor, and illustrated by a folding plate of storm charts, with several woodcuts.

The Appendix to this number contains papers by the Editor, namely:—A Card to accompany Weather-glasses—References to Remarks on Storms, published in 1838—Extracts from the "Barometer and Weather Guide"—Letter from Professor Espy, referring to the first number of these Papers, and to his own "Fourth Report on Meteorology," and requesting the Board of Trade to appoint a Committee to examine his Report. This letter is followed by certain Facts, and the Conclusions to which they lead," submitted by the Editor.—

“Remarks on Aqueous Vapour”—“Suggestions intended to promote Correspondence between Meteorologic Observers”—and “Table of the Velocity and Pressure of the Wind.”

A *Second Edition* of this *THIRD NUMBER* was published in 1861.

FOURTH NUMBER, 1860. 4to. 61 pp. Two Plates.

This number contains:—An “Abstract of Meteorologic Register of the Arctic Discovery Yacht ‘Fox.’” Capt. Sir F. L. M’Clintock, R.N., kept by D. Walker, Esq., M.D.; with Map of the Arctic Regions. The Preface by the Editor contains a letter from Capt. M’Clintock, dated Holsteinberg, South Greenland, May 5, 1858; including a Table of the Wind and Ice Drift experienced by the Arctic Searching Yacht “Fox.” Appended to the Register is a Chart of the Barometer Range in the month of January 1858, in Baffin’s Bay.

The Appendix contains:—A “Description of the Marine Barometer, adopted by H.M. Government, in 1854,” on the recommendation of the Kew Observatory Committee of the British Association for the Advancement of Science—and the Kew method of “Testing Barometers, Hydrometers, and Thermometers.”

FIFTH NUMBER, 1861. 4to. 99 pp. Three Plates.

A selection from a series of “Meteorologic Observations, 1858–59, made by “Dr. Mann, at Natal,” which were transmitted to this Department of the Board of Trade. The Tables are prefaced by Notes on Dr. Mann’s Observations, and Remarks on the upland summer of Natal, by Dr. Mann. Then follow “Meteorologic Observations at Orotava, in Teneriffe,” from Professor C. Piazzzi Smyth, F.R.S., 1856–57, which were made by M. Fraz Kreitz, with Admiralty Instruments.—“Meteorologic Observations at Papiete in Tahiti, 1855–60.”—“Temperatures at Japan, taken at the Island of Decima, the foreign quarter of Japan, 1845–55.” Madeira and Decima are in about the same latitude, and both about equidistant from a great continent; but, according to some Dutch remarks, Madeira presents an “island climate,” and Decima a “continental type,” which may be accounted for by one being on the *east*, the other on the *west* of a large tract of land. A comparison between the mean temperature of each month at Funchal (Madeira), Decima (Japan), and Oglethorpe (Georgia). The difference between the summer and winter temperatures of the three places being $8^{\circ}\cdot4$, $33^{\circ}\cdot4$, and 26° respectively. And “The Climate of Orkney,” by the Rev. C. Clouston.

SIXTH NUMBER, 1861. 8vo. 39 pp. Two Plates.

Being a paper by Professor Dove, “On the Periodic Variations of the Pressure of the Atmosphere,” translated for the Meteorologic Office of the Board of Trade. It was read before the Royal Academy of Sciences, Berlin, on Nov. 12, 1860. The conversions to English measures were made in this office.

SEVENTH NUMBER, 1861. 4to. 18 pp. One Plate. One woodcut.

“Intertropical Diurnal Range Tables of the Barometer.” By these Tables a value or correction may be obtained for barometrical observations made on board any ship crossing the equator at the present time or *in any former year*; the margin or limit of error not being greater than that allowable in ordinary observations made by various persons at night, as well as during the day time, on board a ship in motion at sea.—Aug. 1861.

EIGHTH NUMBER, 1861. 4to. 83 pp.

“Anemometry at Bermuda, from April 1859 to September 1860,” forms the substance of this Number. In 1856 representations were made to the Board of Trade by the Royal Society and British Association, that it was very desirable to effect a series of anemometric observations at certain selected places in the Atlantic or on its coasts. The Board of Trade consented to send a thoroughly efficient instrument to Bermuda, and the Admiralty agreed to place its equal at Halifax. Early in 1859 these two valuable anemometers, having been some time fixed and accurately verified at Kew, were conveyed by Mr. Babington

to their destination, and were by him placed satisfactorily. The records have been reduced and tabulated. The instruments have Robinson cups for the determination of velocity and force, a double windmill governor for direction, and a clock turning the cylinder, with paper attached, on which two pencils (spirals) mark the registrations. A full description (with engravings) of such an Anemometer is given by Mr. Beckley, of the Kew Observatory, in the "British Association Report" for 1858, pp. 306-7, plates 19 and 20.

The Appendix contains Memoranda, dated February 23 and June 21 and 22, 1859, requesting that information respecting wind and weather (particularly) might be obtained and transmitted to this office, and directions are given for facilitating co-operation.

NINTH NUMBER, 1861. 8vo. 78 pp.

The contents of this Number are "Miscellaneous;" a few meteorologic fragments, rather than elaborate or scientific expositions. They are—

1. "Remarks on Meteorologic Progress." Arrangements made in 1857 to collect simultaneous observations from selected stations in the British Islands and the Continent, and forward them to London by electric telegraph. This system was commenced in September 1860. Until January 1861 it was limited to *receiving* reports from practising observers. On February 5 and 6, the first *warnings* of expected bad weather were transmitted by telegraph to seaport towns. Several vessels were wrecked on February 8 and 9 from Shields, where the warning was disregarded. Eight other warnings were given between that date and March 19. Whether from these storm-signals having been appreciated, or from other reasons, the *fact* is that very few wrecks occurred on our coasts during that tempestuous period. The warning-signals are described, and the mode of dealing with them explained.

2. "Mr. Rush's ascent in a balloon in 1838," as recorded by Mr. Green.

