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**Chinese Maritime Customs Project
Occasional Papers No 3**

[Robert Hart]

DOCUMENTS

RELATING TO,

1°

THE ESTABLISHMENT

OF

METEOROLOGICAL STATIONS IN CHINA;

AND

2°

PROPOSALS FOR CO-OPERATION IN THE PUBLICATION

OF

METEOROLOGICAL OBSERVATIONS

AND

EXCHANGE OF WEATHER NEWS BY TELEGRAPH

ALONG THE PACIFIC COAST OF ASIA

[1874]

Edited by Robert Bickers and Catherine Ladds

Bristol September 2008

Note: In a letter of 29 May 1873, Customs Inspector-General Robert Hart ordered his Non-resident (or London) Secretary, James Duncan Campbell, to print up and circulate to 'the people you have consulted about Meteorological matters', as well as to the British Association for the Advancement of Science, and to Samuel Plimsoll M.P., copies of the documents transcribed here. They were to be collated together into a single pamphlet, whose layout was described with Hart's characteristic attention to detail. 'Turn the thing out neatly, and with an official look', he continued, 'The plan is going to succeed, and it may as well be introduced to the public handsomely.' Hart was keen to 'originate a comprehensive organisation for the prosecution of scientific research and for the Communication of scientific knowledge, observations and discoveries.' The infrastructure of the Customs would provide a foundation for a transnational, collaborative enterprise, and it was being greatly extended spatially with the programme of construction of coastal lighthouses by the service which commenced in 1869.

The meteorological scheme had been announced by Hart in Circular No. 28, of 1869, but had then fallen into abeyance. Hart was now re-launching the scheme, although it was to be another decade before it was firmly established. Campbell had been ordered in a letter of 14 March 1873 to consult with Sir George Airey, Astronomer Royal and then President of the Royal Society, and to make contact with other British 'meteorologists and scientific men.' Hart wanted expert advice on what the Customs needed to be doing, but also to interest them in making further proposals for work that the Customs could undertake. The keepers of the new lighthouses were, he told Campbell, 'fairly intelligent Europeans; steady men who can read and write and who will only be too glad to have something given them to do, to occupy the lonely hours of their isolated lives.' Orders were given for sets instruments to be sent out to China, and appropriately designed registers were to be printed and shipped out as well.

As far as we have been able to discover, only two copies of this pamphlet survive, both currently in the library of the Royal Geographical Society, London.

While the first item, Hart's Circular No.28 of 1869, announcing his intention to initiative meteorological activity is well known, the other documents are more obscure, and are reproduced here for the first time.

Robert Bickers
Bristol, 1 September 2008

DOCUMENTS

RELATING TO

- 1° THE ESTABLISHMENT OF METEOROLOGICAL STATIONS IN CHINA; AND
- 2° PROPOSALS FOR CO-OPERATION IN THE PUBLICATION OF METEOROLOGICAL OBSERVATIONS AND EXCHANGE OF WEATHER NEWS BY TELEGRAPH ALONG THE PACIFIC COAST OF ASIA

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1. CIRCULAR NO. 28 of 1869

Inspectorate-General of Customs,
Peking, 12th November, 1869

Sir,

(1.) – I write to inform you that it is my intention to establish a Meteorological Station in connection with each Office of Customs during the coming year, and have now to request that you will take the matter into consideration, so that, when I have the opportunity of conferring with you personally, you may be able to name to me the individuals on the strength of your establishment, who could best be trusted to take and record the necessary observations, as well as be prepared with such suggestions as may be calculated to further the general object in view.

(2.) – Our offices are now to be found at points along the coasts and banks of seas and rivers, embracing land and water extending without break over some twenty degrees of latitude and ten of longitude, and our present organization is such as will enable us to record meteorological observations without adding to our numbers, and with but little other expenditure than that to be met for the purchase of instruments. The worth of such observations to the scientific world, and the practical value they may be made to have for seafaring men and others on these Eastern seas, will in due time be appreciated and acknowledged, and I feel confident that I have only to mention this matter to you to interest you in it, and to secure your hearty co-operation in a scheme which will tend so powerfully to assist in throwing light on natural laws, and in bringing within the reach of scientific men facts and figures from a quarter of the globe, which, rich in phenomena, has heretofore yielded so few data for systematic generalization. In a few years these Meteorological Stations will probably have at their head an Observatory, to be established in connection with the Peking College (T'ung-Wen-Kuan).

