ACHTZEHNTES HEFT.

THE SEPTEMBER TAIFUNS 1878(*)

WITH 12 CHARTS AND 1 DIAGRAMM

BY

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PART I.

THE GREAT SEPTEMBER TAIFUN IN THE CHINA AND JAPAN SEAS 1878.

In September 1878 3 Taifuns raged on the coasts of Japan and China, of which the last one, from September 15th to September 22nd, was the greatest. Through the kindness of many captains of ships and of the directors of several meteorological observatories (see Appendix), to whom I take this opportunity of returning my best thanks, I have been furnished with sufficient data to investigate the last taifun; most of all contributors however I am indebted to I. Arai Esq., Surveyor-in-Chief, Tokio, who kindly consented to have the accompanying charts and diagramm engraved and printed in his department and to Captain R. Swain, M. S. S. *Tokio Maru* (log No. 14), who forwarded not only his own log, but also No. 9 to 13 inclusive and part of 20.

GENERAL REMARKS ABOUT THE TRACK.

(See Chart I and IX.)

The centre, coming up from S. E. travelled in a NWly direction till September 19th, noon, passing between the Miyakojima group and the Liu-Kiu islands; from there it went about due N., midway between the China coast and Kiushū, till it arrived W. of Quelpart, September 20, noon; thence between Korea and Japan in an ENE and NE ly direction through the Japan sea towards the N. end of Nippon (IX).

In the middle part of the track two dents are noticeable, from the 17th noon to midnight and 20th 8 a.m. to noon; and near these dents a slower progress of the centre will be remarked; they make the impression, as if here two enemies were fighting each other hard, both of nearly equal strength, the receding N ly, trying, September 17, to regain his lost ground, till on the 20th p. m. it holds its own and forces the S ly to deviate from its previous course and turn to the right. It will be noticed also, that the fiercest contest is raging on the water and does not take place over continous land. The lowest rate of progress was 2.3 nautical miles (m) per hour (see also Remarks to I) the highest 25 m., the total distance travelled 1774 miles.

The track looked at as a whole is about as regular as could be expected from straight lines joining the positions of the centre as found by rigid geometrical construction.

Capt. Swain, who has considerable experience on these coasts, is with many others of the opinion, that in the China sea taifuns generally break up off the Saddles (I); the present instance shows, that this is not always the case.

(*) Mit Rücksicht darauf, dass fast alle das chinesische und japanische Meer befahrenden Capitaine der englischen Sprache mächtig sind, ist diese Arbeit in englischer Sprache aufgenommen worden.

With regard to the recurving of taifuns I would call attention to the fact, that from the log of the *Berwickshire* (No. 1) alone, with bearing of centre assumed at 8 points, one might refer, that the centre of this taifun travelled first in an ENE ly direction, turned to the N. and recurved to the NW. and WNW., which was obviously not the case. From the log of the *Gold Hunter* (9) alone a similar conclusion might be drawn. In the *Bulletin mensuel*, September 1878 of the Zi-ka-wei observatory recurving to the W. is also assumed for this taifun, as will be seen from the following positions of centre as given under No. 4 and 5 from ships reports: No 4 Lat. 25.7° Long. 125.2° 19 September 1h a. m.
5 26 120 19 noon.

From the above, the general conclusion may be drawn, that recurving did not always take place, where it has been mentioned. One observer alone, employing the 8 points rule, or even more observers on the same side or in the same quarter of a taifun, may report « recurving » which the same observations with another than the 8 points rule or simultaneous observations on the other side of the centre would show to be only imaginary.

As the taifun experienced by the Austrian Fregate *Novara* 1858 in August is sometimes adduced as an example of a recurving taifun (see Annalen der Hydrographie 1878, page 398), I may state, that after a construction based an the present investigation and the same observations as given in that work (Reise der *Novara*), no recurving to the W ward took place whatever in that taifun, on the contrary, the curve is slightly bent to the E ward as the broken line in chart XII shows.

EXTENT OF THE TAIFUN.

The greatest distance of any of the ships (s. App.) from the centre with windforce 9 was 500 miles, September 19 midnight, the *City of Boston*, the ship in question (2) (*) was then to the S ward of the centre (I 2.); to the W ward (*Monongahela* I. 15) the extent was only 225 miles at the same time; but the effect of the low pressure area was felt on September 16 as far as Vladivostock (III 21), 1,250 miles distant, while the Tokio observations (19) show the continous influence of this area from September 17 p. m, the centre being then about 1,000 m. distant (IV.)

The height of the taifun on September 21 and 22 cannot have been less than about 3/4 mile and on September 20th 2.50 pm. not well more than about 3-4 miles. (See remarks to charts VIII and IX and Nagasaki obs. upper clouds.)

BORDERLINE.

To the W ward the storm was sharply defined on the coast of Formosa, as a glance at the log of the Resolute (3 and I) shows, only a few miles separating windforce 6 from 10 and 11; here some may say, the high mountains of Formosa, rising to 12,000 feet, had some influence in confining the taifun to the E. ward of 122° E. Long. which passes through the eastern most point of that island; but in the case of the *Berwickshire* and *Balthasar* (III 1 and 8), which are only 60 m. a part and 140 m. from the nearest point of Formosa, we remark the same, one vessel (1) experiencing a heavy NW gale, while the other (8) has only moderate N ly wind. The observations further N. and off Shanghai (I) show also a sudden termination in about 122° E. Long. in these parts also the meridian of the easternmost point of land. The Shanghai newspaper, further report, that the SS. *Hankwing* left Chifu for Shanghai only 4 hours after the *Appin* (I 18) and did not nearly encounter such bad weather as the *Appin*. It would seem therefore possible and probable, that the *Hankwing*, keeping a few miles more inshore than the *Appin*, was on the safe or outside of the borderline.

BEARING OF CENTRE.

The first construction for finding the positions of the centre was made in accordance with the rule (for the northern hemisphere): when looking up in the wind, the centre bears 8 points to the right; the real bearings of the centre were then all along measured, classed and if differing from 8 points, at once

(*) Number of log in Appendix and small charts.

substituted for the same and the construction several times repeated. The first approximate result gave up to 600 miles:

8 pts. for E-SSE wind of force 8 and less,
10 » » » » » » 9 and more,
10 » » W-ENE »
11 » » S-WSW »
Mean 9 3/4 points.

From the final positions of the centre table A (see Appendix to Part I and diagramm XIII), has been compiled which may be read as follows :

1.—The centre of this taifun bore 10 points from the wind within a distance of 400 miles.

2.—The bearing of the centre varied with the distance from the centre; thus: With NE.,NW. and SW wind the angle for bearing of centre increased with the distance, while with SE wind the reverse was the case.

3.—With NE wind 900 miles from the centre, the latter bore right a head.

The unexpected results mentioned under 2, are in so far of great interest, as some meteorologists are of the opinion, that indraft is greater near the centre, while other writers maintain, that indraft is less near the centre; both opinions seem reconciled by 2). To test part of 2) by one good continuous series of observations, I selected the Zi-ka-wei observations, made on low land, only 21 feet above sealevel and grouped the same together, taking always 5 continuous observations till September 20 noon, the last well known position of the centre. The result was :

WIND	BEARING IN POINTS	DISTANCE IN MILES	NUMBER OF OBSERVATIONS.
NW	9.2	200-230	5
N-NNE	9.1	230-250	5
NNE	10.2	250-350	5
NNE	11.4	350-410	5
NNE	10.3	440-600	5
NNE	10.8	600-1000	2

This single series proves therefore also, that indraft was less near the centre, Table A^{I} A^{II} and A^{III} require no explanation.

Table B was compiled, to meet an objection which might be made to A, that the positions of the centre before September 17 midnight were not accurately known and that shore observations may give different results from those at sea. Table C shows, that the positions of the centre were fairly known from September 17 midnight till September 20 noon. Although the number of observations is thus greatly reduced, table B confirms on the whole the conclusions deduced from A, if due regard is paid to the number of observations in the brackets.

FORCE OF WIND.

Tables A^{IV} and A^{V}, B^{IV} and B^{V} show, that in this taifun the force of wind at the same distance from the centre differed considerably with the different winds, SE wind showing the lowest grade. It is certainly a strange coincidence, which can hardly be accidental, that the only wind which shows outdraft, has also the lowest figure for force within a certain distance from the centre. Table A^{IV} may be used together with the observed fall of the barometer per hour, to find the approximate distance from the centre. Tables B and B^{IV} (see I) have been used, to fix the final positions of the centre from observations of the nearest ships, mean values having been adopted for NW and NE wind.

RAINFALL.

Rain fell before and during the taifun in great quantities, as the numerous black dots on the charts show. Taking a low estimate, viz., the mean rainfall at Nagasaki and Zi-ka-wei for a basis (about 1/4

foot for September 18-20 and assuming, that on the 2 darker shaded 5 degrees squares on IX this average of rain fell, I calculated the

AMOUNT OF RAIN.

in Million Tons between 30-35° N., 120-130° E. L.		
Sept..	18	1,095
»	19	30,037
»	20	9,074

or a total of about ..... 40,000 Million tons, certainly a very respectable quantity and to judge by the logs of several ships rather below, than above the true figures.

Whether such heavy rains cause taifuns or not, is an open question yet, that they have some influence, seems very probable; if we consider, that all this rain was contained before in the atmosphere as vapor and that a vast amount of latent heat was liberated during the precipitation, making the air lighter and contributing its share to the maintenance of the low pressure area (1).