3. "Portable Cup and Dial Anemometer," made by Mr. Adie.—The principle on which this instrument is constructed is "that the centre of any one of the cups moves with a third of the wind's velocity;" and the dimensions are so adjusted that "500 revolutions of the cups are produced by a mile of "wind."

4. "Helm Wind" of Yorkshire.

5. "Ice in a Squall."

6. "Remarkable Halo."

7. "Baltic Observations."—A letter from C. Piazzi Smyth, describing the behaviour of the barometer and the aneroid, and saying in conclusion, "it does so far bear out your view of something in the atmosphere which acts, and powerfully, on the 'metallic' aneroid (Bourdon's), though not on the mercurial." "The *metallic* barometer began to rise, while the mercurial barometer never moved till the following morning at 4 A.M., when it fell, after a storm had subsided, the approach of which had not previously been indicated by any fall in the barometer, while the metallic barometer belonging to the ship kept falling all day." Perhaps an electrical (or chemical) change in the atmosphere, caused by an approaching current of a nature different from the air above the observer, is felt and shown by oil, gas, steel, brass, &c., though not by mercury, so long as the change does not affect pressure or (to any great extent) temperature.

8. Sir Thomas Maclear's letter on compared barometers.

9. "New Marine Barometer."—Packed with vulcanized india-rubber, by which, and a peculiar strength of glass tube, guns may be fired near without causing injury by ordinary concussion. The scale is porcelain; there is no iron anywhere (to *rust*); every part can be unscrewed; there is a spare tube filled and fixed in a cistern. The state of various barometers of this construction under fire is described by Captain Hewlett, of H.M.S. "Excellent."

10. "Remarks on Gales, Storm-signals, and Weather Tables." "Weather Report" published daily; and "Storm-signals" sent with prudence to caution seaport towns, when occasion requires.

11. "Additional Observations on Weather and Meteorologic Instruments, with the use of Daily Tables."—An attempt is made to investigate some causes of the anomalous summer of 1861. That year the coasts of Greenland were blockaded with ice to an extent unknown for about thirty years. That ice was loosened from further north, and drifted after the hot season of 1859. In

last year, as the polar air-currents, or the *mixture* of polar and westerly winds, reached Europe from the *north-westward*, they were affected on a vast scale, as the smaller streams of air are by passing over a melting iceberg; and consequently we had a year of unusually low temperature, with much rain, more rain indeed than had fallen for some *thirty* years,—about the *same* interval that the Greenlanders *estimate* as having occurred since their coasts were similarly shut up by ice for a whole summer.

- 12. "Considerations and Suggestions."
- 13. "Note respecting a Moistened Thermometer (Wet-bulb) used in comparison with a dry one, as a Hygrometer, on Mason's principle."
- 14. Professor Henry to General Sabine (August 1861). He says, "When our reports are full, particularly from points West of this city (Washington), we scarcely ever fail to foretell, for nearly a day in advance, the state of the weather."
- 15. "Forecasts of Weather."—"Principles by which the forecasts of weather are regulated."

TENTH NUMBER. 8vo. 88 pp. Five Plates. Accompanied with an Atlas by Mr. Babington, in 4to, of Twenty-six folding Plates.

This Number contains :—"British Storms: Outline notices of remarkable instances—'Royal Charter' and other recent Storms." The two storms selected for illustration are the storm of October 26-27, 1859, during which the "Royal Charter" was lost; and another storm on November 1-2 of the same year. A paper by W. Stevenson, Esq., of Dunse, 1853, "On the interference of following or consecutive Cyclones," is reprinted, illustrated by a woodcut.

ELEVENTH NUMBER. 8vo. 284 pp.

Containing :—Mr. Babington's Analysis of Weather Reports for 1861-2— a very full and elaborate detail of reliable facts.
2. Instructions for Meteorologic Telegraphy. 3. Correspondence; and, lastly, diagrams with a key chart to the oceanic squares used statistically.

No. 6.

LETTERS, REGISTERS, and PAPERS received at, and despatched from the Meteorologic Office during the years 1859, 1860, 1861, 1862.

Received.	1859.	1860.	1861.	1862.
Registered Letters and Papers (including Monthly and Quarterly Returns of Instruments from Agencies and Dockyards).	430	520	580	750
Ship's Meteorologic Registers and Returns from established Observatories (each Register or Return counted as ONE document.)	280	260	220	160
Miscellaneous Forms, containing Meteorologic Observations (specially asked for in 1859, 1860.)	1,580	2,780	270	300
Daily Meteorologic Telegrams - - - - -	—	1,590	6,870	9,600
Reports and daily Bulletins from Paris (received by Post.)	—	100	600	1,330
Total - - - - -	2,290	5,250	8,540	12,140
Despatched.				
Registered Letters—written - - - - -	440	540	780	770
Circular Letters - - - - -	960	440	260	470
Daily Weather Reports to Newspapers, Public Offices, and Paris.	—	1,020	3,470	4,380
Daily Telegrams to Paris - - - - -	—	100	310	310
Total - - - - -	1,400	2,100	4,820	5,930

These numbers are exclusive of a large scientific and private correspondence too pressing to admit of delay, while waiting for copies by the few pens available.

BOOKS and FORMS supplied for recording METEOROLOGIC
OBSERVATIONS.

	Number of Copies printed.	Number distributed by Office.
Weather Book Register (ship) large for 7 months register -	2,500	1,930
" " small 2 " -	2,250	2,250
Instructions for keeping Register - - - - -	1,750	940
Monthly Register for Land Stations - - - - -	1,300	870
" " with diagram, large - - - - -	3,600	1,300
" " " small - - - - -	3,100	2,350
" " for Lighthouses - - - - -	3,000	1,500
" " table and diagram - - - - -	2,000	450
Weekly Register for Telegraph Stations - - - - -	2,250	1,350
Specimen Registers and Diagrams, filled up - - - - -	850	270

LIST of all CHARTS, BOOKS, and PAMPHLETS published by the METEOROLOGIC OFFICE, showing the Total Number printed for Sale and Distribution, and the Number distributed gratis—to 1st April 1863.