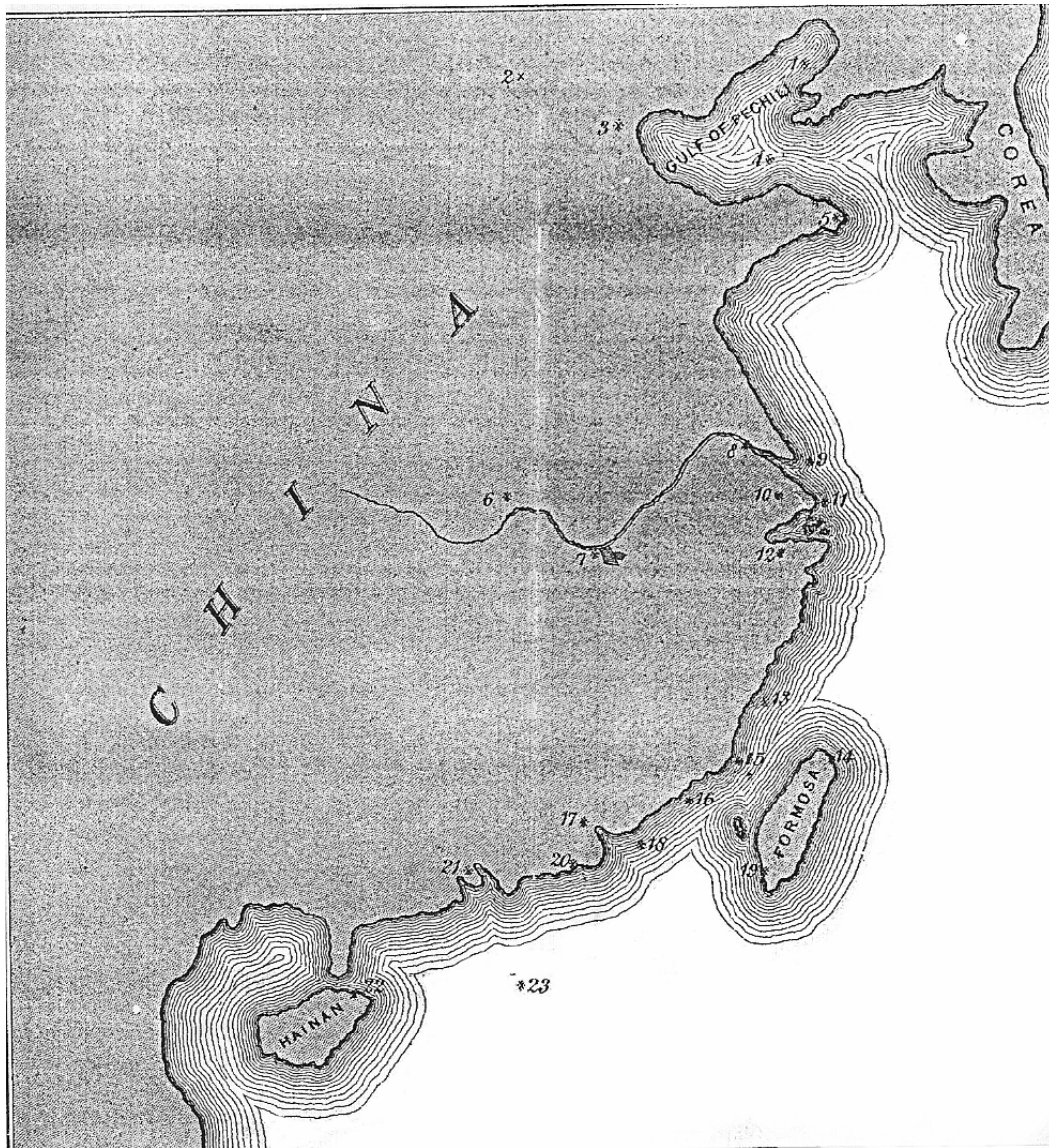
I am, &c.,

(Signed) ROBERT HART
Inspector-General of Chinese Maritime Customs.