SQUALLS AND BACKING.

Squalls and gusts of wind are hardly mentioned by SW wind, most frequently by NE. and SE winds; or in looking at the diagramm XIII we may say, squalls were mentioned almost throughout in front of the centre, while in the wake only a few were noticed.

The same remark applies with greater force still to the backing of the wind (going against the rule), all cases being noticed in front, none behind the centre. Of those vessels (like 1 and 8), which had the wind N. to W., and S., not one mentions backing, while 2 to 4 points and in one case as much as 6 points are noticed with NE. and SE winds before the centre. The backing and filling of the latter winds at a great distance from the centre is to some extent explained by diagramm XIII, where the NE. and SE windcurves come closest together, being inclined towards each other; so that NE. can quickly replace SE. and vice versa. The most remarkable case is that of the *Cannon Harrisson* (12): This vessel had September 18 9 p.m. the wind N., 10 p.m. NE., midnight ENE., afterwards the wind veered as it should, ENE. to N. and NW.; the observations and position of the *Staghound* (I) exclude entirely the idea of the centre having travelled with the change of wind from N. to ENE. in a corresponding way to the SW. or W ward. In the preceding half of the storm a veering of the winds amounting to 2 points and more was therefore not always sufficient to give a clear notion of the direction, in which the centre was travelling.

Possibly in a taifun of large dimensions like the present one, where the area of low pressure itself is very wide, exceedingly heavy rain at one spot or other causes may produce a temporary secondary low pressure area of small extent, which would deflect the wind in the vicinity, without being able to exert its influence to a further distance; an soon as the gap is filled up again and brought to the general level, the wind would return to its proper quarter. Near the centre a small sideway motion of the centre itself would be sufficient to explain any shift or backing, even to 16 points, but September 18, midnight, the *Cannon Harrisson* was yet about 260 m. distant from the centre, therefore the latter explanation is in this instance not feasible.

LIGHTNING.

is only mentioned by the *City of Boston* on September 20, while the *Appin* noticed St. Elmo's light on the 19.

REMARKS TO THE CHARTS.

The small charts II to IX extend all from 19° N. Latitude to 44° N. and from 119° E. Longitude to 142° E. They represents wind etc. at noon on the respective days. No allowance seemed necessary for the difference in longitude, nor for variation. The position of the centre is marked by a small circle with

(1) After the present investigation was finished the writer became acquainted with the work: « Die Wirbelstürme, Tornados und Wettersäulen, etc » by P. REYE, which treats the whole subject in a very concise and clear manner, explaining every feature in connection with the smallest as well as the largest whirlwind, in a very satisfactory way. Page 134 we read: « The motive power in cycloons is the heat, which is liberated through the condensation of the vapor contained in the atmosphere.» For further details and the explanations of the origin and progress of cycloons, the barometer crest on the border of the storms, the squalls and irregular shifts of wind, rainfall in the preceeding part etc. the highly interesting work itself must be referred to.

a dot inside, the wind arrows go with the wind and show the force by the number of feathers; a broken arrow means change of wind; for instance: Tokio has (IV 19) SW wind in the forenoon, NE. in the afternoon. The figures near the arrows correspond with the numbers of the logs in the appendix to Part I from 1-21. The curved dotted lines marked 30.0, 29.9 etc. are isobars, lines of equal barometer; straight or broken lines, marked 80 etc. isotherms or lines of equal temperature, with one exception on IX, where the straight line reaching to the centre-mark designates the track of the centre in continuation to I.

With regard to aneroid-barometers many erroneous opinions seem to exist; it may be therefore not out of the way to point out 2 objections to such instruments, if their indications have to be compared with others: 1, the corrections for index, temperature etc. must be correctly known and from time to time again calculated from comparisons with a standard mercurial barometer, owing to the variation of these corrections to obtain accurate values for pressure. 2, even if all corrections are applied, most aneroids do not keep pace with a good mercurial barometer during a heavy fall and subsequent rise. That unreduced aneroid-readings cannot be compared at once with those of a mercurial barometer, will be plain from the following figures, taken from log № 11.

CORRECTIONS OF ANEROID.

September 15,	noon.....	— 0.38	before the storm.
»	18,8 p. m.....	+ 0.02	during » »
»	19, noon.....	— 0.26	after » »

Reliable observations of pressure can only be obtained by means of a superior mercurial barometer, compared with a standard instrument.

See Chart II, September 15, noon. Although only 3 observations are available, for fixing the position of the centre, remark 4 in log 6 « a high cross sea coming up from SSW. » shows, that the wind was on this day already blowing from all quarters round the centre.

III. September 16, noon. NE. is blowing from Vladivostock (21^h) down to the Straits of Formosa (10). 1 has a NW gale, while 3 and 8 have a higher barometer than either 1 and 9 or 2 and 10; 3 and 8 are on or just outside the borderline of the taifun, marked by a high barometer ridge, sloping down steep to the E. moderately to the W ward. S ly winds are feeding the NE. (4, 6, 16 and 19).

IV. September 17, noon. 1, 9, 3, and 8 are all engaged in the taifun. The positions of 1 and 9 are probably somewhat out, the sun not having been visible for observations. 2 and 10 are yet on the outside of the borderline on the western, moderate slope of the barometer ridge. The NE wind reaches (p. m.) down to 19 and follows now (at Tokio) till September 22 the motion of the centre. 11 is in the most dangerous position, running yet before the wind.

V. September 18, noon. The centre is now fairly surrounded by ships; light winds at a distance (2,3,16,19) blow right towards the centre. The greatest extent of the taifun is now to the NNW ward from the centre (12 and 13); and in the same direction, between the Saddles and Shanghai is again a barometer ridge; 5 and 15 on the ridge have light winds, 13 and 12 on the inside slope record a gale, while 20 on the outer slope has strong wind; 14 with light SE. is on the ridge or even outside of it (aner. 29.78). 14 and 5' 4 and 11 show, how SE wind turns sharply into NE.

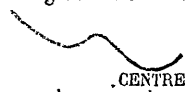
VI. September 19, noon. 11 has had a fearful night of it, the centre passing only 30 m. from ship, with the barometer down to 28.037. In front of the centre the barometer is falling with heavy rain; the gale has reached 18, but 15 and 20 on the land, although far nearer to the centre, record only force 7. The isobars are out of shape and excentric, although every effort was made to draw them as regular as possible, a fair allowance being made for the aneroids, where it seemed necessary and possible (12 records 29.44). Chart VI suggested partly, what has been mentioned under « Backing » that a low pressure area of large dimensions may have at times besides the principal lowest area around the centre other places with very low

pressure, separated from the principal one by a somewhat higher pressure, being also perhaps a ridge (12 to 5), which has been already shown to exist in some cases on the border of the taifun. I give here the figures:

Logs 20 and 15 record	29.42 and 29.41
13 » 14 »	29.20 » 29.24
12 » 5 »	29.44 » 29.51

A comparison of aneroid 13 with 12 on September 16 when the 2 vessels were close together shows them to agree pretty well on that day (29.84 and 29.85) so that of the *rise* from 13 and 11 towards 12 Sept. 19 noon there can be hardly any doubt, although the amount may not be exact. Possibly the same ridge, mentioned in V has moved to the SE. as in VI; the absolute hight of it having become much lower (about 0.4″).

A section from the NNW. to the centre whould look then thus,



I. September 19, midnight. The low pressure area has become a long oval stretching from W. by N. to E. by S. The *Flying Spur*, *Kiushū Maru*, *Black Adder* and *Tokio Maru*, being on or near the ends of the oval, experience all far stronger winds than the *Genkai Maru*, and *Cannon Harrison*, which are on the flat sides of the oval, although the latter vessels are nearer the centre. The *Stag Hound* and *City of Boston* to the S ward of the centre have SW wind, the *Balthasar* and *Berwickshire* to the SSE ward have S wind. At and near Tokio the wind blows right towards the centre. The lowest barometer near this phase of the taifun is mentioned by the *Gleneagles* (21d) as 28.55, September 20,3 am., but the position of the vessel is wanting. The *Genkai Maru* is in the most dangerous position, having SE. by E. 8 only, within less than 100 miles from the centre, which bore S. by W ½ W. from the ship instead of SW. by S. as might have been expected by the 8 points rule, and gets the full violence of the gale on

VII. September 20, at noon. The unfortunate *Bianca Pertica* (21h) already disabled, cannot have been much further than 40 miles from the centre during the fore noon; at noon they made a last effort with the sinking ship to reach Quelpart, but in vain. The *Barbara Taylor* was ran ashore on Quelpart, the same afternoon, to save the lives of the crew. A curve from the centre between 21h and 5, through 7 and 4, and between 1 and 8 gives a good illustration of the increase of the angle for bearing of centre with the distance for S wind. The barometer at Tokio, which has been 30.0 and more, begins to fall.

VIII and IX. September 21, noon and September 22, 4 a.m. With the 8 points rule there would have been an end to the construction of the track an the 20th noon, but table A enables us to fix at least approximately the positions of the centre for nearly 2 more days, although with one exception, a newspaper report, all stations are to the S ward of the centre. In VIII the winds as far S. as the Liu-Kiu Islands (1, 4, 8) agree pretty well with table A, while VIII and IX show plainly, that with a large low pressure area the mountain ranges of Japan, about 4,000 feet high, are not able to stop or alter materially the circulation of the air round and towards the centre. It seems therefore improbable, that at a distance of 100 miles and more small islands like the Liu-Kiu group should « deflect » the wind as has been often assumed; what has been mentioned before under « backing » in midocean and diagr. XIII seem to afford a more natural explanation.

