

FOR OFFICIAL USE.

M.O. 212.

INTERNATIONAL
METEOROLOGICAL COMMITTEE.

REPORT OF PROCEEDINGS

AT A

MEETING

OF THE

COMMISSION FOR MARITIME
METEOROLOGY AND STORM WARNINGS,Held at the Meteorological Office, London,
September 17-20, 1912.

LONDON:

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INTERNATIONAL METEOROLOGICAL COMMITTEE.

REPORT OF PROCEEDINGS

AT A

MEETING

OF THE

COMMISSION FOR MARITIME METEOROLOGY AND STORM WARNINGS,

HELD AT THE METEOROLOGICAL OFFICE, LONDON,
September 17-20, 1912.

Tuesday, 17th September, 1912, 10h. a.m.

Joint Meeting of the Commission for Maritime Meteorology and Storm Warnings and of the Commission for Weather Telegraphy.—

The following gentlemen were present :— Messrs. Shaw (President of the Commissions), Angot, van Everdingen, Grossmann, Hellmann, Hepworth, Lempfert, Mohn, Palazzo, Ryder, Rykatcheff, Santi, van der Stok.

His Highness the Raj Rana of Jhalawar and Señor Nuno Duarte, Chief of the Brazilian Meteorological Service, were invited to be present at the Meetings.

Order of business.—The order of business for the Commission for Maritime Meteorology and Storm Warnings was approved, as follows :—

1. Report of the President (p. 10).
Resolutions of the Ninth Meeting of the International Meteorological Committee.
Circulars issued.
Election of new members.
The system of storm signals at present in use. (Seewarte, p. 11.)
2. Proposals for an international system of *local night signals*.
(a) The original proposals of the Commission. (Report, 1909, pp. 5, 6.)
(b) The proposals of M. Angot. (Berlin Report, p. 68.)
(c) The proposals with letters of Mr. Willis Moore (p. 11).
(d) The experiments of the Seewarte (p. 11).
(e) Letter from Mr. T. F. Claxton, Hong Kong (p. 13).
(f) Letter from Mr. Hunt (p. 14).

3. Consideration of suitable means for keeping the Commission officially informed of the procedure of the various Governments in respect of Maritime Weather Signals.

4. Rules for hoisting and lowering Signals. (M. Ryder.)

5. Proposals for an international system of *non-local signals* giving information to Ocean-going Ships about a tropical-revolving-storm known to be in existence.

Proposal of M. Froc (*see p. 17*):—

"As concerns the signals to be made to sea-going vessels the Commission is of opinion that it is desirable that 'semaphores' be established at least in the countries where [tropical revolving storms] occur, to signal to the steamers the position and motion of the centres of the cyclones by a more complete system, in conformity with the one proposed by the Director of the Zi-ka-Wei Observatory at the Meeting of 1909."

Letter of Captain W. F. Tyler (p. 22).

Letter of Mr. T. F. Claxton (p. 13).

Memorandum by Commander Hepworth (p. 25).

6. Scheme for the publication of meteorological observations made on board ships in selected ten degree squares. (Dr. van der Stok.)

At 11 a.m. the combined Meeting adjourned and the business of the Commission for Maritime Meteorology began. The following gentlemen were present:—Messrs. Shaw, Angot, van Everdingen, Grossmann, Hellmann, Hepworth, Mohn, Palazzo, Ryder, Rykatcheff, Santi, van der Stok.

Report of the President.—Mr. Shaw presented a report of proceedings leading up to the meeting (Appendix I, p. 10).

New Members.—Messrs. van Everdingen, Palazzo, Ryder, Rykatcheff, Stupart, Walker, members of the Committee, who, in response to a circular of 17th January, 1912, had signified their desire to become members of the Commission were duly elected, together with the following:—

Mr. T. F. Claxton, Royal Observatory, Hong Kong.

Mr. J. H. Field, Meteorological Office, Simla.

Professor Grossmann, Deutsche Seewarte, Hamburg.

Captain Harvey, Board of Trade, London.

Commander Hepworth, Marine Superintendent of the Meteorological Office, London.

Mr. H. A. Hunt, Commonwealth Meteorologist, Melbourne.

Dr. Okada, Central Meteorological Observatory, Tokio.

Signor Santi, the Director of the Hydrographic Institute of the Italian Royal Marine, Genoa.

General Major Schokalsky, Hydrographic Department, St. Petersburg.

Dr. J. P. van der Stok, Netherlands Meteorological Institute, De Bilt.

Upon the proposition of M. Hellmann and M. Ryder respectively it was agreed that M. Mazelle of Trieste, Austria, and M. Finemann

of Sweden, should be invited to join the Commission, and that steps be taken to invite representatives of Spain, Portugal and the Argentine, and other countries interested in Maritime Meteorology which have at present no representative on the Commission.

Apologies for Absence.—The President reported that the following had intimated their regret at being unable to attend the meetings:—

Mr. T. F. Claxton, Rev. L. Froc, Captain Harvey, Professor Willis L. Moore, Professor K. Nakamura, Dr. T. Okada, Mr. R. F. Stupart, Dr. Gilbert T. Walker.

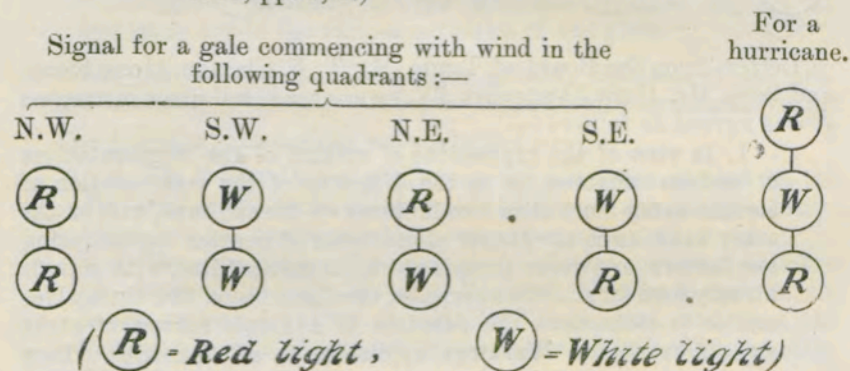
M. Rykatcheff explained that M. Schokalsky was prevented from attending as he was on a visit to America.

In reply to a request from the Seewarte (No. 1 of Appendix II.), a new edition of the "Provisional Summary of Maritime Weather Signals at present in use in the various countries of the Globe," dated 14th August, 1912, was presented to the meeting.

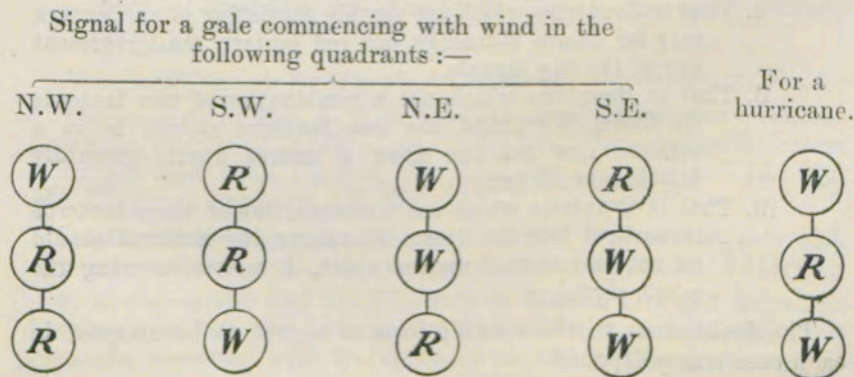
Proposals for an International System of Local Night Signals. (Programme, No. 2.)