To the Commissioners of Customs,

Niuchuang	Ningpo
Tientsin	Foochow
Chefoo	Tamsui
Shanghai	Takow
Chinkiang	Amoy
Kiukiang	Swatow
Hankow	Canton

[Map 1: Position of stations listed in paragraph 2, p.5]



2. MEMORANDUM

Inspectorate General of Customs,
Peking, 11th March, 1873

1 – The plan announced in Circular No. 28 of 1869, for the establishment of Meteorological Stations has remained in abeyance, but is now about to be given effect to. The necessary instruments, registers, &c., &c., are about to be ordered for twenty stations, and instructions, &c., for the guidance of the officers in whose keeping the instruments, &c., will be placed, are about to be drawn up. Arrangements, too, are in progress for the grouping and publication of the observations recorded. Before the end of the year, the preparations will have been completed, and from the 1st January, 1874, observations will be registered.

2. – The positions of the stations may be roughly indicated as follows: -

	North lat.	East long.
1. Niuchuang Lightship	40.35	122.00
2. Peking	40.00	116.25
3. Taku	39.00	117.45
4. Miao tao group	38.50	120.37
5. Shantung Promontory	37.23	122.43
6. Hankow	30.34	114.12
7. Kiukiang	29.37	116.10
8. Chinkiang	32.11	119.27
9. Shaweishan	31.22	119.27
10. Shanghai	31.12	121.27
11. Gutzlaff	30.41	122.10
12. Chinhai	29.48	121.42
13. White Dogs	25.57	120.00
14. Keelung	25.15	121.45
15. Ockseu	25.00	119.27
16. Chapel Island	24.12	118.15
17. Swatow	23.20	116.40
18. Lamocks	23.15	117.15
19. Takow	22.35	120.15
20. Breaker Point	22.55	116.27
21. Canton	23.70	113.17
22. Hainan	20.00	110.00
23. Pratas	20.30	115.20

Stations will thus be found at intervals from longitude 110° to 122° east, and from latitude 20° to 40° north. Within these limits additional stations will in time be established.

3. – For want of a better term, the intended stations are styled Meteorological Stations. But while primarily established to record observations similar to those recorded elsewhere, *it is also desired that advantage should be taken of their existence to assist enquiry in any possible or worthy way out of the beaten track.* In this connection, the Chief Secretary of the Inspectorate of Customs, Mr. Campbell, has been instructed:

- 1° -- To inform Meteorologists and other scientific men of the intended establishment of such meteorological stations;
- 2° -- To ascertain the instruments to be procured to bring observations into accord with those of stations elsewhere established;
- 3° -- To procure registers, &c., similar to those in which stations elsewhere record their observations;
- 4° -- To invite advice generally, and to ascertain what observations may be suppressed, and what per-centage ought to be recorded in print; and
- 5° -- To express the Inspector-General's willingness to co-operate in the matter of directing observations to be made *in special directions*, and to receive and answer any communications addressed to him for the attainment of scientific ends by means of enquiries feasible at such stations.

4. – The stations will in course of time be connected with a Chair of Astronomy in the T'ung-Wen-Kuan or Peking College.

5. – The records of the stations will be printed annually at Shanghai.

6. – The stations are to be kept by men who have other duties to perform, but chiefly by Lighthouse-keepers; all unnecessary observations ought therefore to be excluded, and the attention of the keepers directed especially to what will be of real value. The stations must not attempt too much at first.

7. – Each station ought to be provided with copies of Buchan's Text-Book of Meteorology (Blackwood and Sons), and one or two other books connected with the same subject, for the use of the officers in charge of the instruments; 1°, to instruct them in the work; and, 2°, to enable them to understand and record more intelligently.

ROBERT HART

Inspector-General of Chinese Maritime Customs

To

J. D. Campbell, Esq., &c., &c., &c.,
86, St. James Street,
London, S.W.

3. – LETTERS

Inspectorate-General of Customs,
Peking, 31st May, 1873

Sir,

I have the honour to enclose copies of a letter and memorandum:

Concerning publication of meteorological observations and exchange of weather news, and inviting co-operation in a general plan:

which have been addressed to Their Excellencies

The Governors-General of Eastern Siberia,

Hong Kong

Manila

Saigon

Singapore and

Java, --

the Japanese Authorities at Yokohama and Nagasaki;

and the Siamese Authorities at Bangkok.

As these plans and proposals may be thought worthy of communication to the Admiral on the station, or some of the superior Governmental departments at home, I beg to bring them to the notice of Your Excellency.

I am, etc.,

(Signed) ROBERT HART
Inspector-General of Chinese Maritime Customs.