Date,	Name of Publication.	Shape	No. of Pages.	Total Number of copies printed for sale, and dis- tribution.*	Number distributed by Depart- ment to date.†
				sets.	sets.
1855	Wind Charts, general, 12 in each set -	—	—	3,000	2,710
" " Black Sea—storm -	-	—	—	1,000	1,000
1856	Pamphlet on Marine Barometer -	8vo.	8	1,000	870
" Circular on Deviation -	-	8vo.	14	500	400
1857	Report of Office, 1857 -	8vo.	83	2,000	1,710
" Meteorology of New Zealand -	-	4to.	10	100	100
" Log of Yacht—Fair Rosamond -	-	4to.	—	200	200
" First Number of Papers -	-	4to.	182	400	400
" Instructions for correcting Deviation of Compass.	-	8vo.	19	500	500
" Swinging Ship for Deviation -	-	8vo.	16	200	200
" Report of Liverpool Compass Committee	-	Fol.	74	500	370
1858	Pamphlet on Herring Fisheries (trans.) -	8vo.	26	400	350
" " Great Circle Sailing -	-	8vo.	14	3,000	1,720
" " Barometer and Weather -	-	8vo.	25	1,000	1,000
" Barometer and Weather Guide -	-	8vo.	32	1,000	1,000
" " Manual and Card -	-	8vo.	16	1,000	1,000
" Report of Office, 1858 -	-	8vo.	14	1,650	1,550
" Second Number of Papers -	-	4to.	40	1,000	1,000
" Third " " -	-	4to.	100	1,000	1,000
1859	Icebergs in the Southern Ocean -	8vo.	16	1,000	640
" Passage Table and Sailing Directions -	-	8vo.	98	1,000	1,000
" Wind Charts, North Atlantic Ocean, 16 in each set. Special.	-	—	—	1,000	810

* About half the number of copies printed since February 1861 have been retained by the Stationery Office for sale.
† Includes those sent to the Government agent for sale to Feb. 1861, after which date they have been supplied from the Stationery Office direct to him, and their sale accounted for to that office.

List of Books, Charts, &c.—*continued.*

Date.	Name of Publication.	Shape.	No. of Pages.	Total Number of copies printed for sale, and distribution.*	Number distributed by Office. to date.†
1860	Notes on Meteorology - - -	8vo.	35	sets. 1,000	sets. 980
"	Swinging Ship for Deviation, 2nd edition	8vo.	19	2,000	1,100
"	Barometer and Weather Guide, 2nd and 3rd edition.	8vo.	31	4,000	4,000
"	Barometer Manual, 2nd and 3rd edition -	8vo.	31	4,000	4,000
"	Fourth Number of Papers - - -	4to.	61	500	500
"	Suggestions to Meteorologic Observers -	8vo.	24	200	200
1861	Barometer and Weather Guide, 4th edition	8vo.	31	1,000	350
"	" Manual - - -	8vo.	18	2,500	500
"	Third Number of Papers, 2nd edition -	4to.	100	500	230
"	Fifth " " - - -	4to.	100	500	180
"	Sixth " " - - -	4to.	39	750	180
"	Seventh " " - - -	4to.	18	500	230
"	Eighth " " - - -	4to.	83	250	90
"	Ninth " " - - -	4to.	78	750	290
"	Tenth " " - - -	4to.	90	500	280
"	With Atlas of 30 Charts - - -	4to.	—	500	280
"	Barometer Manual, 5th edition - - -	8vo.	48	2,000	520
"	Third Report of Liverpool Compass Committee.	Fol.	124	500	190
"	Meteorologic Observations at Orkney	4to.	15	200	170
"	Station Instructions for Meteorologic Telegraphy.	8vo.	19	500	500
"	Barometer Card and Storm Warning Signals.	8vo.	4	5,000	2,000
"	List of Ports, Harbours, Creeks, &c. -	8vo.	35	250	250
"	Conversion Tables - - -	8vo.	4	50	50
1862	Eleventh Number of Papers - - -	8vo.	280	1,000	460
"	List of Ports, Harbours, &c., 2nd edition	8vo.	31	250	120
"	Report of Department, 1862 - - -	8vo.	77	—	100
"	Second Number of Papers, 2nd edition -	8vo.	96	1,000	125
"	Arrangements for Meteorologic Telegraphy, 2nd edition.	8vo.	32	1,000	450
"	Barometer Manual, 6th edition - - -	8vo.	50	1,000	50
1863	" " 7th " - - -	8vo.	—	1,000	—
"	First Number of Papers, 2nd edition -	8vo.	—	500	—
"	Fishery Barometer Manual - - -	8vo.	—	1,000	—
	Supplied by American Government — GRATIS.			Received.	Issued.
	Maury's Wind and Current Charts -	—	—	17,100	10,150
	" Sailing Directions - - -	4to.	800	800	730
	" Monographs - - -	4to.	120	100	50
	" Abstract Logs - - -	4to.	150	100	50

* About half the number of copies printed since February 1861 have been retained by the Stationery Office for sale.

† Includes those sent to the Government agent *for sale to Feb. 1861*, after which date they have been supplied from the Stationery Office direct to him, and their sale accounted for to that office.

N.B.—The Board of Trade publications are sold, at the bare cost of paper and print, without copyright claimed, by Mr. Potter, 31, Poultry, E.C.

No. 7.

WORKS NOW IN PROGRESS AT THE METEOROLOGIC OFFICE.