BAROMETER.

The following table gives for an advance of centre of 50 miles the average fall, observed by ships at sea. It will be hardly necessary, to mention that the values can only be approximate.

MEAN DISTANCE FROM CENTRE.	FALL OF BAROMETER FOR AN APPROACH OF 50 M.	IN ROUND NUMBERS.
375	0.08	0.07
325	0.07	0.08
275	0.11	0.09
225	0.08	0.10
175	0.12	0.12
125	0.14	0.14
75	0.55	0.55

The last column divided by 5, gives about the corresponding fall per hour.

The ships 7,11 and 12 record the lowest barometer, after the centre has well passed; particularly so 7 and 12, the latter log has September 19, 8 p.m. 29,38, September 20, noon, only 29.40.

The *City of Boston* has a strong SW gale with rising barometer; but there is nothing strange in it, if we consider, that higher isobars from the S. or SE ward overtake the ship, (VI and VII) the lowest pressure being to the N ward of that vessel.

SUMMARY OF RESULTS.

Recurving of taifuns has often been reported, where it did not take place.

The rate of progress was an average about 10 m. per hour, but varying from 2.3 to 25 m. p. h.

The greatest distance from the centre, at which the wind reached force 9 or more, was 500 miles.

In the western half of the taifun a borderline well marked in some places by a higher barometer, separated within a very short space gales from moderate winds.

Whether this high barometer ridge is noticed or not on board of ship, depends on the relative motion of ship and isobar.

The centre bore 10 points from the wind within a distance of 400 miles from the centre and therefore a vessel if running, should never run right before the wind but always keep the wind well on the starboard quarter (in the northern hemisphere.)

The bearing of the centre varied with the distance from the centre, thus: With NE, NW. and SW wind the angle increased with the distance, while with SE. the reverse was the case.

With NE wind, 900 miles from the centre, the latter bore right a head.

With SE ly wind and general signs of an approaching taifun the centre may bear S.

While with NW wind the veering of the wind was regular and allowed a fair estimate to be made of the track, the same was not so the case with NE and SE winds in front of the centre, except after a very decided change of wind.

SE wind in front of the centre with a low grade of force was the most treacherous of all winds.

Of 2 ships, which tried to run across the track before the centre one foundered, the other succeeded, but with 11 feet of water in the hold!

PART II.

THE FORERUNNERS OF THE GREAT TAIFUN.

Whilst collecting data for the great taifun, it was not the intention to investigate the 1st and 2nd taifun in September also. The limited time at disposal seemed not to allow a full investigation of all 3 taifuns within a reasonable time. However through the kindness of Capitains Smith, and Reeves P. & O. S.S *Malacca* and *Sunda*, two very complete logs were received (see Appendix II), for which I beg to return to those gentlemen my best thanks. Combined with the notes of the *Kiushū Maru*, the complete observations from Nagasaki and Tokio and a few newspaper reports, they furnished sufficient data to lay the tracks of both taifuns down approximately.

The first September Taifun (X) August 31st to September 6th 1878.

This taifun is first mentioned in a newspapar report of the *Black Adder* (see App. II 5.), which vessel experienced on August 31 a heavy SSW gale; unfortunately the position is not given, but considering, that she crossed the equator on August 15 and was September 16 in about 30° N. 123° E, there can be no doubt, that she encountered the same taifun, which was met with by the S.S. *Malacca* on September 1st in about 28° N. From the log of the latter vessel it would appear, that September 2 from 2 a.m. the central space of about 70 m. diameter passed over the ship with the barometer at 28.94. The violent gale with furious squalls at 1 a. m. moderated suddenly at 2 a.m.; the wind fell light with vivid lightning at 4 a.m, and at 6 a. m. the wind freshened suddenly to a strong gale with violent squalls and torrents of rain. The rapid

change of wind afterwards, NNE. at 7 a.m; NW. by W. at 8 a.m. and W. by N. at 10 a. m. confirms this view. At Nagasaki the wind blew strongest September 2 at 9. p. m. (bar. 29.47), in Kobe September 3 5.40 p. m. (29.64); the Tokio observations, September 4 and 5, with wind from NE, NNE, N. and NNW. show, that the low pressure area was proceeding to the E ward and finally curving to the N. (X). It has been remarked in Part I, that a very low pressure continued yet in some cases long after the proper or windcentre, if we may use this word, had passed the observer; in this taifun we notice the same at Tokio, where the lowest reading was registered on September 6, 3.30 p. m., when the wind had changed already from NNW. to SSE. At Tokio however, only moderate wind was observed.

The positions of the centre on September 2, 2 a.m. and September 3 at 5.40 p. m., of which the latter can be only approximate, give a rate of progress of about 10.5 miles p. h., nearly the same as the mean rate of the great taifun. Near the Liu-Kiu islands the track runs about NNE. and follows almost throughout, as far as the observations go, the warm current known as Kuro-Shio or Japan Current. A glance at XII shows, that the track of this taifun up to the S. coast of Kiushū is almost identical with the track, deduced by table A from the observations of the *Novara* in 1858.

The second September Taifun (XI) September 12.

The track amongst the islands S. of Kiushū shows the same direction, viz to NNE. as the first taifun in the same vicinity. The S. S. *Sunda* stood to the W. and N ward, went course again on the 12th a. m, but had to keep once more to the W. till noon, and passed safely behind the centre. Not so the unfortunate *Lookout;* this vessel ran with a fair wind till September 11 midnight, when she was hove to nearly right in the track. She lost her spars and masts, the centre passing probably only 30 to 40 miles to the E ward of the ship and was thrown on Kutsunoshima, where she became a total wreck. Happily the greater part of the crew was saved. At Kagoshima the storm was at its height at 9h p. m, when in Nagasaki also the greatest force of wind was registered. From the observations at Kagoshima it is impossible to tell with certainty, whether the centre passed over the place, or on which side of it. Tokio was not affected by this taifun.

The rate of progress from 2 a. m. to 9 p. m. was about 7.5 miles p. h. The remark N° 1, to September 16 in the *Overdale's* log (Appendix I 16) is of interest here. This vessel ran up from September 12 to September 16 before a strong SE gale, with blinding rainshowers; the lowest barometer was observed September 13, 2 a. m. in 22°.30′ N. 146°30′E. It would be interesting to know, whether this low pressure area observed also by the *George Thompson* with SSW. in the same neighbourhood was connected with the one South of Kiushū or was the commencement of the great taifun, what appears to be more likely. If the latter supposition is right, the centre of the great taifun was, September 13, midnight in about 22° N. 145° E. and travelled therefore W. by S till September 15, noon.

In all 3 September Taifuns there seems to be a remarkable following order in so far, as each succeding taifun reached further N. The first kept altogether to the S ward of Japan, the second travelled very likely NNE. from Kagoshima, the third, in the middle and latter part of the track almost parallel to the first, went right round Japan. The first and second taifuns were also felt at Zi-ka-wei on September 2 and 9 as barometrical depressions and are mentioned in the *Bulletin mensuel* etc.

In conclusion, I beg to tender once more my thanks to all contributors to this paper and to express the hope, that in a few years much more may be known about the taifuns of the China and Japan Seas.

All the logs in the appendix are given in full, to offer the reader an opportunity, to test himself the conclusions, I have come to and because a perusal of some of them with the help of the charts will be found very instructive and interesting at the same time.

E. KNIPPING.

Tokio, May 1879.

APPENDIX TO PART I.

REMARKS RELATING TO THE LOGS AND OBSERVATIONS.

The force of wind, 0-12, is contained in the original under N° 5, 6, 7, 8, 11, 14, 15, 16,;
added after the wording under N° 1. 2. 3. 4. 9. 10. 12. 13;
reduced from the number of miles N° 17. 19. 20.

BAROMETER:

N° 5. 11. 16. 17. 19. contain Mercurial Barom. Observations, alle reduced to 32° F. and sealevel.
N° 20 Merc. Barom., but no remark whether reduced to sealevel or not.
N° 3. 4. 8. 9. 10. 12. 13. 14. 18. Aneroid.
N° 1. 2. 6. 7. 15. 21., no mention of instrument., N° 15 very likely Mercur. Barom. and therefore reduced as N° 5 etc. Correction to sealevel adopted as + 0.02″.
To N° 1 the correction for the whole voyage was stated as — 0.18″.
N° 2, 6 and 7, if mercur. bar. would have to be reduced by about — 0.″12 for temperature and sealevel.
N° 14 Aneroid may have a correction of about + 0.11″ (see N° 17).

POSITIONS
of N° 8 have been corrected in chart,
of N° 14 have been fixed from bearings partly.
N° 18 has been compiled from a report in the *Japan Gazette*.

LIST OF CONTRIBUTORS, SHIPS AND STATIONS.