To

His Excellency Hon. F. F. Low, &c., &c., &c.,
[U.S. Minister]

Mr. De Calice, &c., &c., &c.,
[Austro-Hungarian Minister]

Mr. T'King De Roodenbeck, &c., &c., &c.,
[Belgian Minister]

Count Fe D'Ostiani, &c., &c., &c.,
[Italian Minister]

Inspectorate-General of Customs,
Peking, 31st May, 1873

Sir,

I have the honour to enclose copies of a letter and memorandum:
Concerning publication of meteorological observations and exchange
of weather-news, and inviting co-operation in a general plan:
which have been addressed to Their Excellencies

The Governors-General of Eastern Siberia,
Hong Kong,
Manila,
Saigon,
Singapore, and
Java,
The Japanese Authorities at Nagasaki and Yokohama;
And the Siamese Authorities at Bangkok;

and I have now the honour to request that Your Excellency will take the
proposal for co-operation into consideration, and, if approved of, give it such
support as may most tend to secure its acceptance.

I beg to add some additional copies of the memorandum, thinking that
its contents may be of interest and worthy of communication to the Admiral on
the station, and some of the superior Governmental departments at home.

I have, etc.,

(Signed) ROBERT HART
Inspector-General of Chinese Maritime Customs

To

His Excellency General Vlangaly, &c., &c., &c.
[Russian Minister]

T. F. Wade, Esquire, C.B., &c., &c., &c.,
[British Minister]

Mr. de Geofroy, &c., &c., &c.,
[French Minister]

Mr. Ferguson, &c., &c., &c.,
[Dutch Minister]

Mr. Soyeshima, &c., &c., &c.,
[Japanese Ambassador]

Mr. Otin, &c., &c., &c.,
[Spanish Chargé d'Affaires]

4. – LETTER

Inspectorate-General of Customs,
Peking, 26th May, 1873

Sir,

1. – I have the honour to forward, for Your Excellency's perusal and consideration, a Memorandum, which

1° -- states what is about to be done in China to record and publish meteorological observations and transmit telegraphic weather-news; and,

2° -- invites co-operation in a plan for the publication of meteorological observations, and exchange of weather-news by telegraph along the Pacific Coast of Asia.

2. – There is an obvious connection between meteorological observations and the transmission of weather-news, but while science should supply the method for the first, utility must limit the extension of the second.

3. – For the present, -- apart from what is to be done separately in China, and which may be styled a local undertaking, -- the general plan, in which co-operation is invited, proposes the establishment of twelve Meteorological Stations between Passiette and Batavia, at different points between long. 100° and 140° east, and lat. 10° south and 50° north; but, when these stations are once in working order, it is proposed to establish eight others [say, at Irkutsh, Yakutsk and Anadvisk in Siberia, King George's Sound and Sydney in Australia, Wellington in New Zealand, New Caledonia, and Penang], so as to fill up the gap that now exists, and provide a comprehensive record of comparative meteorology for the well-defined section of the globe which lies between 100° and 180° east longitude.

4. – As regards the transmission of weather-news, it is proposed to divide the coast-line between Passiette or Nicolaevsk and Batavia into three sections, -- the northern terminating and the central commencing at Nagasaki, the central terminating and the southern commencing at Hong Kong, so that Nagasaki and Hong Kong shall link the sections together, and thus connect Passiette or Nicolaevsk and Batavia, -- and to arrange, on the one hand for the daily exchange of weather-news between the stations in a section, and, on the other, for the transmission of weather-news on special occasions from section to section. In this connection, it is not much scientific arrangement as practical utility that is to be aimed at, and the exchange and

transmission of weather-news must be made to correspond to the requirements of shipping and the extension of intercourse. The three sections proposed may have to be modified or added to, but that will be best determined by experience, although, of course, primarily controlled by telegraphic arrangements.

5. – Should it please your Excellency to approve of either or both of the plans proposed, I beg that the name of the office who will be charged with the work at *..... may be communicated to me, in order that I may supply him with instruments and registers, and with such memoranda as shall secure uniformity and scientific precision at all the stations.

6. – In conclusion, I beg to recommend these proposals to your Excellency's consideration, and to invited co-operation in an undertaking of much interest and value to the scientific world, and calculated to be increasingly useful to mariners of all classes in these seas – an undertaking, too, which in these days of change and progress, may form the basis of an organization for the advancement of science throughout the eastern half of Asia and the Pacific.