The following proposals were considered:—

(a) The original proposals of the Commission. (*See Report, 1909, pp. 5, 6.*)

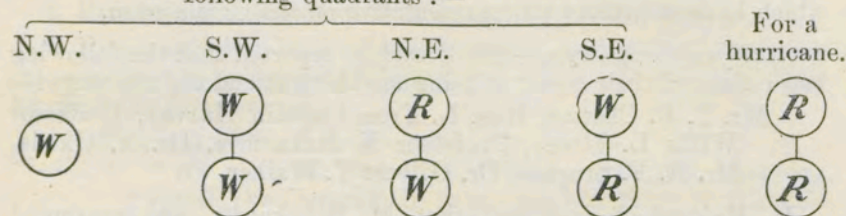


(b) The proposals of M. Angot. (*Report, Berlin Meeting, p. 68.*)



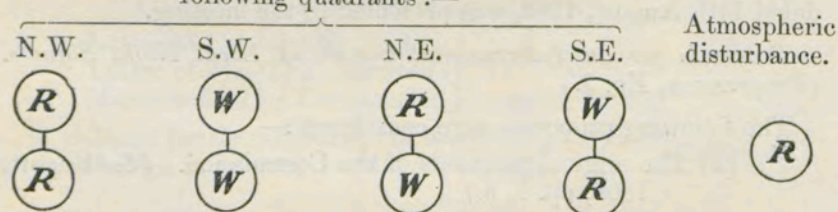
(c) The proposals of Mr. Willis Moore (Appendix III., p. 11).

Signal for a gale commencing with wind in the following quadrants :—



(d) The system which had been the subject of experiments by the Deutsche Seewarte. (Appendix II., 2, p. 11.)

Signal for a gale commencing with wind in the following quadrants :—



Letters from the Board of Trade, Mr. T. F. Claxton, Hong Kong, and from Mr. Hunt (Appendix IV.) were read, and after discussion it was agreed as follows :—

1. In view of the expressions of opinion of the representatives of various countries as to the difficulty of the manipulation of signals using more than two lanterns on the one hand, and, on the other hand, as to the danger of confusion of weather signals using one lantern, or two, or three lanterns in vertical line, with signals already used for maritime purposes, the Commission find themselves unable to recommend the adoption of a single scheme of night signals for Storm Warnings applicable to all Countries. They are, however, of opinion that any combination of lanterns to form a weather signal should have the same meaning in all countries which adopt a national system of local storm warnings, and they therefore recommend as follows :—

- i. That in Countries which use signals consisting of one lantern only for Storm Warnings, one red lantern shall represent any of the day signals.
- ii. That in Countries which use a combination of two lanterns for Storm Warnings, the two lanterns should be in a vertical line not less than 2 metres apart (generally 4 metres or 15 feet).
- iii. That in Countries which use a combination of three lanterns in vertical line for Storm Warnings, the lanterns should be not less than 2 metres apart, 4 metres covering the whole signal.

The decision as to the specific form of signal to be adopted in each case was postponed.

2. It was also agreed to accept by way of explanation that the distance between two cones hoisted in vertical line for day signals should be the same as the length of the slant side of the cones.

The meeting was adjourned at 12h. 30m. p.m.

Wednesday, 18th September, 1912, 10h. a.m.

Present : Messrs. Shaw (President), Angot, van Everdingen, Grossmann, Hepworth, Mohn, Palazzo, Ryder, Rykatcheff, Santi, van der Stok.

The Raj Rana of Jhalawar, and Señor Duarte, Chief of the Meteorological Service of Brazil.

Rules for Hoisting and Lowering Storm Signals. (Programme, No. 4.)

M. Ryder drew attention to the differences in the practices of the different countries as regards the interval of time covered by storm warnings, and it was agreed :—

3. That in order to secure uniformity of practice the representatives of the various countries and the Meteorological Institutes be invited to supply information as to the rules for the hoisting and lowering the signals to be included in the "Provisional Summary of the Maritime Weather Signals at present in use in the various countries of the globe."

Means for keeping the Commission officially informed of the procedure in respect of Maritime Weather Signals. (Programme, No. 3.)

The following resolutions were adopted :—

4. The Meteorological Institutes are requested to send to the President of the Commission a notification of any changes introduced into the practice in their respective countries.

5. That the London Meteorological Office be requested to issue an edition of the "Summary of Maritime Weather Signals in use in the various countries of the globe" each year, and that the Summary be divided into two sections, one for Local and the other for Non-Local signals.

6. That a statement of the scheme for transmission of messages by wireless telegraphy from the Eiffel Tower, Norddeich, and other wireless stations be added to the Summary as indicating the existing provision for Non-Local Signals in North-Western Europe.

Non-Local Signals for Tropical Countries. (Programme, No. 5.)

The proposal of Rev. L. Froc for the general adoption of a scheme based on that of Zi-ka-Wei was considered, together with letters from him and from Captain W. F. Tyler (Appendix VII.) and Mr. Claxton (Appendix IV. B).

Captain Hepworth submitted a scheme of non-local signals with reference to hurricanes, with a memorandum (Appendix VIII.).

7. It was agreed that the proposals of Messrs. Froc and Hepworth be circulated for the information and comments of the different Institutes concerned with Warnings for tropical revolving storms.

Scheme for the publication of Meteorological Observations made on board ship in selected 10° squares. (Programme, No. 6.)

The proposal of M. van der Stok (Appendix IX.) was considered, and it was agreed:—

8. That the Commission invite the several Meteorological Institutes to send to the Director of the Netherlands Institute extracts from their Meteorological Logs of Ships giving the usual observations of Pressure, Wind, Temperature of the Air and Sea, and Weather, at 8 a.m. and 8 p.m., Ship's Time, within the following 20-degree squares:—

| | |
|------------------|--------------------------------------|
| Lat 5° to 25° N. | Long. 25° to 45° W. |
| 10° to 30° N. | 140° to 160° W. |
| 10° N. to 10° S. | 70° to 90° E. |
| 0° to 20° S. | 10° W. to 10° E. |
| 10° to 30° S. | 90° to 110° W. and 90° to 110° E. |

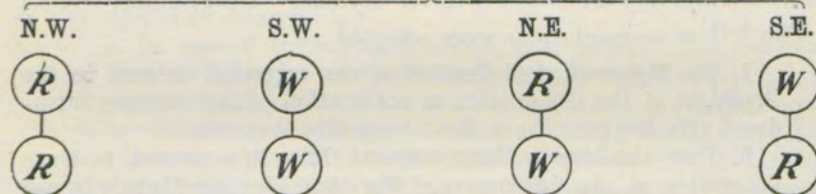
with a view to the publication of a resumé of the observations as a contribution to the Meteorology of the Globe.

Local Night Signals (continued). (Programme, No. 2.)

Upon further consideration of the question of local night signals it was agreed:—

9. That for countries which use two lanterns in a vertical line for Storm Warnings, the following be the signals of approaching gales:—

For a gale commencing with winds in the following quadrants:—



The question of the use of a night signal to replace the day signal for a hurricane was postponed.

The meeting was adjourned at 12h. 30m. p.m.

Friday, 20th September, 1912, 10h. a.m.

Present: Messrs. Shaw (President), Angot, van Everdingen, Grossmann, Hellmann, Hepworth, Mohn, Palazzo, Ryder, Rykatcheff, Santi, van der Stok.

The Raj Rana of Jhalawar.

Non-Local Signals (continued). (Programme, No. 5.)

A letter from Rev. L. Froc (Appendix VI.) recommending an 8-point system of day signals was read, and it was agreed:—

10. That as the question of local day signals was decided at the meeting of the International Meteorological Committee at Berlin, 1910, the Commission should not reconsider the matter without fresh instructions from the International Meteorological Committee.

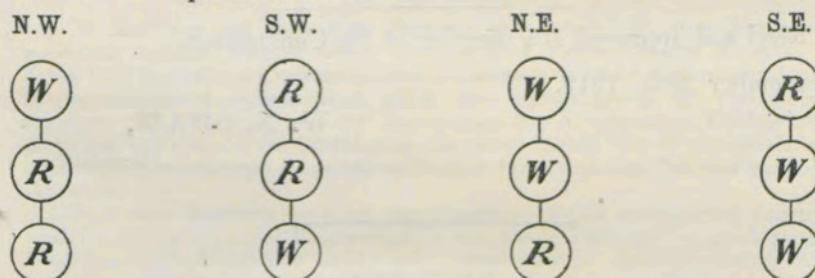
Local Night Signals (continued). (Programme, No. 2.)

11. It was agreed that in order to complete the scheme of night signals three red lanterns in vertical line be recommended as the night signal to correspond with the day signal for a hurricane, but that as the signal for a hurricane would not, as a rule, be hoisted in temperate latitudes, one red lamp may be used as an alternative, signifying the existence of an atmospheric disturbance, which may cause a gale in the locality where the signal is hoisted.