1.—British Barque	*Berwickshire*,.....	Capitain W. NOTT.	
2.—American Ship	*City of Boston*,.....	»	J. K. CROSBY.
3.— » »	*Resolute*, ...	»	E. D. P. NICKELS.
4.—Japanese M. B. M. S. S	*Kiushū Maru*,.....	»	W. THOMPSON { Communicated by. J. Mc Kechnie, Chief Officer.
5.— » M. S. S.....	*Genkai Maru*, ...	»	G. W. CONNER.
6.—British Ship.....	*George Thompson*,.....	»	C. S. MILL.
7.— » Barque.....	*Flying Spur*,.....	»	G. CROOT.
8.—German S. M. Schooner	*Balthasar*,.....	»	E. C. FULDA.
9.—	*Gold Hunter*, ...	Communicated by Captain R. SWAIN.	
10.—	*Golden State*,.....	»	» » » »
11.—Barque	*Stag Hound*,.....	»	» » » »
12.— »	*Cannon Harrison*,.....	»	» » » »
13.—British Barque	*Black Adder*,.....	»	» » » »
14.—Japanese M. S. S	*Tokio Maru*,.....	Capitain R. SWAIN.	
15.—U. S. S.....	*Monongahela*, (2nd rate)	»	W. E. FITZHUGH U. S. N.
16.—British Barque	*Overdale*,.....	»	J. P. HOLDICH, R. N. R.
17.—*Nagasaki*. J. J. Meteorological Observatory....		Communicated by H. MASATO ESQ.	
18.—	S. S. *Appin*, Extract from the *Japan Gazette*.		

19.—*Tokio*... I. J. Meteor. Observatory. Comm. by I. ARAI Esq. Surveyor-in-Chief.

20.—*Zi-ka-wei*, French Observatory. Comm. by M. Dechevrens, S. I. Director.

21.—A-0, Notes from the *Japan Herald* and *Japan Gazette*.

1.—BRITISH BARQUE "BERWICKSHIRE", CAPTAIN W. NOTT.

LONDON-YOKOHAMA.

Civil Time.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND		BAROM.	
September.. 14	noon.	19°19′	120°26′	N	6	29.85″	1,
» 15	4 a. m.	20 9	121 00	»	7	29.75	2,
» »	noon.	20 15	121 26	»	7	29.70	3,
» »	midn.	20 30	122 30	NW	10	29.60	4,
» 16	noon.	20 41	123 36*	»	10	29.60	5,
» »	midn.	21 06	125 06		10	29.50	6,
» 17	noon.	21 30	126 01	WSW	11	29.30	7,
» »	midn.	22 20	127 26	SW	11	29.15	8,
» 18	noon.	23 10	128 47	SSW	10	29.20	9,
» »	midn.	23 52	129 22	S	10	29.30	10,
» 19	noon.	24 33	129 56*	S	9	29.60	11,
» »	midn.	25 28	130 46	»	9	29.66	12,
» 20	noon.	26 30	121 33*	»	8	29.78	13,
» 21	noon.	28 00	132 10*	SSW	3	29.90	14,

1,—Gradually increasing wind with rain in squalls, up to midnight under topsails and courses.

2,—Strong wind with heavy rain, reefed the topsails.

3,—Strong wind with rain in squalls, wind inclined to the Westward.

4,—Strong gale with heavy squalls and high sea.

5,— Do. wind and weather.

6,—Wind very unsteady in the squalls from NW. to W.

7,—Heavy gale with a high cross sea, ship running under lower topsails and foresail; showers at intervals.

8,—Heavy gale with a very high cross sea, ship scudding under lower main topsail.

9,—Gale moderating a little, still high cross sea, cloudy weather, better appearance.

10,—Strong gale with high cross sea, ship still under lower main topsail.

11,—Fresh gale, but still high turbulent sea, ship under whole topsail.

12,— Do. wind and sea, cloudy weather.

13,—Moderate wind from W. still a cross sea, but very much less than the last two days.

14,—Light breeze and fine w., still a cross sea as yesterday.

Correction of Barom. (not employed in the abstract): —0.18″

* Observation.

2.—AMERICAN SHIP "CITY OF BOSTON", CAPTAIN G. K. CROSBY
NEW-YORK YOKOHAMA.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND.	BAROMETER	TEMPERATURE.	
	a. m.			NW 2	29°".61	Mean	
September.. 16	noon.	20°53′	119°40′		29.58	84°F.	1,
	p. m.			NE 6	29.59		
	a. m.			NNW 6	29.51		
» 17	noon.	21 14	120 12		29.48	85	2,
	p. m.			SSW 2	29.40		
	a. m.			NNW 6	29.28		
» 18	noon.	21 40	122 05		29.25	85	3,
	p. m.			WSW 4	29.20		
	a. m.			W 4	29.23		
» 19	noon.	21 54	124 03	9	29.30	86	4,
	p. m.			SW 9	29.45		strong gale.
	a. m.			SW 10	29.49		
» 20	noon.	23 16	126 04		29.54	86	5,
	p. m.				29.58		strong gale.
	a. m.			SSW 2	29.60		
» 21	noon.	24 23	126 45		29.63	87	6,
	p. m.			W 1	29.65		
	a. m.			0	29.63		
» 22	noon.	24 52	126 30		29.68	84	
	p. m.			NE	29.74		

1,—First part, light breeze, hazy, heavy cross sea. Middle and latter part fresh breeze and baffling, squally with rain.

2,—First part fresh breeze, squally with rain, middle part light breeze and fine, latter part calm ; cross sea.

3,—Fresh breeze, passing clouds; bad cross sea; latter part moderate breeze, wind WSW; lowest reading of Barom. 29.16″

4,—Beginning moderate breeze, cloudy and hazy. 8. p. m., (8 a. m.?) breeze up suddenly from the W., heavy black clouds passing quickly. Middle and latter part blowing heavy, heavy sea from the W. Steered E. 50 miles on the night of the 19th, civil time.

5,—Beginning strong gale, wind veering to Southward, altered course to NE, passing clouds and very heavy sea, to the N ward some lightning and rain.

6,—First and middle part light breeze, passing stouds; latter part very light winds and clear, very hot.

3.—AMERICAN SHIP "RESOLUTE" CAPTAIN E. D. P. NICKELS,
NEW-YORK YOKOHAMA.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND.	ANEROID.		
September. 15	5 p. m.	22°10′	121°50′	NNE 6	29.95	1,	
» 16	8 a. m.	22 40	122 00	NNE 6	29.90	2,	do. as 1,
» »	noon.	22 48	121 40	do. 6	»	3,	do. as 1,
» »	6-8 p. m.	22 55	122 00	N 10	29.80-29.60	4,	Aneroid falling.
» 17	1 a. m.	22 55	122 12	N 11	29 45	5,	» steady.
» »	6 a. m.	22 50	122 18	N —	29.55	6,	» rising gradually.
» »	11 a. m.	»	»	9	29.70	7,	
» »	3 p. m.	»	122 25	11	29.50	8,	Aneroid falling.
» »	6 p. m.	»	»	12	29.45-29.35	9,	
» 18	1-4 a. m.	»	»		29.35	10,	An. steady, then rising gradually.
» »	6 a. m.			calm.	29.48		
» »	8 a. m.			2	29.55	11,	

1,—Strong winds, heavy head sea; courses, topsails and main top gallantsail set; weather hazy.

4,—Wind increased suddenly to very strong gale, put ship under lower topsails and stormsails; sky threatening and greenish appearance at sunset.

5,—Gale increasing, heavy cross sea, ship labouring heavily, shipping quantities of water.

6,—Wind died out suddenly; sea high and confused; set all available sail.

7,—Wind increased suddenly to a gale.

8,—Blowing a violent gale.

9,—Wind still increasing, sky threatening and very greenish appearance, blowing with hurrican force; wore ship, stood towards land.

10,—Wind died gradually away, leaving a terrible, high cross sea.

11,—Wind breezing lightly from the S ward and veering to SW; weather fine with heavy sea from N ward.

Throughout the 18th, latter part, and 19th wind and weather continued the same, experienced on the 18th 19th a very heavy sea from N ward, the wind gradually veered to the NW.

4.—JAPANESE M.B.S.S. "KIUSHU MARU" CAPTAIN W. THOMPSON,

COMMUNICATED BY J. McKECHNIE, CHIEF OFFICER.

KAGOSHIMA-NASSE (LIU-KIU).

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND.		ANEROID.	TEMPERATURE	
Sept .. 16	noon.	28°30′	129°34′	SE	7	29.78 to 29.76 29.79	78,80,76° F.	1,
,, 17	noon.	(28°26′	129°33′E.K.)	S.	8	29.73	76 to	2,
,, ,,	midnight.				9	29.70	75	3,
,, 18				SE	9	29.70-29.68	78 to 80°	4,
,, 19	6 a. m.			SE	10	29.62	78	5,
,, ,,	noon.					29.54	to	
,, ,,	7 p. m.				12	29.54	80	
,, ,,	midnight.					29.62		
,, 20				S	6	29.65 to 29.82	80 to 76°	6,
,, 21		28 14	129 02	WSW		29.86 to 29.91	78.80.79.77	7,
,, 22	noon.	26 13	127 40	WNW NW	2	29.92 to 29.96	76 to 78°	8,
,, 23 & 24					1			9,

1,—Strong wind with razoredged sea and hazy weather; midnight squally with heavy rain.

2,—Strong southerly squalls with much rain. At anchor in Nasse, Oshima.

3,—Gale increasing.

4,—Strong SE squalls with heavy torrents of rain; midnight sudden calms and then terrific squalls. In Nasse bay.

5,—Weather dark as night, taifun from SE; 7 p. m. heaviest of gale.

6,—Fresh southerly wind and cloudy weather; midnight moderate S ly wind and cloudy. In Nasse bay.