Besides usual daily duties of correspondence, accounts, registry, record, observation of instruments, and telegraphy, the principal works in progress are:—

1. A large collection of oceanic statistical data from various sources, especially Sea Logs and registers, comprising relative prevalence of Storms or Gales, Fogs, Rain, Calm, Lightning, and other meteorologic occurrences in all regions of the world.
 2. Data respecting Ice, in all Arctic and Antarctic Seas, with their adjacent oceans.
 3. Specific gravity and temperature of water, in all oceans.
 4. Barometric collections in high latitudes, and their apparent results.
 5. Barometric, Thermometric, Air current, and Oceanic current data, in all navigable regions.
 6. Separate detailed data for oceanic current description and analysis around the world.
 7. Anemometric collections from Halifax, Bermuda, Orkneys, Ascension, and elsewhere.
 8. Electric, Magnetic, Auroral, Meteoric, and other such phenomena.
 9. Remarkable occurrences, or facts of a very noteworthy character, having a scientific connexion, extracted from good and reliable Meteorologic Registers, or Logs.
 10. Analyses of remarkable storms or gales, in late years, especially over the British Islands, but not exclusive of others.
 11. Researches into the nature and periods of atmospheric changes, whether supposed to be derived from central Lunisolar action or otherwise.
 12. A comprehensive and full daily weather journal, including notices from as many parts of the world as can be obtained, with the view of distinguishing zones of climate, and of investigating atmospheric changes which occur simultaneously.
-

Date.	Disposable at Outports.	Compasses.	Barometers.	Thermometers, (sets of 6 each).	Hydrometers, (sets of 4 each).	Screens.	Registers.	Instructions.	Charts, " B. T."	Directions.	Aneroids.	Fishery Barometers.	Rain Gages.
1 Jan. '63	Liverpool - -	7	9	11	4	7	15	2	2 sets .	—			
"	Glasgow - -	3	2	1	3	4	1	11	510 sheets	2			
"	Hull - -	4	6	1	—	3	28	6	5 sets	2			
"	Greenock - -	3	4	1	1½	1	—	2	3 "	2			
"	Leith - -	1	4	3	2	2	33	—	3 "	1			
"	Bristol - -	3	4	4	3	7	6	2	{ 7 " sheets }	—	1	—	1
"	Belfast - -	3	2	3	5	4	26	3	—	3			
"	Southampton - -												

PLACES SUPPLIED.

Bahamas Lighthouse, Falklands Lighthouse, Demerara Observatory, Western Australia, Edinburgh Training College, Fiji Islands, Trinity Steamers, Belle Isle Lighthouse, Cape of Good Hope Observatory, Natal, Bahia, Hakodate, Australia, Tasmania, China and Japan Surveys, Trinidad, Singapore, Fernando Po, Zambesi Expedition, Navigator and Society Islands, Gortin.

FISHERY BAROMETERS.—Gorey, Newlyn, Portreath, Mousehole, Cawsand Bay, Dover, Hull, Bridlington, Filey, Scarborough, Beadnell, Fleetwood, Maryport, Newhaven, Anstruther, St. Andrew's, Broughty Ferry, Arbroath, Findon, Rosehearty, Gardenstown, Portlethen, Whitehills, Portnockie, Portessie, Sandhaven, Nairn, Portmahomack, Lybster, Burra Orkney, Sandsair, Lerwick, Peel, Dundalk, Hartlepool, Dingle, Valentia, Kingsdown, Mevagissey, Gorleston, Lossiemouth, Flamboro', Dunfanaghy, Port Isaac, Budleigh, Salterton, Gorranhaven, Lough Swilly, Wick, Burnham, Crail, Staithes, Lynn, Swansea, Dungarvan, Deal, Penryn, Falmouth, Milford Haven, Howth, St. Helen's, Sarclet, Burghead, Stranraer, Burntisland, Morecambe.

TELEGRAPH STATIONS.—Nairn, Aberdeen, Portrush, Galway, Valencia, Queenstown, Yarmouth, Portsmouth, Plymouth, Penzance, Jersey, Alderney, Leith, Ardrossan, North Shields, Scarboro', Portland, Heligoland, Pembroke, Holyhead, Roche Point.

2. 4. 63.	Office - - -	16	45	1	55	8	—	—	—	—	2	5	2
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Opticians have under Repair.

8. 7. 62.	Adie - - -	—	1										
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Opticians are preparing by direction.

2. 4. 63.	Afloat - -	45	93	82	60	—	—	—	Self-registering Thermometer.	Wind Gages.			
"	Fixed - -	3	96	30	4	—	—	—	—	2	3	—	2
									46	7	14	65	55
	Total - -	48	189	112	64	—	—	—	46	9	17	65	57

No. 8.

ADMIRALTY INSTRUMENTS, &c.

Date.	Disposable at Depôts.	Barometers.	Aneroids.	Thermometers, (sets of 6 each).	Hydrometers, (sets of 4 each).	Registers.	Instructions.	Deep-sea Thermometers.	Self-registering Thermometers.	Mountain Barometers.	Mountain Thermometers.	Rate Thermo- meters.	Watch Aneroids.
1 April	Woolwich - -	7	9	5	4	12	6	—	—	—	—	—	3
"	Chatham - -	11	7	6	6	23	8	—	—	—	—	4	2
"	Sheerness - -	8	2	3	10	34	10	—	—	—	—	3	6
"	Portsmouth - -	5	1	—	3	20	10	—	—	—	—	—	8
"	Devonport - -	7	8	1	3	12	9	—	—	—	—	1	10
"	Pembroke - -	3											
"	Queenstown - -	2	3	3	2	6	2	—	—	—	—	2	
1 March	Gibraltar - -	3	7	4	—	12	6	—	—	—	—	4	
"	Malta - -	9	10	9	6	18	6	—	—	—	—	4	2
1 January	Halifax - -	8	2	6	3	6	—	—	—	—	—	3	2
"	Bermuda - -	5	3	—	4	26	6	—	—	—	—	2	2
"	Port Royal - -	—	2										
"	Ascension - -	2	1	2									
"	Cape of Good Hope -	3											
28 October	Hong Kong - -	—	3	4	3	7							
2. 5. 60.	Rio Janeiro - -	4	6										
27. 11. 62.	Valparaiso - -	8	6	4	4	24	6	—	—	—	—	6	
	Sydney - -												
2. 4. 63.	Office - - Gun Boat - -	9 29 —	1 15	20 30	—	—	—	17	7	6	2	12	17
Opticians have under Repair.													
8. 7. 62.	Adie - -	4											
16. 3. 63.	Elliott Brothers - -	—	12										
13. 3. 63.	Negretti - -	—	14	2									
8. 7. 62.	Casella - -	1											
Opticians are preparing by direction.													
13. 3. 6.	- - -	1 standard.											
14. 1. 63.	Negretti and Zambra	12 tubes.											
13. 3. 63.	Adie - -	1 standard.											
2. 4. 63.	Brought forward	189	17	112	—	—	—	—	46	—	—	Rain Gages. 57	Wind Gages. 9
"	Afloat in Navy -	200	302	114	—	—	—	70	153	3	2	—	—
"	Fixed - -	44	44	27	3	—	—	—	94	8	4	—	—
	Total—belonging to Government }	433	363	253	—	—	—	70	293	11	6	57	9