I have, &c.,
 (signed) ROBERT HART
 Inspector General of Chinese Mariitme

Customs

To

Their Excellencies
 The Governors-General of
 Eastern Siberia, (Russia)
 Hong Kong, (England)
 Manila, (Spain)
 Saigon, (France)
 Singapore, (England)
 Java, and (Holland)

The Governors of
 Yokohama, (Japan)
 Nagasaki, and (Japan)
 Bangkok (Siam)

5. – MEMORANDUM

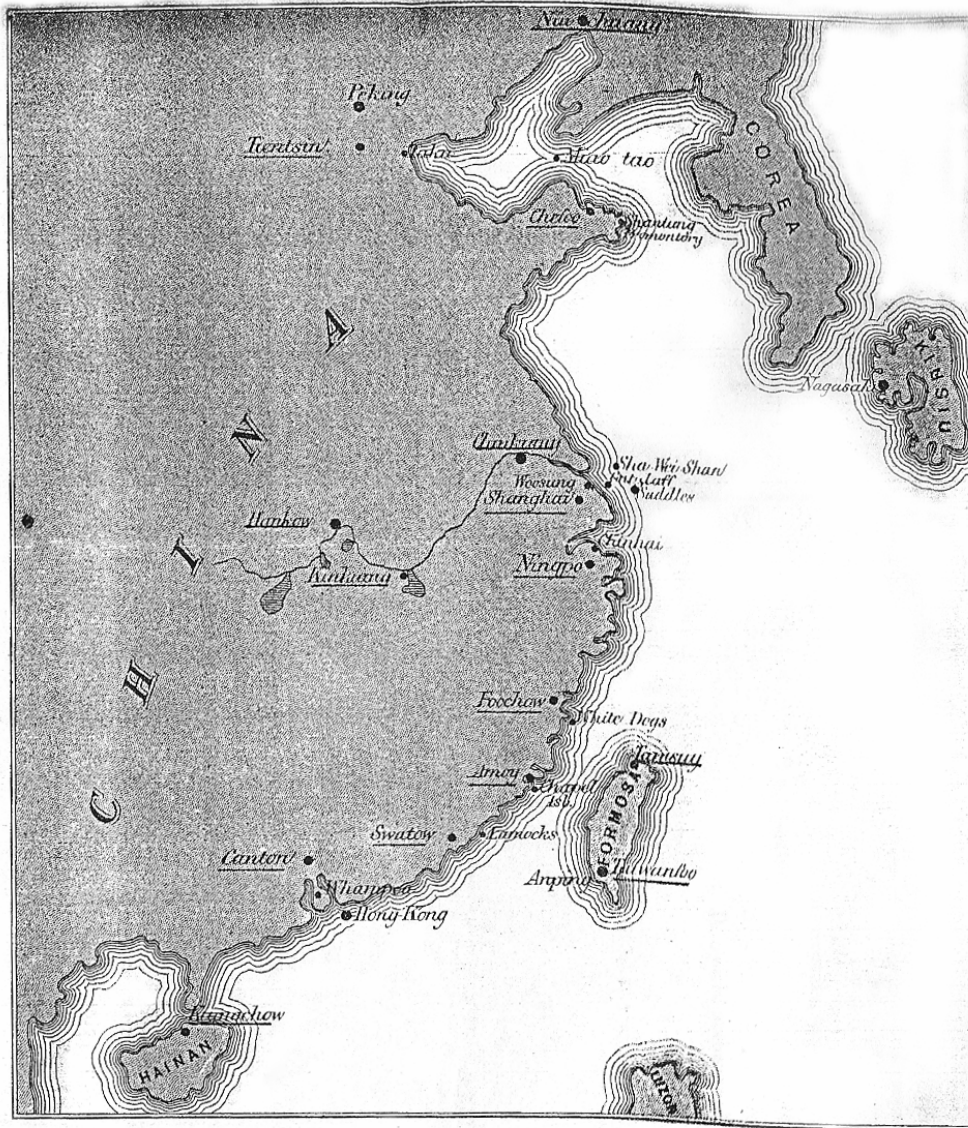
Inspectorate-General of Customs,
Peking, 15th April, 1873

1. – *The establishment of meteorological stations in China* has been some time under consideration, and it has recently been decided to commence from the 1st January, 1874, to record observations at Twenty Stations, for which sets of instruments and registers are coming from Europe.

2. – The sites selected for Stations are places along the coast – some on the mainland and others on outlying islands – at which there are Europeans in the Chinese Service, assisting in the collection of revenue or in charge of lighthouses and lightships. The rough sketch of the Chinese Coast herewith given will show at a glance the Treaty Ports and the places at which Meteorological Observations will first be recorded.