7,—WSW wind and heavy confused sea, weather moderating all the time.

8,—Light WNW and NW wind with fine clear weather.

9,—Light airs and calms with gradually rising barometer.

5.—JAPANESE M. B. M. S. S. "GENKAI MARU", CAPTAIN G. W. CONNER.

SHANGHAI TO NAGASAKI.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	BAROM.	TEMPER.		
Sept.. 18	noon.	31°12′	122°45′	NE	2	29.°84″	76	c. u.	
» »	4 p. m.			NE	4	29.72	78		
» »	8 p. m.			ENE	5	29.65	76	r. q	
» »	midn.			E	5	29.60	76	r. q	
» 19	4 a. m.			E	6	29.57	78	r. r. r.	
» »	8 a. m.			E	8	29.53	80	r. r. r.	
» »	noon.	31 47	125 48	E	8	29.51	82	r. r. r.	
» »	4 p. m.			SE	8	29.44		r. r. r.	
» »	8 p. m.			ESE	8	29.38			1,
» »	midn.			SE by E	8	29.34			2, as 1,
» 20	4 a. m.			SE	9	29.32			
» »	8 a. m.			SSE	10	29 30			
» »	noon.	32 30	127 30	S	12	29.25			3,
» »	4 p. m.			SSW					
» »	8 p. m.			SSW	9	29.35			moderating.
» »	midn.								Moderating fast.
» 21	3.45 a.m.								Kept away on our course.

All positions by dead reckoning.

1,—Sea running in the wildest confusion.

2,—Wind blowing with most terrific violence.

6.—BRITISH SHIP "GEORGE THOMPSON" CAPTAIN C. S. MILL.

NEWCASTLE, N. S. W. TO YOKOHAMA.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	BAROM.	TEMPER.	
Sept.. 12	noon.	20°00′	147°50′	SSW	6	29.60	84°F.	1,
,, ,,	midn.					29.55		
,, 13	noon.	21 45	145 22	S to SW	q	29.60	82	2,
,, 14	noon.	23 45	143 30	SE to SW	q	29.70	82	3,
,, 15	noon.	25 48	141 8	SSE	7	29.80	82	4,
,, ,,	midn.					29.85		
,, 16	noon.	28 00	138 30	SSE	6	29.85	82	5,
,, 17	noon.	31 24	138 20	SSE	5	30.00	82	6,
,, 18	noon.	33 56	138 45	ESE	4	30.05	82	7,
,, 19	noon.			NE	5	30.00	80	8,
,, ,,	10 p. m.			ENE	4	29.90		9,
,, 20	noon.			variable.		29.75	80	10,

1,—Dark threatening weather with hard squalls and heavy rain, wind shifting suddenly from SE. to SW., making a high confused sea; reduced sail to lower topsails and foresail.

2,—Strong gusts of wind commencing at S. and veering round to SW. with a confused sea and a dark, leaden looking sky with heavy lightning to the Southward, ship still under lower topsails; at noon hauled ship to the wind, I judging, that there was a taifun raging to the Westward of my position.

3,—Still continued the same as yesterday, now barometer rising, the squalls very heavy at times, with a continuous heavy rain and confused sea.

4,—Strong wind with hard squalls and heavy rain; 2 a. m. split uppermaintopsail; noon, weather clearing up a little, set upper topsails, a high cross sea coming up from SSW.

5,—A. M. Strong wind with dull cloudy weather; noon more moderate; set all sail, passing showers of rain.

6,—Moderate winds and clear weather with a very heavy swell coming up from SSW., found current setting to the Westward at the rate of 1 mile per hour.

7,—Moderate breeze and fine; as nearing the land found swell increasing, rolling up very high from SSW.; weather now cleared up, found current setting to the Eastward. 3 p, m. sighted Fujiyama, first land seen since leaving Newcastle (N.S.W.) an Aug. 18th. P. M. Light winds and calm.

8,—Fresh breeze and clear weather, swell still coming up from SSW. but decreasing. Barometer again falling, sky again looking heavy. 10 p. m. thick rain with little wind. Noon off Rock Island. (Position of ship about 34°32′ N. 139°7′ E.—*E. K.*)

9,—10 p. m. off Mela Ledge (Position of ship about 34°50′N. 139°45′E.—*E. K.*)

10,—Wind light with passing showers of rain. 4 p. m. came to an anchor in Yokohama bay. 6 p. m. strong wind with heavy rain. (Yokohama bay in 35°26′ N. 139°40′E.—*E. K.*)

7.—BRITISH BARQUE "FLYING SPUR," CAPTAIN G. CROOT.

NAGASAKI—YOKOHAMA.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	BAROM.	REMARKS.
Sept. 17	5 a.m.			NE	3	29.75″	Thick, misty, rain.
,, ,,	noon.	32°17′	129°27′	ENE	3-4	29.78	Torrents of rain.
,, ,,	8 p.m.	32	129 30	SE-NE	4-5	29.76	Unsteady wind and rain.
,, ,,	10 p.m.						Commenced to shorten sail, squally.
,, ,,	midn.				5-6	29.70	Rainsqualls, dirty appearance.
,, 18	2 a.m.				6-7		Strong gale, ship under topsails.
,, ,,	3 a.m.				7-8	29.70	Fine rain squalls. 1,
,, ,,	8 a.m.			E by S	7-8		Same weather, high confused sea.
,, ,,	noon.	31 9	128 52	E	7-8	29.64	,, ,, ,, ,, ,,
,, ,,	6 p.m.			ESE	7-8	29.50	Thick driving rain, dense clouds all around.
,, ,,	8 p.m.				8-9	29.46	Weather getting worse.
,, ,,	midn.					29.48	Fierce gale and driving rain.
,, 19	4 a.m.				9-10	29.46	Gale increasing.
,, ,,	noon.				10-12	29.30	Terrific gusts. 2,
,, ,,	3 p.m.				10-12	29.29	
,, ,,	6 p.m.					29.22	Awful weather, torrents of rain.
,, ,,	midn.			SE	10-12	29.22	,, ,, ,, ,,
,, 20	4 a.m.					29.19	Fierce squalls of rain. 3,
,, ,,	7 a m.					29.18	
,, ,,	9 a.m.					29.26	Sun visible, very high cross sea.
,, ,,	noon.	31 2	127 43	S	9-10	29.25	Weather improving.
,, ,,	2 p.m.			SSW			Hard gale and fierce rainsqualls. 4.
,, ,,	6 p.m.			SW		29.25	Wore ship to S E.
,, ,,	midn.			WSW	8-9		Weather more moderate. 5,
,, 21	4 a.m.					29.20	
,, ,,	6 a.m.					29.28	Weather improving.
,, ,,	9 a.m.						Strong gale and clear. 6,
,, ,,	noon.	30 52	128 30	W ly	6-8	29.32	Brisk gale and clear. 7,
,, ,,	9 p.m.			,,	5-6	29.40	Moderate wind and fine.
,, 22	2 a.m.			,,			Passed C. Chichakoff.
,, ,,	noon.					29.47	
,, 23	noon.	32 22	135 3′	WSW		29.60	Fine weather.

1,—Put the ship under stormsails.
2,—Very high cross sea, furled lower fore topsail.
3,—Stars seen at times.
4,—Barometer unsteady.
5,—Set stormstaysails to steady ship.
6,—Occasional squall of rain. Set lower foretopsail.
7,—Kept ship away for Van Diemens Strait and made sail to gradually improving weather.

8.—DEUTSHER DREIMASTSCHUNER "BALTHASAR" CAPTAIN E. C. FULDA.

ANTWERPEN-YOKOHAMA.

DATUM. 1878.	STUNDE.	BREITE.	LAENGE.	WIND.	STAER.	ANEROID.	LUFT.	BEMERKUNGEN.
Sept. 16	Mittag.	20°20′	122°37′	N	5	29.89	86°	See von N.
,,	4 p. m.	20 21	122 47	NNW	7	29.84	83.7′	1,
,,	8 p. m.			NNW	7	29.84	86	2,
,,	Mittern.	20 35	123 12	NW	8	29.77	86	Wind mehr W lich 3,
Sept. 17	4 a. m.			NW z. W	9	29.73	85	Heftiger enhaltender Regen 4,
,,	8 a. m.			WNW	9	29.71	83.7	
,,	Mittag.	21 9	123 54	WNW	9	29.62	84.2	Sehr hohe See von NW.
,,	4 p. m.			WNW	9	29.53	82.5	5,
,,	8 p. m.	21 36	124 30	NW z W	10	29.50	83.7	
,,	Mittern.			WNW	10	29.44	83.7	Regenböen 6,
Sept. 18	4 a. m.			WNW	10	29.42	83.7	7,
,,	8 a. m.			WSW	10	29.44	83.7	Regenböen.
,,	Mittag.	22 19	125 21	,,	10	29.42	83.7	Regen 8,
,,	4 p. m.			SW	9	29.42	83.7	9,
,,	8 p. m.	22 56	126 5	,,	9	29.53	83.7	
,,	Mittern.			,,	8	29.55	83.7	
Sept. 19	4 a. m.	23 32	126 45	,,	8	29.58	83.7	Heftige Regenböen. 10,
,,	8 a. m.			S	8	29.66	85.2	Setzten volles Marssegel.
,,	Mittag.	23 30*	127 54	,,	8	29.68	85.0	Bewölkter Himmel 11,
,,	4 p. m.			,,	8	29.68	85.0	12,
,,	8 p. m.	25? 6	129 3	,,	8	29.77	83.7	Sternenklar, nur Kimm etw. diesig.
,,	Mittern.			,,	7	29.80	83.7	,, ,,
Sept. 20	4 a. m.	24 48	128 50	,,	7	29.80	83.7	13,
,,	8 a. m.			,,	7	29.90	86.5	
,,	Mittag.	25 35*	129 20	,,	6	29.93	88.2	Schönes sonnenhelles Wetter.
,,	4 p. m.			SW	5	29.89	88.2	See sehr durcheinander laufend.
,,	8 p. m.	26 2	129 40	SSW	5	29.93	85.2	
,,	Mittern.			,,	5	29.93	83.7	Sternenklar, diesige Kimm.
Sept. 21	4 a. m.	26 30	130 2	SW	5	29.89	83.7	
,,	8 a. m.			SW	5	29.95	83.7	Bewölkte Luft.
,,	Mittag.	26 56*	130 39	SSW	5	29.95	87.0	
,,	4 p. m.				0	29.93	88.7	Klare Luft.
,,	8 p. m.	27 35	131 0		0	29.97	86	Sternenklar.