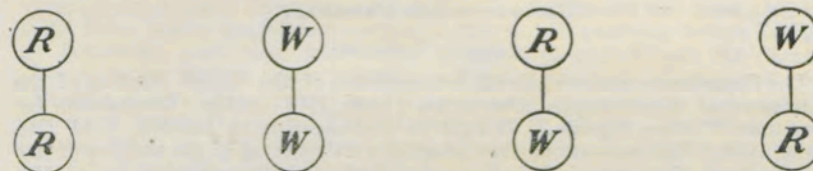
12. It was therefore agreed that the following be recommended as the system of night signals:—

(i) For countries using three lanterns:—

For a gale commencing with wind in the following quadrants:—

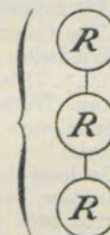


(ii) For countries using two lanterns:—



For use with either of the above:—

Atmospheric disturbance : Hurricane



(iii) For countries using one lantern:—

takes the place of any day signal.

M. Rykatcheff reported that, as at present advised, the Russian Hydrographic Department cannot introduce night signals consisting of three lanterns in a vertical line on account of the danger of confusion with other signals (Appendix V.). That the conclusions of the Commission would be reported to the Hydrographic Department for their consideration, with the note that the Commission

raises objection to the use of 6 lanterns in the form of two triangles because, among other reasons, the lanterns would appear to be in vertical line when viewed sideways.

13. On the suggestion of Captain Ryder it was agreed that the opinion of the Institutes be taken upon the question of exhibiting, where possible at Storm Signal Stations, a green flag by day and a green lamp by night, or some other signal, to indicate that signals cannot be hoisted, either on account of telegraphic communication being interrupted, or for some other cause.

14. It was agreed to add a sentence to the circular, "Provisional Summary of the Maritime Weather Signals, &c.," inviting Institutes to notify their intention of adopting any special form of signals.

The meeting was adjourned at 11h. 20m. a.m.

Read and approved at a meeting of the Commission.
September 20th, 1912.

W. N. SHAW,
President.

APPENDIX I.

REPORT OF THE PRESIDENT.

Terms of reference.

The Commission was constituted by resolution of the Eighth Meeting of the International Meteorological Committee (Paris, 1907) as the "Commission for Maritime Weather Signals." It held its first meeting in London, 22nd-25th June, 1909. The resolutions then adopted were reported to the meeting of the International Meteorological Committee at Berlin, 1910 (see Report, pp. 13-15), and the following resolution was carried at Berlin:—

"The Committee approves resolution 5 of the Commission (Report of the Commission for Maritime Weather Signals, held in London, 22nd-25th June, 1909, p. 7) to establish a permanent Commission on Maritime Meteorology and Storm Warnings, and requests its officers to nominate the members of this Commission from among those gentlemen who are specially interested in the Service."

The local day signals recommended by the Commission were adopted by the Committee, but "the part of the resolution regarding night signals was therefore referred back to the Commission for further consideration by a wider circle of experts."

Circulars issued.

Accordingly, a circular letter dated 17th January, 1912, was issued to the International Meteorological Committee, asking if they wished to be co-opted as members of the Commission, if not already members, and for additional names to be proposed for election, and suggesting alternatives with regard to the date and place of the next meeting.

A second circular letter, dated 6th April, 1912, was forwarded to all the members of the Commission, to those members of the Committee who had signified their desire to take part in the deliberations, and to those gentlemen who had been proposed by members of the Committee. The letter set out the names of the members of the Commission as then proposed, asked for approval of the names, and enclosed a programme of business and various documents for consideration by the Commission. It also conveyed an invitation to a meeting

of the Commission in London on 17th September, 1912, the date and place being decided by vote of the members of the Commission for Maritime Meteorology and of the Commission for Weather Telegraphy.

A third circular letter, dated 8th August, 1912, enclosed a proposed time table of meetings. (See Appendix I., Report of Commission for Weather Telegraphy, 1912.)

APPENDIX II.

MEMORANDUM OF THE DEUTSCHE SEEWARTE.

Kaiserliche Marine,
Deutsche Seewarte.
B. Nr. 592. III. 2 ang.

Hamburg, den 21 Februar, 1912.

An die Internationale Kommission für maritime Meteorologie und Sturmwarnungen.

1. Es erscheint der Deutschen Seewarte sehr erwünscht dass festgestellt werde, in welchen Staaten bisher die von dem Internationalen Komitee im Jahre 1910 in Berlin der internationalen Annahme empfohlen Tagessturmsignale bereits eingeführt worden sind, wann dies stattgefunden hat und welche etwaigen Abweichungen von der allgemeinen Norm vorgesehen worden sind, sowie des weiteren, ob die Einführung der vereinbarten Tag-Sturmsignale mit oder ohne Abweichungen von anderen Staaten für die nächste Zukunft beabsichtigt wird.

2. Von der Seewarte sind an der deutschen Küste ausgedehnte Versuche zunächst mit den von der Kommission in London in Juni 1909 vorgeschlagenen Zweilaternen-Nachtsignalen und mit verschiedenen Drei-Laternensignalen gemacht worden, wobei sich herausstellte, dass das Zweilaternen-Nachtsturmsignal bei weitem den Vorzug verdient. Um die Frage mit Sicherheit zu entscheiden, ob die Gefahr einer Verwechslung mit anderen Lichtsignalen vorliegt, sind die Versuche im vorigen Jahre mit diesen Signalen fortgesetzt und jetzt noch bis Ende dieses Jahres ausgedehnt worden, da der verhältnismässig ruhige Verlauf der Witterung noch nicht hinreichend Gelegenheit zum Hissen der Signale geboten hat. Bisher lauten sämtliche Urteile durchaus günstig, mit der alleinigen Einschränkung, dass eine Verwechslung mit anderen Lichtsignalen bei einer Benutzung jener Nachtsturmsignale in offenem Fahrwasser, auf Leuchtschiffen, etc. wohl eintreten könne, während sie im übrigen ausgeschlossen sei. Desweiteren hat die Erfahrung insbesondere ergeben, dass die Handhabung von Dreilaternen Signalen viel zu schwierig ist, um solche zur Einführung zu empfehlen.

BEHM.

APPENDIX III.

LOCAL NIGHT SIGNALS.

Extract from Letter dated 17th October, 1911, from the Chief of the United States Weather Bureau.

Before we change our day signals I hope that some decision may be reached in regard to night signals. Otherwise, in planning changes in our storm-warning towers to adapt them to the former, we should run the risk of adopting a form of construction that would not be appropriate for the latter. It is also desirable to avoid making two successive changes in the printed circulars, instructions, &c., relative to storm signals. I think it is every way preferable to change the day and the night signals at the same time, so as to avoid unnecessarily confusing seamen. May I ask whether any progress has been made looking to international agreement on this question? I understand the Seewarte has been experimenting with various arrangements of lanterns, but do not know the present attitude of that Office toward the code recommended at our meeting in London. I should also be interested to know what steps have been taken looking to the adoption of the international day signals in the British Isles.

I doubt that it will be possible to convince the meteorologists of this country that any form of night signals that provides for the displaying of more than one lamp in the same plane would be practical. In planning to introduce the international signals I discovered that, while the code as adopted by the Committee is doubtless the simplest by which signals for the four points of the compass can be shown in addition to displaying a hurricane signal, there would be difficulty in securing enough vertical space on the various buildings and other places where our signals are exposed so as to have sufficient distance between the three lights. There must be a considerable distance between these lights; otherwise they will visually run together. I have, therefore, decided to submit for the consideration of the International Committee the following night signals in place of those that were suggested by me to the Committee several years ago:—

For storms beginning with north-west winds—white light.

For storms beginning with south-west winds—white-below-white light.

For storms beginning with north-east winds—red-above-white light.

For storms beginning with south-east winds—red-below-white light.

Hurricane signal—red-above-red light."

Then I would suggest the following arrangement of the lights:—

On each staff instal a white and red light close together in the same plane, and fifteen feet below a red and white in the same plane.

You will see from this that all of the signals can be made when but one of the two lamps in the same plane is lighted.