The names of the Treaty Ports are underlined, and those of Meteorological Stations are written in red.

[Map 2: Map of Customs stations and treaty ports]



3. – The observations recorded at the Chinese Meteorological Stations will be published annually at Shanghai by the Customs Press, and copies of the publications will be sent to all national observatories and such learned societies as are likely to use them.

4. – In addition to the establishment of Meteorological Stations, it is intended to telegraph the state of the weather in various directions every morning. The telegrams will be exhibited at the Custom Houses and Harbour Masters' Offices, and supplied to the newspapers, and such storm signals as are requisite will be displayed, so that seafaring men will daily have the opportunity of learning the state of the weather at certain places connected by telegraph.

5. – It here becomes necessary to divide what remains to be said into...

1°. An explanation of what can be done by the Chinese Customs without the aid of other Governmental agencies, and...

2°. A suggestion as to what it will be possible to do in addition, if co-operation can be secured in a general plan for the entire coast from Batavia and Singapore to Hakodadi and Passiette.

6. – What, firstly, the Chinese Customs intend to do, is this: --

A. Chinese Meteorological Observations for twenty or more stations will be published annually, and...

B. The state of the weather will be telegraphed every morning: --

1°. From Shanghai to Nagasaki,
Amoy and
Hongkong.

2°. From Amoy to Hongkong,
Shanghai and
Nagasaki.

3°. From Hongkong to Amoy,

Shanghai and
Nagasaki.

4°. From Nagasaki to Shanghai,
Amoy and
Hongkong.

In the event of telegraphic communication being extended to other Chinese ports, such ports will give and receive Weather-News in a somewhat similar manner.

7. – What, secondly, this memorandum is intended to suggest and request co-operation for, is a general plan for the whole Eastern Coast, embracing both

A. a record of Meteorological Observations, and

B. a daily exchange of Weather-News.

A. To assist and further Meteorological research, and to record observation, it is proposed – if the co-operation requested is accorded --

1. To issue similar sets of instruments and registers to the Harbour Master's Departments at...

Passiette,
Yokohama,
Nagasaki,
[Niuchuang,
Hankow, i.e. three stations in China.
Lamocks,]
Hongkong,
Saigon,
Manila,
Bankok,
Singapore and
Batavia.

2. To have an office at Shanghai to receive the Meteorological Reports or copies of the records of observations from Harbour Masters, &c., at the twelve places named.
3. To publish annually the recorded observations of these twelve stations, in a separate form, and in addition to the more local observations of the Customs' Stations along the Chinese Coast.

B. In the matter of Weather-News, it is proposed to arrange with the Telegraph Companies for the daily transmission of telegrams, thus: --

First Group of Stations: Northern District:

1. From Passiette to Yokohama;
2. From Yokohama to Passiette;
3. From Nagasaki to Yokohama;
4. From Yokohama to Nagasaki.