1,—Wind umlaufend und verändert in Stärke; schmieriger Himmel; kleine Segel fest.
2,—Hohe N liche See später sehr durcheinander laufend. Viel Wasser auf Deck.
3,—Ein Reff in das Marssegel.
4,—Marsseg. dicht gerefft; Klüver und Besahn fest.

* Observation.
? 24°6′

5,—Gegen 6h legten das Schiff über Backbord Halsen an den Wind vor Untermarsseg., Vorstags, und dicht gerefftem Grossegel.

6,—Sehr schmieriger Himmel. Hohe See.

7,—Setzten ganze Fock bei und steuerten wieder Curs.

8,—Setzten gerefftes Obermarssegel.

9,—Wind nahm wieder ab, See dennoch hochgehend.

10,—Wind etwas abnehmend, änderte mehr nach S.

11,—Anhaltende hohe See.

12,—Setzten Bramsegel und andere thunliche Segel.

13,—Immer noch anhaltende hohe See von der westlichen Seite.

9.—"GOLD HUNTER."

COMMUNICATED BY CAPTAIN R. SWAIN.

? SHANGHAI.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	ANEROID.	REMARKS.
Sept. 16	noon.	23°32′	123°50′	N	Fresh 6		
,, 17	»	21 32	125 57	NNW	Heavy gale. 11	29.07	
,, 18	»	21 15	126 28	WNW	,, ,, 11	29.05	
,, 19	»	22 51	126 52	WSW		29.02	Heavy irregular sea.
,, 20	»	25 24	126 20	SW		Rising.	,, ,, ,,

10.—"GOLDEN STATE."

COMMUNICATED BY CAPTAIN R. SWAIN.

? SHANGHAI.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	ANEROID.	REMARKS.
Sept. 16	noon.	22°15′	119° 08′	NNE	Strong 8	29.60″	
,, 17	»	21 31	120 49	»	Fresh. 6	29.58	Fine weather.
,, 18	»	21 20	120(?)25	WNW	Light 2	29.55	,, ,,
,, 19	»	22 47	121 59		0	29.51	Cloudy Swell S E.
,, 20	»	23 41	122 41	SW	Moderate .. 4	29.50	Pleasant.
,, 21	»	24 43	123 41	ENE	Light..... 2	29.53	Fine.

(?) 121°25′

11.—BARQUE "STAG HOUND."

COMMUNICATED BY CAPTAIN R. SWAIN.

TO SHANGHAI.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	BAR. RED. to 32°a. S. L.	AIR.	DRY B.	DAMP.	ANEROID.
Sept. 15	noon.	25°12′	130°01′	NE	8	29.438″	84°			29.82″
,, 16	,,	25 25	129 04	ENE	6	29.435	85			29.86
,, 17	4 a. m.			E	7	29.375	85	85	82	
,, ,,	8 a. m.			E	8	29.398	83	85	81	29.80
,, ,,	noon.	25 46	126 37	E	8	29.361	85	85	81	29.76
,, ,,	4 p. m.			E	8	29.323	83	81	79	29.70

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	BAR. RED. to 28° a. S. L.	AT T.	DRY B.	DAMP.	ANEROID.
Sept. 17	8 p. m.			ENE	8	29.345	83°	81	78	29.70
,, ,,	midn.			NE by E	9	29.303	83	81	79	
,, 18	4 a. m.			NE	10	29.186	83	81	80	
,, ,,	8 a. m.			NE	10	29.105	83	81	80	29.50
,, ,,	noon.	25°40′	125°11′	NNE	10	28.935	84	82	80	
,, ,,	4 p. m.			NNE	11	28.803	84	82	80	
,, ,,	8 p. m.			N	11	28.435	83	83	82	28.42
,, ,,	midn.			NW	11	28.249	83	83	82	1,
,, 19	4 a. m.			W	11	28.037	83	83	82	
,, ,,	8 a. m.			SW	11	28.976	84	81	79	29.28
,, ,,	noon.	25 41	125 13	SW	10	29.235	83	83	81	29.50
,, ,,	4 p. m.			SW	9	29.328	84	84	81	
,, ,,	8 p. m.			SW	8	29.534	84	82	79	
,, ,,	midn.			SW	6	29.637	84	82	80	
,, 20	4 a. m.			SW	5	29.637	83	82	80	29.94
,, ,,	8 a. m.			SW	4	29.704	82	81	79	
,, ,,	noon.	26 15	126 18	SW	3	29.713	83	83	79	
,, ,,	4 p. m.			SW	2	29.765	84	84	81	29.98
,, ,,	8 p. m.				0	29.818	83	82	79	30.04
,, ,,	midn.				0	29.828	83	82	79	

1,—Hurricane at its height.

During the gale had 11 feet of water in the hold; had to be docked, caulked and coppered.

12.—BARQUE "CANNON HARRISON."

COMMUNICATED BY CAPTAIN R. SWAIN.

TO SHANGHAI.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	ANEROID.	TEMP.	REMARKS.
Sept. 16	noon.	29°17′	124°13′	NE by N	Fresh 6	29.84	81	
,, 17	»	29 16	124 34	NNE	» 6	29.82	82	o. r.
,, 18	1 a.m.			N by W	Strong 8			1,
,, ,,	4 a.m.			NE	Gale 9	29.71	81	Heavy q. r.
,, ,,	8 a.m.			»	» 9			2,
,, ,,	noon.	29 10	124 00	»	Hard gale.. 10	29.67	80	o. dirty rainy sky.
,, ,,	4 p.m.			»	» .. 10			
,, ,,	9 p.m.			N	Terrific.... 12			Wind shifted to N.
,, ,,	10 p.m.			NE	» ... 12	29.63		Back again to NE.
,, ,,	midnight.			ENE	Heavy at times. 11	29.60		Heavy SE swell.
,, 19	4 a.m.			ENE	Squally.	29.54	78	Vessel under staysails.
,, ,,	8 a.m.				Increasing . 12	29.50		Terrific squalls of wind.
,, ,,	noon.	29 48	123 44	NE by E		29.44	80	» » »
,, ,,	4 p.m.			N E	Taifun 12			Commencing to change.
,, ,,	8 p.m.			N	» 12	29.38		Wind changing.
,, ,,	midnight.			NNW	Moderating. 10	»		Still hard gale.
,, 20	4 a.m.			W	Gale 9	29.38	80	
,, ,,	8 a.m.			N to W	4	29.39		Moderating fast.
,, ,,	noon.	29 30	124 27			29.40	77	Clearing up.
,, ,,	4 p.m.			WNW		29.48		
,, ,,	8 p.m.					29.55		Gale passed.
,, ,,	midnight.					29.65	83	Sea going down.

1,—Commenced to take in sail.
2,—Heavy irregular SE swell.
Had to be docked, recaulked and coppered; making 5″ water per hour after the gale.

13.—BRITISH BARQUE "BLACK ADDER," CAPTAIN W. A. ALLEN.

SYDNEY N. S. W. TO SHANGHAI.

COMMUNICATED BY CAPTAIN R. SWAIN.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	ANEROID.	TEMP. AIR.	REMARKS.
Sept. 16	noon.	29°50′	123°14′	NNE	Strong 8	29.85	82	Clear weather.
,, 17	noon.	29 45	124 20	NNE	Gale 9	29.70	80	Squally.
,, 18	,,	31 12	123 16	ENE	,, ... 9	29.60	81	,, and rainy.
,, 19	,,	31 36	123 10	ENE	Furious 12	29.20	80	1,
,, ,,	midn.			veer. N.	,, ... 12	29.00	74	
,, 20	2 a. m.			N	Moderating . 8	29.10	80	
,, ,,	noon.	31 00	122 56	N ly	,, ... 4		78	
,, ,,	8 p. m.			,,	Calm..... 0			Fine weather.
,, 21	noon.	29 58	123 30	W and NNW	2	29.30	80	,, ,,
,, ,,	4 p. m.			W and NNW	2	29.53	78	,, ,,

1,—Much rain with terrific squalls, wind weering N.
The gale blew hardest from the 19th midnight up to 4 a.m. on the 20th.

14.—JAPANESE M. B. M. S. S. "TOKIO MARU," CAPTAIN R. SWAIN.