No. 9.

STATEMENT showing the Sums voted by Parliament for "METEOROLOGIC OBSERVATIONS" during the years 1854-5 to 1861-2, together with the amounts *paid* and *chargeable* to each Year's Vote.

Year and Vote.	As shown by Books of Meteorologic Office.	Remarks.
<div> <div>£ s. d.</div> <div>1854-5. Vote - 3,200 0 0</div> </div>	<div> <div>£ s. d.</div> <div>Meteorologic ac- counts forwarded and paid* - - 932 16 7</div> <div>Meteorologic ac- counts paid in 1855-6 <i>chargeable</i> to vote for <i>this</i> <i>year</i>, 1854-5 - 251 17 7</div> <div>Total <i>chargeable</i> to vote for 1854-5 - 1,184 14 2</div> </div>	*During these years, 1854-5, 1855-6, the Meteorologic accounts were forwarded to, and paid by the Department of Science and Art.
<div> <div>£ s. d.</div> <div>Surplus - - 2,015 5 10</div> </div>		
<div> <div>£ s. d.</div> <div>1855-6. Vote - 3,200 0 0</div> </div>	<div> <div>£ s. d.</div> <div>Meteorologic ac- counts forwarded and paid† - - 2,837 0 0</div> <div>Included in the above, but <i>charge- able</i> to vote for 1854-5 - - 251 17 7</div> <div>2,585 2 5</div> <div>Paid in 1856-7, but <i>chargeable</i> to vote for <i>this year</i>, 1855-6 - - 185 15 8</div> <div>Total <i>chargeable</i> to vote for 1855-6 - 2,770 18 1</div> </div>	† In which was included a grant of 100 <i>l.</i> to Liverpool Compass Committee for magnetic experiments by Mr. Rundell.
<div> <div>£ s. d.</div> <div>Surplus - - 429 1 11</div> </div>		
<div> <div>£ s. d.</div> <div>1856-7. Vote - 3,200 0 0</div> </div>	<div> <div>£ s. d.</div> <div>Meteorologic ac- counts forwarded 2,002 16 4</div> <div>Included in the above, but <i>charge- able</i> to vote for 1855-6 - - 185 15 8</div> <div>1,817 0 8</div> <div>Paid in 1857-8, but <i>chargeable</i> to vote for <i>this year</i>, 1856-7 - - 258 5 3</div> <div>Total <i>chargeable</i> to vote for 1856-7 - 2,075 5 11</div> </div>	Further particulars respecting <i>this</i> and <i>following years'</i> expenditure, as shown by books, may be obtained from the Accountant's department of the Board of Trade.
<div> <div>£ s. d.</div> <div>Surplus - - 1,124 14 1</div> </div>		

NOTE.—The difference observed between the amounts *forwarded* for payment, and *paid*, during the year, is owing to some of the accounts forwarded in the *last* quarter of the financial year not having been *paid* until the *next* quarter of the *following* year.

STATEMENT—continued.

Year and Vote.	As shown by Books of Meteorologic Office.	Remarks.
1857-8. Vote - £ 3,200 s. 0 d. 0 Sale of publica- tions - - 62 1 6 <u>3,262 1 6</u> <u>1,811 13 6</u> Surplus - - 1,450 8 0	£ s. d. Meteorologic ac- counts forwarded 1,688 9 11 Included in the above, but charge- able to vote for 1856-7 - - 258 5 3 <u>1,430 4 8</u> Paid in 1858-9, but chargeable to vote for this year, 1857-8 - - 381 8 10 <u>Total chargeable to</u> <u>vote for 1857-8 - 1,811 13 6</u>	These and other similar accounts, authorized to be paid, were duly forwarded to the Accountant's office at the Board of Trade, where any further details may be obtained, as readily as at this office.
1858-9. Vote - £ 3,200 s. 0 d. 0 Sale of publica- tions - - 63 8 2 <u>3,263 8 2</u> <u>2,086 11 9</u> Surplus - - 1,176 16 5	Meteorologic ac- counts forwarded 2,288 2 2 Included in the above, but charge- able to vote for 1857-8 - - 381 8 10 <u>1,906 13 4</u> Paid in 1859-60, but chargeable to vote for this year, 1858-9 - - 179 18 5 <u>Total chargeable to</u> <u>vote for 1858-9 - 2,086 11 9</u>	
1859-60. Vote - £ 2,400 s. 0 d. 0 Sale of publica- tions - - 32 13 0 <u>2,432 13 0</u> <u>2,215 13 2</u> Surplus - - 216 19 10	Meteorologic ac- counts forwarded 1,787 19 1 Included in the above, but charge- able to vote for 1858-9 - - 179 18 5 <u>1,608 0 8</u> Paid in 1860-1, but chargeable to vote for this year, 1859-60 - - 411 11 4 <u>2,019 12 0</u> Chargeable to this year's vote (see Note to vote 1860-1) - - 196 1 2 <u>Total chargeable to</u> <u>vote for 1859-60 - 2,215 13 2</u>	

NOTE.—The difference observed between the amounts *forwarded* for payment, and *paid*, during the year, is owing to some of the accounts forwarded in the *last* quarter of the financial year not having been *paid* until the *next* quarter of the *following* year.