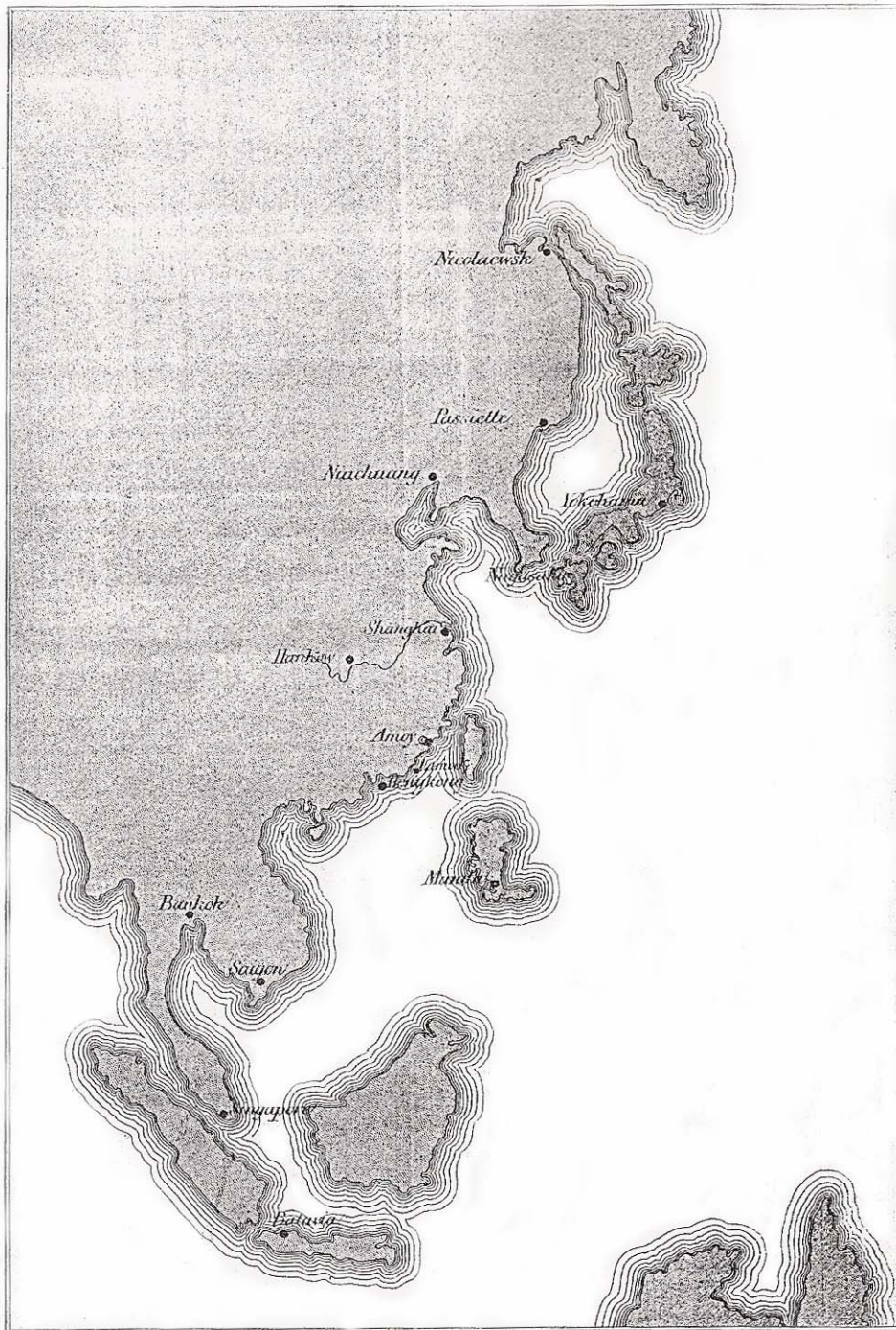
Second Group of Stations: Central District:

1. From Nagasaki to Shanghai,
Amoy and Hongkong.
2. From Shanghai to Nagasaki,
Amoy and
Hongkong.
3. From Amoy to Shanghai and
Hongkong.
4. From Hongkong to Amoy,
Shanghai and
Nagasaki.

Third Group of Stations: Southern District:

1. From Hongkong to Manila and
Saigon.

[Map 3: Proposed Pacific Coast of Asia Network]



2. From Saigon to Hongkong,
Manila,
Bangkok,
Singapore and
Batavia.
3. From Manila to Hongkong,
Saigon,
Singapore and
Batavia.
4. From Bangkok to Saigon,
Singapore and
Batavia.
5. From Singapore to Bangkok,
Saigon,
Hongkong,
Manila and
Batavia.
6. From Batavia to Singapore,
Bangkok,
Saigon and
Manila.

The Stations in a District would in this way give and receive Weather-News daily; but in the event of bad or exceptional weather in any District, the news would be passed on to the other Districts. Thus, bad weather at Singapore would be telegraphed to the Central District, and a typhoon at Nagasaki to the Southern District.

The appended sketch of the coast from Passiette to Batavia will help to make the proposal more intelligible.

8. The proposed messages may be modified according to circumstances, but the general plan suggested cannot fail to be of use in the Eastern Seas, and it is hoped that it will receive support from the various authorities before whom it is laid. The annual charge likely to be made by Telegraph Companies is not yet known, but divided between ...

Russia (Passiette),
Japan (Nagasaki and Yokohama),
China,
England (Hongkong and Singapore),
Spain (Manila),
France (Saigon),
Siam (Bangkok), and
Holland (Batavia),

the amount could be very easily provided. For the present, and till Manila and Bangkok are connected with the other places by telegraph, weather-news cannot be sent to or received from them, but their meteorological observations will be required to complete the line of Stations above set forth (A).

ROBERT HART
Inspector-General of Chinese Maritime Customs.