NAGASAKI TO SHANGHAI.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	ANEROID.	AIR.	REMARKS.
Sept. 17	4 p. m.			NE	3	29.70	80°	
,, ,,	8 p. m.			SE	3	29.74	80	Thick and Rain.
,, ,,	midn.			SE	2	29.74	80	Heavy rain.
,, 18	4 a. m.			E	3	29.75	78	Rain.
,, ,,	8 a. m.			SE	3	29.75	78	Drizzling at times.
,, ,,	noon.	32.04	126.04	SE	3	29.78	78	Sun partly obscured.
,, ,,	4 p. m.			SE	2	29.78	80	Heavy rain at times. 1,
,, ,,	8 p. m.			ENE	2	29.77	80	Hazy. Light swell.
,, ,,	midn.			E by N	3	29.75	78	Drizzling rain.
,, 19	4 a. m.			NE	4	29.60	78	Overcast. ESE swell.
,, ,,	6 a. m.			ENE to ESE		29.55		4 to 8 Aner. falling steadily. 2,
,, ,,	8 a. m.	30.59 30.54	122.36 122.23	ENE to ESE	6	29.46	78	3,
,, ,,	10 a. m.			ENE to ESE		29.40		Ship laying at anchor.
,, ,,	11 a. m.			ENE to ESE		29.36		
,, ,,	11.30 a. m.			ENE to ESE		29.31		
,, ,,	noon.	30.54	122.23	ENE to ESE	8	29.24	78	
,, ,,	1 p. m.	30.54	122.23	ESE to ENE		29.20		Ships head kept to the sea.
,, ,,	3 p. m.			NE		29.16		
,, ,,	4 p. m.			N	10	29.11	79	
,, ,,	6 p. m.	30.56	122.47	NNW		29.04		
,, ,,	8 p. m.	30.55	122.56	NNW		29.00	78	

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	ANEROID.	AIR.	REMARKS.
Sept. 19	10 p. m.			N by W		28.90		
,, ,,	11 p. m.			N by W		28.86		
,, ,,	midn.	30.53	123.10	NW by N	12	28.80	78°	4,
,, 20	4 a. m.	30.46	123.19	W by N	11	28.86	77	5,
,, ,,	8 a. m.	30.32	123.20	W by N	9	28.94	77	
,, ,,	noon.			W by N	10	29.02	77	Thick weather.
,, ,,	4 p. m.			W by N	8	29.09	79	Thick, 6,
,, ,,	8 p. m.	30.32	123. 4	W	7	29.17	79	6 p m. Weather moderating.
,, ,,	midn.			NNW	5	29.26	79	Clear. Stars out.
,, 21	4 a. m.	30.48	122.36	WNW	4	29.36	79	7,
,, ,,	8 a. m.			N	4	29.50	79	Fine clear weather.
,, ,,	noon.	30.48	122.36	N	3	29.64	80	Fine and pleasant weather.
,, ,,	4 p. m.			N	2	29.66	79	
,, ,,	8 p. m.			—	0	29.73	79	Laying at anchor 8,
,, ,,	midn.			—	0	29.80	78	9, as 8,.

1,—Moderate SE swell.
2,—Moderate SE swell; at 9 a.m. Aneroid still falling.
3,—At 9h 30m a.m. swell increasing from the E.
4,—Aneroid commenced to rise and gale increased.
5,—Gale at its height during the last 4 hours.
6,—Heavy squalls at times.
7,—Sea going down quickly. 5 a.m. anchored at Side Saddle bay.
8,—Fine calm night and clear.

The *Tokio Maru* left Nagasaki on the 17 September at 0h 15m p.m., at 1h 15m p.m. anchored at the mouth of the harbour; proceeded again to sea at 3 p.m.

On the 19th about 3h 45m p.m. with the wind NNE. and the sea from E. going down a tidal wave coming up from SSE struck the vessel, then in 14½ fathoms of water, and carried everything before it. An ordinary sea would after breaking, loose its strength, but this one came rolling on higher, caught the ship on the starboard beam and did far more damage than the seas, caused by the taifun.

15.—U.S.S. "MONONGAHELA," (2nd rate) W. F. FITZHUGH, CAPTAIN U.S.N. COMMANDING: AT ANCHOR OFF WOOSUNG.

(POSITION ABOUT 31° 17′ N. 121° 43′ E. *E.K.*)

DATE. 1878	HOUR.	WIND DIR.	FORCE.	R. to 32° a. S. L. BAROM.	THERM.	WEATHER.	REMARKS.
Sept. 17	1-4 p. m.	NE by N	4 to 5	29.83-29.79	78	b. c.	1,
,, ,,	5-6 p. m.	N by E	4-5	29.79-29.78	78	,, ,,	
,, ,,	7-midn.	NNE	4 6	29.77-29.73	77-75	o. c. q. r.	
,, 18	1-4 a. m.	NNE	5-7	29.86-29.85	75	b c.	
,, ,,	5-8 a. m.	NE	5-6	29.85-29.86	75-76	,, ,,	
,, ,,	9 a. m.-4 p. m.	NE by N	4-5	29.86-29.79	76-78	,, ,,	
,, ,,	5-6 p. m.	N by E	5-6	29.79-29.78	78	,, ,,	
,, ,,	7-midn.	NNE	5-6	29.77-29.73	77-75	b. c. q. r.	
,, 19	1-7 a. m.	NNE	3-6	29.69-29.49	76-77	o. c. q r.	
,, ,,	8 a. m-4 p. m.	NE	6-8	29.48-29.34	77-78	o. c. q. r.	

DATE. 1878.	HOUR.	WIND DIR.	FORCE.	R. to 32° a. S. L. BAROM.	THERM.	WEATHER.	REMARKS.
Sept. 19	5-10 p. m.	NNE	7-9	29.33-29.30	77-76	o. c. q. r.	
,, ,,	11-midn.	N by E	7-10	29.30	76	,, ,,	
,, 20	1-4 a. m.	N and N by E	5-9	29.29-29.28	75	,, ,,	
,, ,,	5-7 a. m.	NW by N	5-8	29.30-29.33	75	,, ,,	
,, ,,	8-10 a. m.	NW	5-8	29.37-29.41	75	,, ,,	
,, ,,	11 a. m.-4 p. m.	NW by W	6-8	29.41-29.46	75-78	,, ,,	
,, ,,	5-8 p. m.	NW	5-6	29.48-29.54	78-77	b. c.	
,, ,,	9 p. m-midn.	NW by W	5-6	29.55-29.56	76-75	,, ,,	2,

1,—The wind previous to 1 p.m. September 17th had been light to moderate from N. and E.; Bar. ranging between 29.90 and 29.95, Thermom. from 74-78°.

2,—On the 21st the wind was from N. and W., blowing at 1 a.m. with a force of 5, and gradually moderating to 1 to 2 at midnight, the gale apparently going off in a course of NE by N.

16.—BRITISH BARQUE "OVERDALE," CAPTAIN J. P. HOLDICH R. N. R.

N. S. W. TO YOKOHAMA.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	BAROM. to 32°a. S. L.	THERM. Dry	THERM. Wet.	WEATHER.	REMARKS.
Sept. 16				SSE	8				c. p. q. d.	1,
,, ,,	4 a.m.			S	7	29.774″	81°	79°.5		
,, ,,				S	7					
,, ,,	8 a.m.			S	7	29.816	82	79.5	c. q. p. d.	
,, ,,				S	6					
,, ,,	noon.	32°26′	137°57′	S by W	5	29.863	83	80.5	c. p. m.	2,
,, ,,				S by W	5					
,, ,,	4 p.m.			SSW	4	29.856	81	79.5	o. c. q. m.	
,, ,,				S	5					3,
,, ,,	8 p.m.			SE by S	4	29.890	81	80	c. b. m.	
,, ,,				SE by S	5					4,
,, ,,	midn.			,,	5	29.897	82	80	c. b. p. m.	
,, 17				SSE	5					
,, ,,	4 a.m.			S	5	29.923	82	81	c. b. m.	
,, ,,		32 45	138 18	SSW	5					5,
,, ,,	8 a.m.			SW by S	4	29.999	82	80	c. b. m.	
,, ,,				,,	3					
,, ,,	noon.	33 14	138 26	SSW	2	29.979	83	81	b. c. m.	
,, ,,				SE	2					
,, ,,	4 p.m.			NNE	2	29.979	84.5	82	c. b.	
,, ,,				,,	3					
,, ,,	8 p.m.			E	4	30.024	78.5	77.5	b. c. p.	
,, ,,				,,	4					
,, ,,	midn.	34 5		SE	4	30.019	79	78	b. c. w.	
,, 18				SE	4					
,, ,,	4 a.m.			SE by S	3	30.018	78	78	b. c. w.	
,, ,,				ESE	3					6,
,, ,,	8 a.m.			E by S	4	30.049	78.5	77	b. c. m.	
,, ,,				E	3					
,, ,,	noon.	34 21	138 44	E by N	4	30.050	78.5	77	b. c. m.	