Do you not think it would be practicable to submit these signals to all the meteorological services that have storm-warning stations under their control? If these services were to send in written promises to adopt these signals, that would render certain their approval by the International Committee the next time it meets, and we could go ahead as soon as we get money from Congress and make the necessary changes at our stations.

For distribution to those interested, I inclose a number of printed cards showing the new suggested signals.

WILLIS L. MOORE.

Extract from a Letter dated 6th September, 1912, from the Chief of the United States Weather Bureau.

I have the honour to acknowledge the receipt of your letter of 8th August, 1912, with reference to the forthcoming meetings of the International Commission for Maritime Meteorology and Storm Warnings and the International Commission for Weather Telegraphy. I regret that it will not be possible for me to attend these meetings.

With regard to the subject of night storm-warning signals, I still adhere to the views outlined in my letter of 17th October, 1911.

The American system of storm-warning equipment calls for the highest power of lantern illumination, in nearly all cases by electric light. This necessarily calls for fixed installation of the lanterns, with wiring circuits leading to the office of the displayman, where, by properly throwing the switches, the lanterns are illuminated according to the requirements of the signal.

In order to make the signals visible at considerable distances the lanterns must necessarily be separated, the minimum distance of separation in the case of the Weather Bureau being about 15 feet. To provide for the combination of lights required in the system shown on the enclosed card, we have to supply a white and a red lantern side by side, elevated at a point 15 feet above another set of white and red lanterns, also side by side. These must all be fixed in position and properly wired to the office of the displayman. Owing to the great weight of the lanterns, and other difficulties, it is hardly possible to carry out such an installation where the lanterns are separated, horizontally, by a sufficient distance to make the signals properly visible, and the Bureau must, therefore, confine itself to displays in a vertical line.

From an extended experience, there has never been found to be any serious confusion of the Weather Bureau signals with those of the Lighthouse Establishment, and other displays.

WILLIS L. MOORE.

APPENDIX IV.

LOCAL NIGHT SIGNALS.

A.

Extract from Board of Trade Letter of 26th November, 1909.

As regards the night signals, the Board desire me to point out that the system recommended by the Commission includes several signals which are already in use under the International Collision Regulations, a copy of which is enclosed (see, for example, articles 3 and 4); and some of the signals are also used for local purposes at various harbours throughout the world as for example at Folkestone, Shanklin, Hythe, Tenby, Swansea, Port Talbot and Penarth, where a signal consisting of two red lights in a vertical line is already in use, while two white lights in a vertical line are largely used for pierhead lights on many coasts.

In these circumstances the Board feel that it would be desirable for an alternative system of night signals to be placed before the International Meteorological Committee for their consideration.

Board of Trade Letter of 19th September, 1910.

With reference to your letter No. M.O. 3045 of the 12th instant, respecting maritime weather signals, I am directed by the Board of Trade to state that the system of night signals suggested by the French Meteorological Office appears to be simple and effective, and such as might be submitted for favourable consideration to the International Meteorological Committee.

As regards the similarity between the suggested weather signals and the harbour signals in use at Burntisland and Dundee, I am to state that, in the event of the proposed weather signals being adopted, the Board would be prepared to communicate with the Harbour Authorities at the two ports in question with a view to preventing the possibility of confusion there.

B.

Royal Observatory, Hong Kong,
July 30th, 1912.

SIR,

In reply to your letter of the 12th ultimo, informing me that Professor K. Nakamura had proposed that my name should be added to the list of members of the International Commission for maritime meteorology and storm warnings, I shall be happy to serve on the Commission, but regret that I shall be unable to attend the meeting to be held in London on September 17th next, as His Excellency the Governor considers that I cannot be spared at present. I have only recently taken over the direction of this Observatory from Mr. Figg, and there are several administrative matters which require my attention.

(2) I consider that an international system of storm signals is very desirable and that a more elaborate code in addition to that given in page 6 of the report of the 1909 London meeting is necessary for coast and harbour stations; particularly in tropical countries. What is required in Hong Kong is a simple code for notifying ships about to leave where the typhoon is located, and its track; and a simple signal to warn the shipping in port—particularly the native craft—when to take shelter.

For the latter purpose I consider the principle of the International Code suitable, and for the former, the Zikawei Code, with a few alterations in the list of localities. As regards the International Code, I think the reason for inserting the words "Commencing with" before the wind directions might be published.

(3) As regards night signals, which are only necessary for local warnings, I prefer the suggestion of Monsieur Angot to the proposed International Code.

(4) Referring to the circular from the Deutsche Seewarte. No change in the present storm signals will be made at Hong Kong until wireless telegraphy has been installed here and on the Pratas Shoal. The question will then probably be reconsidered.

(5) Would Admiral Herz explain the difficulty of using 3-lantern night-signals.

I have, &c.,

T. F. CLAXTON,
Director.

The Director, Meteorological Office,
London, S.W.

C.

Extract from Letter dated 21st February, 1912, from Mr. H. A. Hunt, Commonwealth Meteorologist, Melbourne.

I have received your letter of the 16th ultimo and am very glad to hear that a serious attempt is at last being made to fix upon a code of international storm signals, and should be pleased to know at the earliest possible moment the signals it is de ided to adopt, as the Commonwealth is to take over the lighthouses of Australia, and I am very anxious that the universal code should be substituted for the signals now in use, as they should preferably be on an international basis.

The present Officials in charge of the stations understand that the exhibition of the signals is a part of their duties, and I have the assurance of the Commonwealth Government that this will also be the case under the Commonwealth régime. It would, however, be unfortunate if there were any interval between the taking over of the lighthouses by the Commonwealth and the decision of the Commission regarding the signals, as any break would probably have a bad moral effect on the observers; besides which it might be necessary to incur heavy expenditure in supplying what will probably be largely obsolete equipment.

You will therefore see that from our point of view it is a matter of urgency that the Commission reach a determination with as little delay as possible.

APPENDIX V.

LOCAL NIGHT STORM SIGNALS.

Letter from the Hydrographic Office of the Imperial Russian Marine.

Ministère de la Marine.
Direction Hydrographique Centrale,
St. Petersburg.
11 Juillet, 1912.
No. 5239.

À l'Observatoire Physique
Central Nicolas.

En réponse au No. 1797 de l'11 avril 1912 de l'Observatoire Physique Central Nicolas, la Direction Hydrographique Centrale communique que d'après la correspondance avec les chefs des forces Navales des mers Noire et Baltique, et avec les Directeurs des Phares et des pilotes des mers Baltique, Blanche, Noire, d'Azov et de l'Océan Pacifique, la Direction Hydrographique Centrale, en résumant leurs opinions, est arrivée à la conclusion que chaque système des signaux de nuit servant à l'avertissement de tempêtes, qui est basé sur la disposition linéaire des feux peut mener à une confusion avec d'autres signaux.

Par conséquence la Direction Hydrographique Centrale est d'avis qu'on atteindrait mieux le but en adoptant un système des signaux de nuit avec 6 lanternes suspendues aux coins des 2 cadres triangulaires disposés d'une manière analogue aux signaux du jour.

Le chef de la Direction
Hydrographique Centrale,
GENERAL-LIEUT. WILKITZKIJ.

APPENDIX VI.

LOCAL DAY STORM SIGNALS.

Letter from Rev. L. Froc, Zi-ka-wei.

Observatoire magnétique, météorologique
et sismologique,
Zi-ka-wei, 2nd September, 1912.

DEAR SIR,

ONCE more I address myself to your great kindness for a matter I have been hesitating to submit to your examination and to propose, through your authority, to the Commission. I fear it is too late, but the proposition of Captain Tyler, that at first appears to be more complicated than that

of Prof. Willis L. Moore, is in fact so simple, so satisfactory, and will, I think, be learned by heart by any fishermen, &c., that I would consider it a fault on my part not to propose it, if possible, to the Commission.

The only thing to remember will be that

▲ means N; ▼ = South; ● = East (Orient); ☒ = West

and with this very simple mnemonic effort, any Weather Bureau will be able to give the double of informations, compared with the other proposal.

I beg to recommend it to your authority and to the benevolent examination of Prof. W. L. Moore himself, to whom I am very sorry I am not able to write.

Your obedient Servant,
L. FROC, S.J.