STATEMENT—*continued.*

Year and Vote.	As shown by Books of Meteorologic Office.	Remarks.
1860-1. Vote - £ 2,300 s. 0 d. 0 Sale of publica- tions - - 68 19 3 2,368 19 3 2,292 12 0 Surplus - - 76 7 3	£ s. d. Meteorologic ac- counts forwarded 2,191 15 3 Included in above, but chargeable to vote 1859-60 - 411 11 4 1,780 3 11 Paid in 1861-2, but chargeable to vote for <i>this year</i> , 1860-1 - 512 8 1 Total chargeable to vote 1860-1 - 2,292 12 0	Note.—The sum of 100 <i>l.</i> paid to the Liverpool Compass Committee, together with 96 <i>l.</i> 1 <i>s.</i> 2 <i>d.</i> paid to H.M.'s Paymaster-General, on account of the sale of Meteorologic publications in 1858-9, 1859-60 (by authority of the President) and now repaid to Stationery Office, are charged to vote for 1859-60.
1861-2. Vote - 2,800 0 0 Sale of publica- tions (exclusive of 39 <i>l.</i> 16 <i>s.</i> to the Stationery Office) - - 37 0 0 2,837 0 0	Meteorologic ac- counts forwarded 3,514 1 1 Included in above, but chargeable to vote for 1860-1* - 512 8 1 Total chargeable to vote for 1861-2 - 3,001 13 0	* Includes 68 <i>l.</i> 19 <i>s.</i> 3 <i>d.</i> re- ceived for sale of publi- cations in 1860-61, repaid to Stationery Office (see also Note to 1860).
1862-3. Vote - 3,800 0 0 Sale of publica- tions† - - 88 10 11 3,888 10 11	Meteorologic ac- counts forwarded 3,800 7 3 Repaid to Stationery Office on account of sale of publica- tions - - 88 10 11 3,888 18 2	† Being the sum due by agent for publications received by him previous to February 1861, since which date they have been supplied <i>direct</i> from Stationery Office, the amounts received being accounted for to that Office.

NOTE.—The difference observed between the amounts *forwarded* for payment, and *paid* during the year, is owing to some of the accounts forwarded in the *last* quarter of the financial, year not having been *paid* until the *next* quarter of the *following* year.

N.B.—The estimate and vote for 1863-4 are yet under consideration.

ABSTRACT of previous STATEMENT showing expenditure of Parliamentary Votes for BOARD of TRADE METEOROLOGIC OBSERVATIONS, 1854-5 to 1862-3.

Year.	Amount of Vote.	Received for Sale of Publications.	Total.	Amount actually paid during Year.	Balance at end of financial Year.	Total sum chargeable to Vote for the Year.	Actual Surplus of Vote for the Year.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1854-5	3,200 0 0	—	3,200 0 0	932 16 7	2,267 3 5	1,184 14 2	2,015 5 10
1855-6	3,200 0 0	—	3,200 0 0	2,837 0 0	363 0 0	2,770 18 1	429 1 11
1856-7	3,200 0 0	—	3,200 0 0	2,122 16 4	1,077 3 8	2,075 5 11	1,124 14 1
1857-8	3,200 0 0	62 1 6	3,262 1 6	1,634 1 9	1,627 19 9	1,811 13 6	1,450 8 0
1858-9	3,200 0 0	63 8 2	3,263 8 2	2,357 0 9	906 7 5	2,086 11 9	1,176 16 5
1859-60	2,400 0 0	32 13 0	2,432 13 0	1,573 7 7	859 5 5	2,215 13 2	216 19 10
1860-1	2,300 0 0	68 19 3	2,368 19 3	2,172 17 1	196 2 2	2,292 12 0	76 7 3
1861-2	2,800 0 0	*37 0 0	2,837 0 0	3,943 7 3	—	3,001 8 4	—
1862-3	3,800 0 0	*88 10 11	3,888 10 11	3,888 18 2	—	†4,528 18 2	—

* Exclusively of amounts accounted for to Stationery Office *direct*.

† Deficit of 641*l.* to be provided for in Vote for 1863-4.

NOTE.—The difference observed between the amounts *forwarded* for payment, and *paid*, during the year, is owing to some of the accounts forwarded in the *last* quarter of the financial year not having been *paid* until the *next* quarter of the *following* year.

The aggregate *surplus* seems to be a large sum, but it is only an amount *authorized*, not *drawn*; and therefore it is only *nominal*.

ABSTRACT showing Sums voted by Parliament for Admiralty METEOROLOGIC OBSERVATIONS during the Years 1854-5 to 1862-3, together with the amounts *paid* and *chargeable* to each Year's Vote.

Year.	Amount of Vote.	Amount actually paid during Year.*	Balance at end of financial Year.	Total sum chargeable to Vote for the Year.†	Actual surplus of Vote for the Year.	Deficiency of Vote for the Year.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1854-5	1,000 0 0	262 9 6	737 10 6	740 17 1	259 2 11	—
1855-6	1,000 0 0	895 5 0	104 15 0	780 12 3	219 7 9	—
1856-7	1,000 0 0	749 7 0	250 13 0	985 9 11	14 10 1	—
1857-8	1,000 0 0	1,563 15 0	—	1,008 19 9	—	8 19 9
1858-9	1,000 0 0	919 9 0	80 11 0	1,028 14 4	—	28 14 4
1859-60	1,000 0 0	1,144 18 9	—	1,004 8 0	—	4 8 0
1860-1	1,000 0 0	930 7 6	69 12 6	930 7 6	69 12 6	—
1861-2	1,000 0 0	977 13 6	22 6 6	977 13 6	22 6 6	—
1862-3	1,000 0 0	1,049 1 10	—	1,049 1 10	—	49 1 10

* As shown by Navy Estimates.