Local Day Storm Signals proposed by Capt. W. F. Tyler, Coast Inspector of China, and by Father L. Froc, Director, Zi-ka-wei Observatory.

Symbols :

▲ = N; ● = E; ▼ = S; ☒ = W.

[It is the only mnemonic effort asked from the sailors.]

Signals : ▲ Gale expected, beginning by N. Winds.

| | | | | | |
|---|---|---|---|------|---|
| ▲ | " | " | " | N.E. | " |
| ● | " | " | " | E. | " |
| ▼ | " | " | " | S.E. | " |
| ☒ | " | " | " | S. | " |
| ▲ | " | " | " | S.W. | " |
| ● | " | " | " | W. | " |
| ▼ | " | " | " | N.W. | " |

Hurricane, any direction (as in Prof. W. L. Moore's Scheme).

(Night signals may be reduced to four directions.)

24th August, 1912.




DEAR SIR,


You have asked me whether, in the event of the International Meteorological Signal Commission recommending the international adoption of the local storm signals—suggested by the U.S. Weather Bureau—I would support the idea of its adoption in China.

My reply is that if at any time we adopt an extended system of local warnings, I should certainly support the use of whatever international signals were determined on. There does not, however, appear to be any prospect of establishing such signals here for a number of years to come.

As regards the particular set of signals suggested by the U.S. Weather Bureau :—

I should have thought it was of greater importance to be able to indicate a direction to a greater number than the four intercardinal points than to secure the simplicity that results from the use of one symbol. I think also it would be of advantage if the symbol had some mnemonic signification.

For instance  implies to me the North and  the South. If 

were used for East (Orient, Ost, &c.) and  for West, they, or a combination of two of them, would indicate the eight cardinal and intercardinal points.

I do not myself like the idea of quadrantal indications. If four indications only are to be given I should prefer the four cardinal points, *i.e.*, Northerly Gale, Westerly Gale, &c. It may be that on the American coast the intercardinal indications are of greater importance than the cardinal ones, but it does not necessarily follow that they would be so elsewhere.

Yours faithfully,

W. F. TYLER,
Coast Inspector.

The Director, Siccawei Observatory,
Shanghai.

APPENDIX VII.

NON-LOCAL STORM SIGNALS.

A.

Proposal of the Rev. L. Froc, Zi-ka-wei.

MONSIEUR,

Ne pouvant, cette fois, pour des raisons que j'ai eu l'honneur de soumettre à M. le Président, répondre à l'invitation d'assister personnellement à la réunion de la Commission des Signaux, je me permets de vous adresser, à vous et à tous les membres de cette commission, la brochure où j'ai expliqué le système d'avertissements que l'on donne aux navigateurs, tout le long de la côte du continent Asiatique de l'Extrême Orient, au nord de Saigon.

Je vous prie instamment de bien vouloir en prendre connaissance. Si je prends la liberté d'insister, c'est que la question qu'on y traite n'est point une expérience de laboratoire, ou un problème théorique intéressant, mais un fait très pratique et très réel, un point vital et essentiel pour notre Commission elle-même, je veux dire la sécurité, la sauvegarde de puissants intérêts maritimes, et jusqu'à la vie de nombreux marins. Je me crois donc autorisé à vous demander, avec insistance, de vouloir bien donner une attention bienveillante à cette publication.

Je crois que son actualité n'a pas diminué, mais s'est plutôt accrue, depuis trois ans. Les efforts des bureaux météorologiques, des deux côtés de l'Atlantique, pour développer les services de Télégraphie sans fil, ont abouti à des progrès très réels, et l'exécution de ma proposition est plus facile qu'en 1909.

Je me permets de résumer ici en deux mots l'argument principal de ce mémoire.—Comment les Bureaux Météorologiques peuvent-ils en somme annoncer un coup de vent local ? ce n'est pas par hasard, par instinct : il faut qu'on ait une

raison pour le faire. Cette raison c'est en général l'existence connue d'une dépression, d'un cyclone, et de la marche qu'il va suivre : tout le reste, vent de NE ici, tempête de SW là, n'est qu'une conséquence. Or cette *raison* est une réalité positive, la *conséquence* pour tel ou tel port n'est qu'une échéance probable, possible, qui est sujette à erreur, puisqu'à la fin de l'année on calcule le "pourcentage" de ses réussites.

Or nulle part, sauf en Extrême Orient, on n'a de moyen pratique pour signaler cette *réalité positive*, je veux dire, d'indiquer par des symboles universellement adoptés, la position et la marche des cyclones aux marins qui en ont le plus besoin, ceux qui n'ont pas le temps d'aller à terre prendre des renseignements aux bureaux où ces détails peuvent être affichés. Ainsi il est impossible de dire à un vapeur, doublant Ouessant, qu'un cyclone dangereux est aux Açores et court à sa rencontre. Le code introduit par Zi-ka-wei permet de combler cette lacune.

Je sais que la Commission fait tous ses efforts pour obtenir la *simplicité* et l'*uniformité*.—L'*uniformité* ne sera en rien détruite si l'on décide d'introduire partout quelques sémaphores signalant d'après un principe identique.—Leur adoption ne nuirait pas non plus à la *simplicité* car l'interprétation de notre code est une opération très simple, pour tout marin sachant lire des signaux.—Il ne s'agit nullement d'ailleurs de supplanter les mâts de signaux locaux, que tous, commandants des croiseurs cuirassés et patrons de barques de pêche, peuvent aisément comprendre et retenir par cœur. La vue de nos sémaphores ne trouble personne ; la petite batellerie sait fort bien que cette vergue avec signaux pendant aux deux bouts ne la regarde pas. Mais ce que j'affirme, après avoir consulté les navigateurs depuis de longues années, c'est que tout Capitaine possédant un brevet, peut, dès le premier mois de séjour en Chine, lire et comprendre le livret qui lui dit, en 3 chiffres, où se trouve un cyclone, et en 2 chiffres quelle direction il suit : j'ai là-dessus des témoignages sans nombre.

C'est pourquoi je me permets de proposer à la Commission la résolution suivante :

"En ce qui concerne les navires faisant des voyages au long cours, la Commission exprime le vœu, que des sémaphores soient établis, à titre d'essai, en des points où la navigation est très dense, pour signaler aux vaisseaux en cours de route, la marche des cyclones et des dépressions par un système plus complet, conforme à celui qui a été mentionné par la Commission dans sa réunion de 1908."

Agréez, Monsieur, l'assurance de ma haute considération
et de mon respectueux dévouement,

LOUIS FROC, S. J.

Zi-ka-wei, 15 août 1912.

Directeur de l'Observatoire de Zi-ka-wei.

Observatoire magnétique, météorologique
et sismologique,

Zi-ka-wei, le 27 Août, 1912.

DEAR SIR,

By the last mail I have sent you my letter, with several documents tending to introduce a proposition to be approved by the meeting. I thought it my duty to do my best for that question of so great interest for the sea-going vessels, and I hope you will allow me to rely upon your great kindness for recommending it to the members of the Commission.

As one of the points of the programme of the present meeting introduces the consideration of the "storm warning signals now in use," and the original proposals of the Commission, I thought that my proposal had its proper place in the new meeting, to which, as you know, I cannot attend.

If my proposal appears to be too general, and for that reason runs the risk of being totally rejected, which would be, in my opinion, to be regretted for the sailors, may I ask of your great kindness to modify it so as to make it at least for countries threatened by the regular cyclonic gales. The translation of my proposal, which I submit to your examination and correction, would thus be : "As concerns the signals to be made to the sea-going vessels, the Commission is of opinion that it is desirable that semaphores be established, at least in the countries where regular cyclonic storms occur, to signal to the steamers the position and motion of the centres of the cyclones by a more complete system in conformity with the one proposed by the Director of the Zi-ka-wei Observatory at the meeting of 1909."

My excuse for addressing myself to you for that great service is, on one hand, the great kindness that I know now by experience, on the other, the strong conviction in which I persist that by doing so you will render an immense service in the future to the sailors to whom we must be devoted in our Commission.

I have on that point a memoir by Captain Tyler, whose high position and great authority in the Far East you know, I think. Would it be too much to ask you to give communication of the document to the Commission, and, if possible, to introduce it to be printed with the documents of the next meeting? The opinion of that man may have a great weight. [See p. 22.]

I remain, Sir,

Your obedient servant,

L. FROC, S.J.,
Director of Observatory.

B.

Letter from Rev. L. Froc, forwarding the opinions of Captains of H.M. Ships, with regard to the Non-Local Signals issued by the Observatory of Zi-ka-wei.

Observatoire magnétique, météorologique
et sismologique,
Zi-ka-wei, 2 September, 1912.

DEAR SIR,

I BEG to send you herewith copies of the opinions of H.M. Ships answering to the Vice-Admiral on questions concerning our Code. The answer of the Admiral is on the same line, as well as that of H.M.S. Cadmus, Whiting, Virago and Handy, but I have only their original document, which I cannot send. I hope these answers will arrive during the meeting of the Commission, and I rely upon your kindness for putting them to the disposal of the members. I could not send them sooner.

Yours respectfully,

L. FROC, S.J.

Circular Letter to Captains.

DEAR SIR,

THE question of the method for signalling the cyclones, gales, storms, &c. at the semaphores, will come once more, this year, before the International Meteorological Commission.

As you had time to make yourself an opinion on the system adopted, along the coast of China, for the typhoon and gale signals, would you very kindly give me your views on the matter? The following are the questions I chiefly wish you to answer:—

1st.—Do you believe that this method of signalling is plain, of easy interpretation, and in fact easily understood, after a short experience, by any shipmaster coming to take charge of a ship in the Far-East?

2nd.—Do you believe, by some facts known to you that this system, during the past years had some good results;

(a) for the actual security of navigation;

(b) for the practical instruction of the officers, by enabling them to resolve some nautical problems concerning the cyclones while they are distant?

3rd.—What do you think of the principle of the method, which consists in signalling at *all* the semaphores, to *all* the navigators, *every* centre which threatens them somewhere, with the movement actually followed by that danger, and letting the captains deduce the consequences for themselves? Did you hear of any trouble or confusion resulting of the method?

4th.—Have you any remark, addition, improvement, modification, &c. to suggest?

Yours sincerely,

L. FROC, S.J.,
Director, Zi-ka-wei Observatory.

Zi-ka-wei, April 20th, 1912.

Replies.

No. 1.

"Minotaur" at Wei-hai-Wei,
23rd August, 1912.

SIR,

In reply to your letter of the 29th April last, I have the honour to forward to you herewith reports from certain ships of the Squadron under my command which contain answers to the questions set forth in your printed letter dated the 20th April, 1912.

2. My own remarks in regard to these questions are as follows:—

Q. 1. Yes.

Q. 2. No facts in actual proof of the good results can be cited.

Q. 3. The system is entirely good, and the principle of the method excellent. No proof of confusion has been observed.

Q. 4. Suggested (i) that a semaphore station be erected about Turnabout Island or Tung Ying Island, in order to break the distance between the stations at Gutzlaff and Amoy; and (ii) that the presence and position of fog banks be indicated.

I have, &c.,

A. L. WINSLOE,
Vice Admiral.

L. Froc, S.J.,

Director, Zi-ka-wei Observatory.

No. 2.

H.M.S. "Newcastle" at Kobe,
25th May, 1912.

SIR,

In compliance with your Memorandum No. 155/173 of 11th May, 1912, I have the honour to submit the following remarks on the questions raised by the Director, Zi-Ka-Wei Observatory, with reference to the method of transmitting typhoon signals.

1. The existing method of signalling appears quite easy to understand, and a knowledge of the system is soon gained.

2. H.M. Ship under my command has been fortunate so far in not coming within any typhoon area at sea; but the weather experienced on passages has agreed generally with the deductions drawn from the latest storm signals exhibited.

3. It is considered that the position and movement of every storm centre on the Station should be signalled, thus enabling one to judge to which particular depression the wind actually experienced is due. The greater the number of the signalling stations from which these positions and movements are shown, the easier it is for the Navigator to trace the progress of each depression, and hence to forecast his own weather.

4. No further suggestions can be made.

I have, &c.,

G. P. E. HUNT,
Captain.

The Commander-in-Chief,
China Station.

No. 3.

H.M.S. "Flora" at Shanghai,
6th August, 1912.

SIR,

In compliance with Commander-in-Chief's circular memorandum No. 155/173 dated 11th May last forwarding a letter on the above-mentioned subject from the Director of the Zi-ka-wei Observatory dated the 20th April, 1912, I have the honour to express my views on the questions enumerated in the letter as follows:—

1. The system of signals is plain and easily understood.

2. No remarks.

3. (a) The principle is good. (b) No.

4. A signal giving the intensity of the depression, when known, would be an improvement, and this seems to have been met by the forming, dividing, and intensity signals.

I have, &c.,

CHARLES CORBETT,
Captain.

The Commander-in-Chief,
H.M. Ships and Vessels,
China Station.

No. 4.
H.M.S. "Monmouth" at Yokohama,
23rd May, 1912.

SIR,

WITH reference to your No. 155/173 of 11th May, 1912, on the subject of the China Coast Typhoon Warning Code, I have the honour to report that I consider this system to be plain and easily understood, after a short experience, by any shipmaster coming out to take charge of a ship in the Far East.

2. As regards the results of the system for the actual security of navigation, and for the instruction of officers in nautical problems concerning cyclones, I have no information as to the former; as regards the latter, I consider this system should be of practical use.

3. Regarding the principle of the method, I am in entire agreement with it. It would be impossible to give deductions to ships without knowing their probable movements, and no warning, however unnecessary it may seem, should be neglected.

4. I have not had sufficient experience to enable me to criticise this system, but it appears to be a satisfactory one.

I have, &c.,
BRIAN BARTTELOT,
Captain.

The Commander-in-Chief,
H.M. Ships and Vessels,
China Station.

No. 5.
H.M.S. "Alacrity" at Weihaiwei,
26th June, 1912.

SIR,

WITH reference to your order No. 155/173 of 11th May, 1912, I have the honour to report on the China Coast Typhoon Warning Code as follows:—

- (1) Yes.
- (2) (a) Yes. (b) Probably yes.
- (3) Fully concur in the principle of signalling every centre at all stations, and have not heard of any trouble arising through this method.
- (4) No.

I have, &c.,
CHARLES L. LAMBE,
Commander.

The Commander-in-Chief,
China.

No. 6.
H.M.S. "Bramble" at Shanghai,
14th June, 1912.

SIR,

WITH reference to your No. 155/173 of 11th May, 1912, China Coast Typhoon Warning Code, I have the honour to submit the following answers to questions asked:—

1. Yes.
2. No personal experience.
3. (a) Principle good, but would suggest that it were better to give forecast as well. (b) No.
4. (a) That some code be instituted to indicate the size of a depression as well as the direction it is moving in. (b) That the presence and position of fog banks be indicated.

I have, &c.,
BERNARD PRICHARD,
Lieutenant and Commander.

The Commander-in-Chief,
China.

No. 7.
H.M.S. "Clio," Canton,
2nd June, 1912.

SIR,

WITH reference to your order No. 155/173 of the 11th May, 1912, I have the honour to submit my replies to the questions asked by the Director of the Zi-Ka-Wei Observatory as follows:—

1. Yes.
2. (a) Personally I have not come across an actual case. (b) Yes.
3. (a) Yes. A continuous observation is both interesting and instructive. (b) No.
4. A Semaphore Station at Turnabout or Tung Ying Island would be of great value to mariners. After leaving Gutzlaff there is no semaphore in the ordinary track until Amoy, 500 miles from Gutzlaff, is reached.

I have, &c.,
H. R. VEALE,
Commander in Command.

The Commander-in-Chief,
H.M. Ships and Vessels,
China.

No. 8.
H.M.S. "Defence" at Kobe,
23rd May, 1912.

SIR,

WITH reference to your letter No. 155/173 of 11th May, 1912, relative to The China Coast Typhoon Warning Code, I have the honour to report that it is hardly possible to give an opinion of any value from this ship owing to the short time she has been on the Station (one month), and to the fact that so far only one port, Hong Kong, has been visited on the China Coast.

2. From a study of the signals as given in the China Coaster's Pocket Book, however, it is possible to answer the first question in the affirmative.