† According to accounts and books of Meteorologic Office.

No. 10.

CAUTIONARY SIGNALS.

A staff and two canvas shapes being provided, the following use may be made of them occasionally ; perhaps once or twice in a month, on a yearly average.

One shape, that of a drum (or cylinder) has the appearance of a black square of (not less than) three feet (seen from any point of view) when suspended.

The other shape, a cone (not less than) three feet high, appears triangular (from any point of view) when suspended.

A cone, with the point upward, shows that a gale is *probable* ; from the *northward*. NORTH CONE.

A cone, with the point downward, shows that a gale is *probable* ; from the *southward*. SOUTH CONE.

A DRUM, alone, shows that stormy winds may be expected, from more than one quarter, successively.

A cone *and* drum give warning of *dangerous* winds, the probable *first* direction being shown by the position of the cone—point up, above the drum, for northerly (or polar) wind, W.N.W. by the north, to E.S.E. ; point down, and below the drum, for southerly (or tropical) E.S.E. by the south, to W.N.W. (*true bearings*).*

A conspicuous place should be selected for signalling ; near the telegraph station ; whence other places may repeat the signal, or be warned ; and if practicable, the signal staff or pole should be in view of seafaring persons, besides the nearest Coast-guard Station.

When both these objects cannot be attained without too great distance from the telegraph station, one only—that of visibility to some of the seafaring community—should be secured ; and in this case a *message* should be sent to the nearest Coast-guard.

Whenever such a signal is shown (in consequence of a telegram from London) it should be kept up, distinctly, till dusk of *that day only*, unless otherwise specially directed.

These cautionary signals advert to winds during some part of the *next night and two or three days* ; therefore due *vigilance* should prevail (until the weather is again settled), but without deferring *departures*, or any other operations, *unnecessarily*.

More extended notice may be given by *local interests* and *authorities*, as London can only warn *principal* out-ports. The Coast-guard will repeat the warning as far as means allow, and *extension* of such cautionary notices can be effected by *private* assistance along the most *frequented* shores, where alone they are required.

When a cautionary telegram is *received* at any place *after* three o'clock p.m., it should be followed by a NIGHT SIGNAL, which should be hoisted at dusk, and kept up till about nine o'clock, or even later, till toward midnight, as may seem advisable.

NIGHT SIGNALS.

Three, or four, signal lanterns are intended to be hoisted as shown in the following diagram.

They should be kept up from dusk, or the time of receiving a warning telegram, until late the same evening ; even till near *midnight*, if thought advisable on the spot, but not after that time.

* N.W. by the north to S.E. ; and S.E. by the south to N.W.—*magnetic* ; or by a *mariner's compass*.

A person should be employed to clean, trim, hoist, keep alight, take care of, and return these signal lanterns, for which service payment for each night of actual use will be made. This payment is intended to be an *average*, whether three or four lanterns are hoisted, and for whatever time shown lighted.

Spreaders, or yards, not less than four or five feet long, should be provided at each station, with good durable rope fittings.

Larger signal shapes, and better lanterns; masts *with yards*; and greater distances between the lights of a signal, would be desirable—though, at present, too expensive for general establishment.

Telegrams will not be sent on Sundays, except on *emergencies* (seldom occurring), and then, of course, only to those stations open at the time; but as vigilance will always prevail, by night as well as by day, on the part of those officers who are interested in the Meteorologic Department, no *extensive* change of weather, or *generally* dangerous atmospheric commotion, ought to be unforeseen by them, nor should delay occur *at any time* in telegraphing to the coasts threatened, since attempting to prevent unnecessary risk of human life is the important object of these measures.

It should be remembered that only the greater and more *general* disturbances of the atmosphere can be made known by this method, not *merely local* or sudden changes which are not felt at a certain distance, and do not therefore affect other localities. Local changes should be indicated to observers at such places by their own instruments,—by signs of the weather,—and by due attention to the published Weather Reports.

Much *inequality* of electricity, atmospheric pressure (*tension*), or temperature; great fall or rise of the barometer; sudden or rapid alternations; great falls of rain or snow, foretell more or less *strong* wind, with its usual accompaniments, either in some places only, or throughout an extensive area of hundreds, if not thousands of miles; some tracts, however, remaining almost unaffected, unless by rain or snow.