3. As regards question 2, I should certainly believe that the system as used must have frequently had beneficial results in both the directions indicated.

4. As regards question 3, the principle of the method used appears to be quite sound.

5. As regards question 4, I am not at present sufficiently acquainted with the system to be able to make any suggestions.

I have, &c.,
H. H. BRUCE,
Captain.

The Commander-in-Chief,
H.M. Ships and vessels,
China Station.

No. 9.
H.M.S. "Minotaur" at Weihaiwei,
28th June, 1912.

SIR,

IN compliance with Commander-in-Chief, China, No. 155/173 of 11th May, 1912, I have the honour to report as follows on the working of the China Coast Typhoon Warning Code:—

I consider the system to be a very good one.

No further opinion or suggestions can be given as no actual typhoon has been experienced.

I have, &c.,
G. C. CAYLEY,
Captain.

The Commander-in-Chief,
H.M. Ships and Vessels,
China.

Letter from Capt. W. F. Tyler with regard to the Non-Local Storm Signals issued by the Observatory of Zi-ka-wei.

Coast Inspector's Office, Shanghai,
24th August, 1912.

DEAR SIR,

I UNDERSTAND from you that an International Meteorological Signal Commission, of which you are a member, is about to meet, and that, although you are unable to personally attend it, you are forwarding a resolution regarding the international adoption of a system of storm signals similar to that which we have in use on the China Coast.

In this connexion you ask me—as head of the Marine Department and having charge of the meteorological affairs of the Maritime Customs—to give you my opinion on this subject. I have accordingly now the pleasure to do so.

A meteorological observatory is possessed of certain knowledge:—

- (a) It knows the locality of a cyclonic storm and the direction in which it is at the time travelling. This is more or less exact information; it is not a matter of prognostication.
- (b) It knows the *probable* subsequent course of the storm and is therefore able to *prognosticate* with some degree of certainty which localities will be visited by it, and with a lesser degree of certainty the direction of the wind in each case.
- (c) It is able by means of other data to prognosticate what we here call "gales," *i.e.*, storms of a not definite or concentrated cyclonic character.

The question is how is this knowledge to be used in the most effective manner for the benefit of the seamen? There appear to be three alternatives:—

- (i) The prognostication of local weather warnings according to the general practice in America and Europe.
- (ii) Providing the seamen with information as to the locality and course of a cyclone, and with the area threatened by a gale from a certain direction, as is done in the Far East.
- (iii) A combination of (i) and (ii) as is done in Japan and Hong Kong, and to a, as yet, very limited extent in China.

As regards (i). On the coasts of all the maritime countries, there is a class of vessel commanded by more or less uneducated men, namely, fishing vessels and small coast craft, &c, which are the object of special solicitude in connexion with storm warnings.

These vessels are concerned chiefly, if not solely, about local weather conditions, and they are commanded by men who as a rule need to be served by a specific warning, *i.e.*, they would be incapable of making proper use of a knowledge of the locality of a cyclone.

The needs of this class are naturally the first consideration; their needs coincide with those of a harbour generally. It is therefore proper that local storm warning signals be considered a matter of first importance.

The China coast is an exception in this respect. We have the same class of vessel to probably a greater degree than in any other country, *i.e.*, the innumerable Chinese fishing junks and trading junks, but owing to the peculiar state of the meteorological service here and to governmental conditions, it has not as yet been found practicable, except to a very limited degree, to provide for them.

The Siccawei system has from the beginning been based on the needs of an entirely different class of vessel, namely, on the needs of ocean vessels and of coasters commanded by certificated officers.

I have thus maintained that local weather warnings are a necessity of the first importance on account of the needs of fishing and other vessels in charge of uneducated men. There are, however, two factors which detract greatly from their general value. One is that they are mere prognostications of the most likely event, regardless of other likely though less likely events. The other is that, whether the prognostications are correct or not, they are of little or no value to the ocean trader or to the long passage coaster. The only information given is that a storm is expected locally. The only use that a captain can make of it is to take shelter, and in nine cases out of ten as regards

moderate-sized coasters to take shelter would be improper. I base this statement on conditions here in China, and I cannot imagine them radically different elsewhere. To seamen, other than the uneducated men in charge of fishing and other small craft, the local weather warnings appear therefore to me to be of little if any use.

As regards (ii). In this system the seaman is supplied with positive knowledge concerning the locality and course of a cyclone, knowledge which only the meteorological observatories can give him, while, as regards deductions from that knowledge, he is left to form his own. Experience has shown that the certificated officer can safely be left to do so.

The overwhelming advantage of this system to the educated seaman appears to me to be obvious. The observatory has certain definite information, *i.e.*, the locality of a cyclone and its course for the time being. Concerning the course it will continue to follow a probability will usually exist, but no certainty. There are, besides the probable course, certain other possible ones, and certain impossible ones. A knowledge of the whole range of possibilities, as far as may be, in connexion with the track of the storm is obviously a matter of the most urgent importance to the seaman. At the time of having to take action for the safety of his vessel, a captain has no observatory to consult. He has to act on his own judgment, and that judgment will be soundest when it is based on the best premises, *i.e.*, a knowledge when he left port or passed a signal station of the locality of the typhoon and the direction in which it was then travelling. So obvious does this fact seem that one is almost loath to state it, and yet it seems that it has not been fully grasped elsewhere, and requires emphasizing.

Some doubt may exist as to the quality of seamen that would be capable of taking proper advantage of the system. I am strongly of opinion that any officer who has sufficient education to obtain a certificate of competence in navigation and seamanship is capable of using it. There is another consideration, namely, that the use of the system is in itself an education in meteorology. It forces on the seaman a knowledge of cyclonic storms and of the probable tracks in different localities at different times of the year. This is knowledge which in any case and under any system it is desirable he should have.

I am convinced that, as a result of the use of this system in China, the officers on the coasting vessels here have an exceptional and practical grasp of the law of storms in its local application.

As regards the advisability of adopting this system in localities where well defined cyclonic storms occur—whether of cyclonic force or not—*e.g.*, in the West Indies, there can, I think, be no doubt.

As to whether the cyclonic areas which occur off the European and the northern parts of the American coasts are sufficiently defined, *i.e.*, determinative of wind direction, to make the system of unquestionable use there, I have not sufficient knowledge to form an opinion.

And now as regards (i) and (ii). There can be no possible competition between the two systems. System (i) is needed everywhere for certain limited though important purposes. System (ii) is the only one that can be of use to the deep sea sailors and coasters, and where conditions render that system possible, it should be used in addition to (i).

I can see no possible difficulties in using both systems, each for its own purpose. This is done in Japan and is done in Hong Kong, with entirely satisfactory results.

It may be said that while the local warnings are made public by means of signals, the fuller information is available to the seamen who will take the trouble to go to the Harbour Office. (I presume that in the United States, at all events, this information is thus available.) So far as vessels leaving a port are concerned, it may be admitted that this meets their needs sufficiently though not thoroughly.

The most important use that can be made of the system is, however, in regard to coast signal stations. A vessel passing one of these obtains information as to the locality and direction of a storm. Her captain may thus:

- (a) become acquainted for the first time with the existence of the storm,
- (b) may have confirmed information previously obtained as to the course the storm is taking,
- (c) may have information concerning the recurving of the storm previously known.

Such information is of course of the utmost value. That he may have received full information on leaving port does not detract from the need for further information. The value of a warning concerning a particular storm is greatly increased—is more than doubled—by the existence of a previous warning. For one thing it gives a rate of progression.

It should always be realised that full information concerning a storm serves not only to enable a captain to avoid danger; it may enable him to take advantage of wind, sea and weather to facilitate his passage.

As regards the Siccawei system now in use. Excellent as it is in principle, it has—as you know is my opinion—two defects, and as this scheme is coming before the Signal Commission I would like to specify what I consider those defects to be.

(a) The localities given are too indefinite. A named locality in these waters is needed to give at once the general locality; but this should be amplified by specifying an area or spot by latitude and longitude.

(b) The symbols used are not the best possible. It is of the greatest importance for coast signal stations that the symbols be those that have the greatest distinguishableness. You will remember that I supplied you with a short paper on the subject for the 1908 Meteorological Conference, but I will here shortly repeat the conclusions I came to.

Of the disc, the diamond and the square, only one should be used, as among themselves they have a low degree of distinguishableness. The diamond is the best, the disc is the least suited.

The symbols recommended are, in their two-dimensional aspect, a diamond, a triangle, an inverted triangle, a double triangle (apex to apex), a vertical bar and a horizontal bar. The relative sizes of these symbols to secure equal distinguishableness were also investigated.

There is one other matter to which I would refer.

A system of local warnings, *i.e.*, warnings that a gale is to be expected from a certain direction can be made, and I think should, if found convenient, be made internationally uniform for the benefit of the seamen in a foreign port (though I have maintained that these are of little use to him on proceeding to sea).

On the other hand the Siccawei system can only be made internationally uniform as regards general principles. Different localities would require different codes. These localities could, however, be very extensive. For example, Japan, China and the Philippines could be dealt with in one code. The whole of Europe in a second, the East Coast of North America with the West Indies and Central America as a third, etc.

In conclusion, I would refer to what I consider to be the pith of the question.

The gales, which are notified in Part II. of our Code, depend, I understand, on Continental depressions, and these depressions are, I presume, of a partially cyclonic character. The gales, however, are not the immediate and usual result of a cyclonic area. They are, as it were, the aftermath of a large but shallow Continental depression.

The foretelling of these is a matter of skilled prognostication beyond the ability of the seamen on information as to depressions.

Leaving out of consideration those localities in which distinct cyclonic storms occur, such as the China Sea and the West Indies, do the storms on the European and North American coasts, or a sufficient number of them, partake of such a definite cyclonic character as would enable the Siccawei system to be usefully put into operation, or do they principally partake of the nature of gales as referred to above?

This appears to me to be the question on the answer to which a decision as to the general adoption of the Siccawei system must be based.

As to the localities where distinct and concentrated cyclonic storms occur, there can, I consider, be no doubt whatever that the principle of the Siccawei system of storm warnings should be adopted.

Yours faithfully,

W. FERD. TYLER,

Coast Inspector.

The Director,
Siccawei Observatory.

APPENDIX VIII.

NON-LOCAL WARNINGS RELATING TO A TROPICAL REVOLVING STORM.

While the local signals of warning for Tropical Revolving Storms are of the greatest value to seamen who frequent the seas to which they relate and, therefore, become acquainted with them, they are of an intricate character, and it frequently occurs that a navigator who is strange to the locality in which he sees them exhibited is unable to interpret their meaning. It appears, therefore, that a non-local system of signals for storms of this nature is wanted to supplement the local set of signals; a system that can easily be committed to memory, and serve for all seas in which tropical storms are experienced. The warnings I have suggested appear to have advantages in this respect, which are as follows:—

A northerly component in the bearing of a storm centre is indicated by the vertex of the upper cone pointing upwards;

A southerly component by the vertex of that cone pointing downwards;

A westerly component in the bearing is indicated by the meeting of the vertices of the two lower cones when the direction is northerly, and by the meeting of the bases of the two lower cones when the direction is southerly.




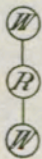












An easterly component by the pointing of all the vertices in the same direction.

The red light of the night signals represents a cone vertex upwards; the white light a cone with vertex downwards.

CAMPBELL HEPWORTH.

18th September, 1912.

Warnings relating to a Tropical Revolving Storm, suggested by Commander Hepworth.

| Signals: | | |
|---|---|---|
| Day. | Night. | |
|  |  | Storm centre situated to north westward of station. |
|  |  | |
|  |  | Storm centre situated to south-westward of station. |
|  |  | |
|  |  | Storm centre situated to north-eastward of station. |
|  |  | |
|  |  | Storm centre situated to south-eastward of station. |
|  |  | |

APPENDIX IX.

DR. J. P. VAN DER STOK'S PROPOSAL.

Proposition à discuter pendant la session de la Commission pour la Météorologie maritime et les avertissements des tempêtes, du 17 au 20 Septembre 1912 à Londres.

Si l'on désire faire des recherches sur un rapport possible et probable entre les fluctuations du temps (périodes, de chaleur et de froid, de sécheresse et d'humidité) observées dans une région donnée et d'oscillations simultanées ou antérieures dans les régions des vents alisés, on se heurte toujours à un manque de connaissance détaillée des conditions atmosphériques (et océanographiques) en pleine mer, ou sur des îles situées hors de l'influence des continents.

Evidemment, il y a deux manières de combler cette lacune :

La première, l'établissement de stations météorologiques sur des îles bien situées, a été fortement recommandée par la Commission Solaire, et dans le rapport de son assemblée à Londres (Juin 1909) une liste de stations, coordonnées par une Commission *ad hoc*, a été donnée.

Il serait désirable que la Commission pour la Météorologie maritime et les avertissements des tempêtes soutint cette proposition et émit un vœu pour la réalisation de ce projet.

Pourtant, une telle réalisation ne peut se faire, sans le concours des différents Etats, et il est à craindre que, vue les frais assez considérables qu'elle demande, si jamais le vœu émis se réalise, l'établissement des diverses stations pélagiques se fera attendre assez longtemps.

La seconde manière d'atteindre le but souhaité et que le soussigné a l'honneur de soumettre à la discussion de la Commission, serait une publication détaillée des observations faites à bord de vaisseaux et limitées à quelques carrés bien choisis, en concordance avec le projet de la Commission solaire, fréquentés par les bateaux à vapeur des diverses nations, et pour un nombre déterminé d'années, p.e. 10 années.

Cette méthode, quoique ne donnant certainement pas tout ce qu'on peut désirer, permettra au moins de recueillir des données utiles aux recherches.

Elle a l'avantage de ne pas exiger l'intervention, toujours accompagnée de perte de temps, des Gouvernements et de pouvoir être appliquée à peu de frais.

Elle pourra, donc, être réalisée dès le moment où elle aura été jugée convenable et qu'une entente sur la manière de la mettre en vigueur sera intervenue.

Pour le cas, où la proposition serait acceptée en principe, il serait désirable que des cartes, montrant les lignes des routes maritimes dans l'Atlantique et l'Océan Indien et une estimation des nombres d'observations, faites le long des lignes fussent produites, afin de pouvoir choisir les carrés les plus convenables pendant la session même de la Commission.

J. P. VAN DER STOK.

de Bilt, August 21, 1912.

COMMISSION FOR MARITIME METEOROLOGY AND STORM WARNINGS.

Appointed at Paris 1907. Has met at London 1909, London 1912.

LIST OF MEMBERS ON 5TH DECEMBER, 1912.

- 1907 Dr. W. N. Shaw, London, *President*.
- 1907 Prof. A. Angot, Paris.
- 1907 Rev. L. Froc, S.J., Zi-Ka-Wei, Shanghai.
- 1907 Prof. H. Mohn, Christiania.
- 1907 Prof. Willis L. Moore, Washington, U.S.A.
- 1907 Prof. K. Nakamura, Tokio.
- 1912 Señor José Galbis, Madrid.
- 1909 Prof. L. Grossmann, Deutsche Seewarte, Hamburg.
- 1912 Mr. T. F. Claxton, Royal Observatory, Honk Kong.
- 1912 Prof. E. van Everdingen, de Bilt, Utrecht.
- 1912 Mr. J. H. Field, Simla, India.
- 1912 Dr. C. G. Fineman, Stockholm.
- 1912 Captain J. M. Harvey, Board of Trade, London.
- 1912 Commander M. W. C. Hepworth, London.
- 1912 Mr. H. A. Hunt, Melbourne.
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- 1912 Prof. E. Mazelle, Triest.
- 1912 Dr. Okada, Tokio.
- 1912 Prof. L. Palazzo, Rome.
- 1912 Captain C. Ryder, Copenhagen.
- 1912 General M. Rykatcheff, St. Petersburg.
- 1912 Signor Santi, Hydrographic Institute, Genoa.
- 1912 General Major Schokalsky, Hydrographic Department, St. Petersburg.
- 1912 Dr. J. Van der Stok, de Bilt, Utrecht.
- 1912 Mr. R. F. Stupart, Toronto, Canada.
- 1912 Dr. G. T. Walker, Simla, India.
- The Director, Deutsche Seewarte, Hamburg.