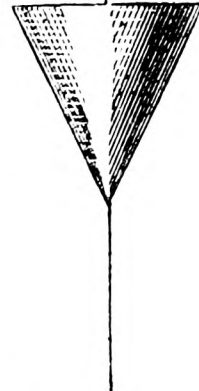
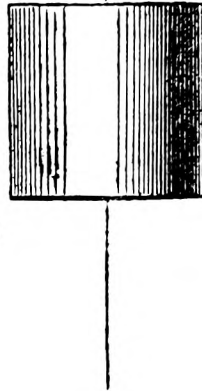
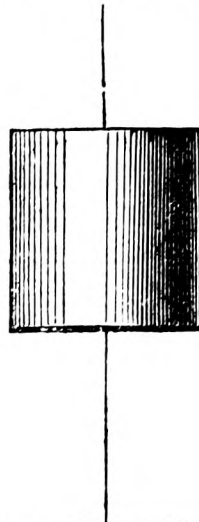
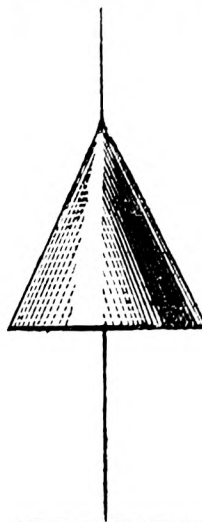
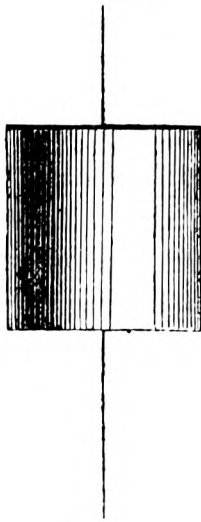
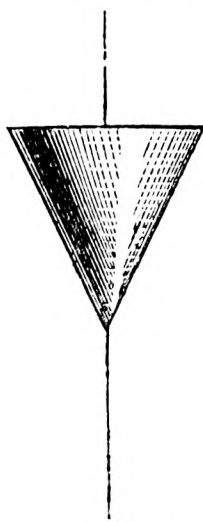
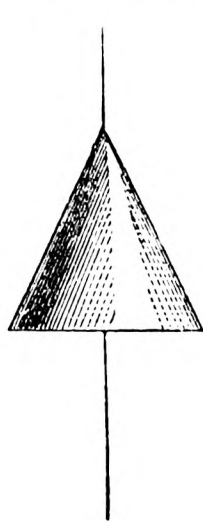
Speaking *generally*, there is less occasion to give warning of *southerly* gales by signals than of northerly; because those from the southward are preceded by notable signs of the atmosphere, such as a falling barometer, and a temperature higher than usual *at the season*; whereas, on the contrary, dangerous storms from a polar quarter (north-west to north and easterly) are *sometimes* sudden, and preceded by a *rising* barometer, which may mislead persons, especially if accompanied by a temporary lull of a day or two, with a fallacious appearance of fine weather. This fallacy is caused by a circuitous movement of wind following, influencing by checking and then overpowering or uniting with a preceding similar cyclonic sweep.

It should be kept in mind that these signals are merely *cautionary*, to give notice of much atmospheric disturbance over some considerable part of the British Islands; and that they are not in the least degree *compulsory*, or intended to interfere with individual judgment on any occasion.

NORTH CONE.

SOUTH CONE.

DRUM.

Probable Heavy Gale or Storm.

CAUTIONARY SIGNALS.

To be suspended from a Mast and Yard, or a Staff, or even a Pole.

*Gale
probably
from the
Northward.*

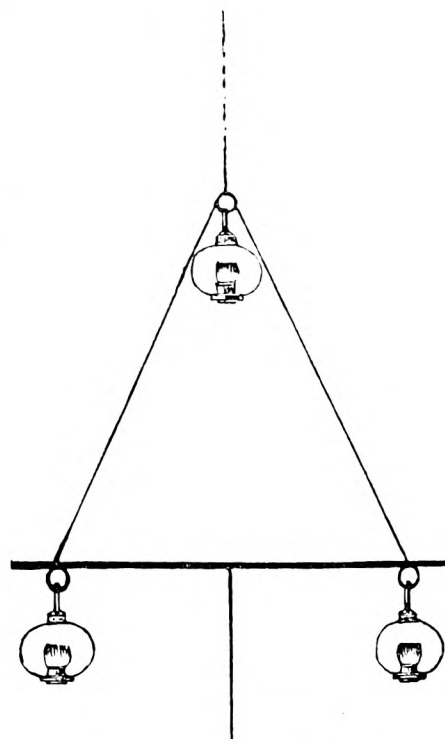
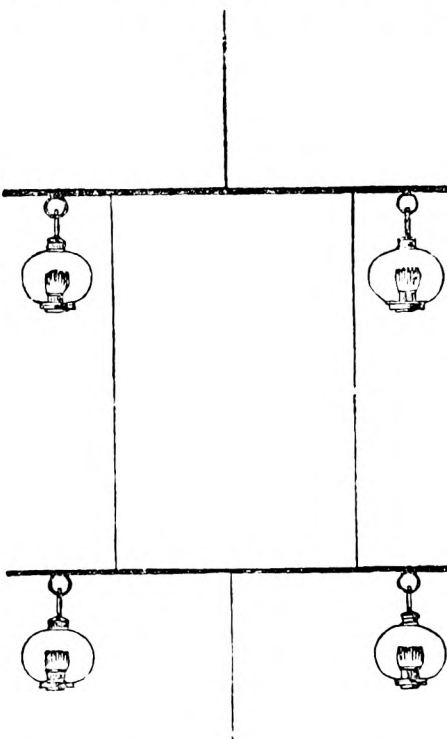
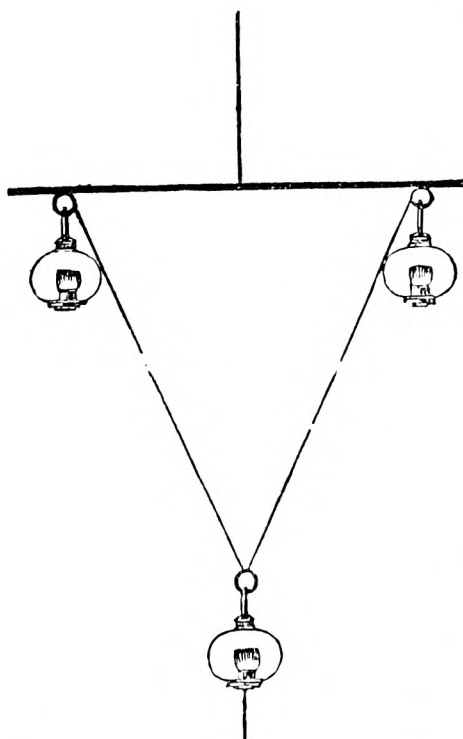
*Gale
probably
from the
Southward.*

*Gales
successively.*

*Dangerous
Winds
probably at first
from the
Northward.*

*Dangerous
Winds
probably at first
from the
Southward.*

NIGHT SIGNALS. (instead of the above) Lights in triangle, or square.



Four lanterns and two yards, each not less than four feet long, will be sufficient—as only one signal will be used at night.

These signals may be made with any lanterns, showing either white, or any colour, but *alike*. *Red is most cligible*. Lamps are preferable to candles. The halyards should be good rope, and protected from chafing. The lanterns should hang *at least* three feet apart.