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	BAROM. to 32° a. S. L.	THERM. Dry	THERM. Wet.	WEATHER.	REMARKS.
Sept. 18				E by N	4					
,, ,,	4 p.m.			ENE	4	30.031	80	78	b. c. m.	
,, ,,				,,	4					
,, ,,	8 p. m.			,,	3	30.065	77	76	b. c. w.	7,
,, ,,				,,	2					
,, ,,	midn.			E	3	30.051	77	76	b. c.	
,, 19				NNE	3					
,, ,,	4 a.m.			NNE to NE	3	30.027	77.5	76	c. b.	8,
,, ,,				,,	4					
,, ,,	8 a. m.			,,	4	30.047	76	75	c. b. p.	
,, ,,				,,	4					
,, ,,	noon.	34°48′	139 14	,,	4	30.039	78	76	c. b. p.	
,, ,,				,,	3					
,, ,,	4 p. m.			,,	3	30.019	78.5	77	c. b.	
,, ,,				,,	2					
,, ,,	8 p. m.			,,	3	30,014	77	76	o. c.	
,, ,,				,,	2					
,, ,,	midn.			,,	3	30.000	77.5	76	c. b.	9,

1,—I had been running up for 4 days before a strong S. E. gale, with blinding rain showers. The lowest barometer I found at 2 a. m, 13th Sept. in about 22°30′N. 146°30′E. when the weather was very threatening, but from that time the mercury gradually rose to the height first entered in my abstract. Yesterday at 11 1/2 a. m, passed close to St. Peters Rock, dist 1′.

2,—A. M. brought less wind and rain, but a very heavy S ly swell; noon dull unsettled appearance, leaden heavy sky and no signs of a change. Current E. 15′.

3,—At 6. p. m, brought ship to wind on port tack, to await clearer sky.

4,—Stars showing dimly, weather moderating.

5,—Stars brighter and horizon clearer.

6,—Made land about Cape Idzu.

7,—Rock light N by W½ W 12′.

8,—Working ship up the coast.

9,—Mela L. E. by S. Sagami NNE.

17.—I. J. METEOROLOGICAL OBSERVATORY.

NAGASAKI.

Lat. N. 32°44′ 28″, Long. E. 129°51′30″. Height above M. S. L. 189 feet.

COMMUNICATED BY H. MASATO ESQ., IMPERIAL OBSERVATORY, TOKIO.

DATE. 1878	HOUR.	WIND.	FORCE. Mil. p. hour.	SEA SCALE.	BAROM. to 32° S. L	THERM. Dry	THERM. Wet.	CLOUDS. 0-10	UPPER.	LOW.	REMARKS.
Sept. 16	8.50 a.m.	NE	7.50	4	29,736″	82.4	74.0	1	SE	—	Veloc. of wind.
,, ,,	9.30 »	NE	10.39	5	29.736	83.0	74.5	1	SE	NE	In 24h 215.40.
,, ,,	2.50 p.m.	ENE	13.08	6	29.724	82.5	73.7	10	SSW	NNE	Mil. (meas. 10 p.m.)
,, ,,	3.30 »	ENE	15.78	7	29.724	81.3	74.1	9	N	N	Rainfall in 24h.
,, ,,	8.50 »	NE	6.30	4	29.771	76.8	71.4	10	—	—	0,480″ (meas. at
,, ,,	9.30 »	NE	1.59	3	29.768	75.8	71.2	10	—	—	9.30 a.m.)
,, 17	8 50 a.m.	ENE	8.73	5	29.817	74.4	73.5	10	—	E	Max 85 8, Min. 74.8.
,, ,,	9.30 »	E	10.36	6	29.820	76.0	74.0	10	—	E	Vel. of wind.
,, ,,	2.50 p.m.	NE	8.91	5	29.787	72.8	70.9	10	—	ENE	In 24h 162.11 Mil.
,, ,,	3.30 »	NE	9.54	5	29.806	71.6	70.3	10	—	NE	Rainfall in 24h.
,, ,,	8.50 »	NE	3.15	3	29.831	73.3	72.5	10	—	—	2.790″.
,, ,,	9.30 »	NNE	4.70	4	29.832	72.9	72.4	10	—	—	Max. 78 1 Min. 70.6.

DATE. 1878	HOUR.	WIND.	FORCE. Mil. p. hour.	SEA SCALE.	BAROM. to 32° S. L.	THERM. Dry	THERM. Wet.	CLOUDS. 0-10	UPPER.	LOW.	REMARKS.
Sept. 18	8.50 a.m.	E	8.55	5	29.767	83.0	74.4	8	W	—	
,, ,,	9.30 »	E	11.50	6	29.765	83.8	73.4	9	S	—	Vel. of wind.
,, ,,	2.50 p.m.	ESE	10.65	6	29.719	85.5	74.8	9	SE	—	In 24h 156.86 Mil.
,, ,,	3.30 »	ESE	13.33	7	29.724	84.7	73.8	9	—	—	Rainfall in 24h.
,, ,,	8.50 »	NE	7.29	5	29.757	79.9	71.2	0	—	—	0.105″.
,, ,,	9.30 »	ENE	3.92	4	29.753	78.7	70.9	0	—	—	Max. 86.8 Min. 72.9.
,, 19	8.50 a.m.	ENE	9.45	5	29.678	81.8	72.1	8	ESE	—	
,, ,,	9.30 »	ENE	9.71	5	29.673	83.7	73.3	8	SSE	WNW	Vel. of wind.
,, ,,	2.50 p m.	E	10.11	5	29.574	84.1	74.1	10	E	—	In 24h 211.09 M.
,, ,,	3.30 »	ESE	10.71	6	29.574	83.2	74.3	10	ESE	ESE	Rainfall in 24h.
,, ,,	8.50 »	E	8.67	5	29.566	81.5	73.2	4	—	—	0.105″
,, ,,	9.30 »	E	10.15	5	29.560	82.4	73.1	9	—	—	Max. 85.8 Min. 76.5.
,, 20	8.50 a.m.	SE	14.91	7	29.531	78.9	75.5	5	S	E	
,, ,,	9.30 ,,	SE	20.20	8	29.527	80.3	76.3	5	—	SE	Vel. of wind.
,, ,,	2.50 p.m	S	23.70	8	29.463	85.7	76.6	9	NW	SE	in 24h 391.40 Mil.
,, ,,	3.30 ,,	S	23.95	8	29.463	84.5	76.8	7	—	SSE	Rain in 24h.
,, ,,	8.50 ,,	S	29.40	9	29.492	80.4	74.8	2	—	—	0.453″
,, ,,	9.30 ,,	S	27.40	9	29.493	80.1	75.4	7	—	S	Max.86.1 Min 76.9.
,, 21	8.50 a.m.	SSW	26.07	8	29.526	78.9	74.7	10	SSW	SSW	
,, ,,	9.30 ,,	SSW	27.76	9	29.526	78.7	75.1	10	SSW	SSW	Vel. of wind.
,, ,,	2.50 p.m.	SW	13.02	6	29.480	76.0	73.5	9	SSW	SSW	In 24h 423.40 Mil.
,, ,,	3.30 ,,	SW	14.48	7	29.477	77.0	73.1	9	SSW	SSW	Rain in 24h.
,, ,,	8.50 ,,	SW	12.00	6	29.525	72.8	71.4	10	—	—	1.120.
,, ,,	9.30 ,,	SW	10.97	6	29.530	72.2	71.4	10	—	—	Max.80.9 Min. 72.2.
,, 22	8.50 a.m.	WSW	6.24	4	29.629	76.9	74.8	10	—	WSW	
,, ,,	9.30 ,,	WSW	5.05	4	29.633	77.1	74.9	10	—	WSW	Vel. of wind.
,, ,,	2.50 p.m.	NNE	8.55	5	29.658	75.8	73.4	10	—	NNW	In 24h 176.30 Mil.
,, ,,	3.30 ,,	N	9.16	5	29.661	76.1	73.2	10	—	NNW	Rain in 24h.
,, ,,	8.50 ,,	NE	4.44	4	29.775	73.8	71.0	2	—	—	0.014″.
,, ,,	9.30 ,,	NE	4.30	4	29.786	73.6	71.0	1	—	—	Max.80.1 Min. 72.3.

18.—C. M. S. S. APPIN, CAPTAIN ANDERSON.

CHIFU-SHANGHAI.

EXTRACT FROM THE "JAPAN GAZETTE" OCT. 1, 1878. POSITIONS APPROXIMATE.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND DIR.	FORCE.	ANEROID.	REMARKS.
Sept. 18	0.50 a. m.	37° 23′	122° 45′	E	6		Swell from E.
»	8 a. m.					r.q.	Wind flying about.
Sept. 19	8 p. m.				9	q.	
»	9 »			NE		29.50	
»	9.30 p. m.						Hove to on the port tack.
»	11 p. m.						Heavy q. St Elms light.
Sept. 20	1 a. m.	34.0	123	NNE	10		
						29.42	
»	7 a. m.			N	10		Kept away till 9 a. m.
»	9 »	33.40	123	NNE	11		Hove to.
»	11.30 a. m.			N			Kept away.
						29.20	
»	4 p. m.			NNW	10	rising	
»	7.30 p. m.	32.35	123				Hove to on the port tack.
»	8 p. m.				12	29.35	
Sept. 21	noon.						Made Shaweishan.

19.—I. J. METEOROLOGICAL OBSERVATORY

TOKEI, JAPAN.

Lat. 35°39′50″ N. Long. 139°45′ 10″ E. Height above M. S. L. 63 feet.

Sheets N° $\frac{52}{78}$ and $\frac{53}{78}$

COMMUNICATED BY J. ARAI ESQ. SURVEYOR-IN-CHIEF, TOKIO.

DATE. 1878.	HOUR.	WIND.	MILES. p. h.	FORCE. 0-12	BAROM. to 32° a. S. L.	THERM. Dry Wet.	CLOUDS.	UPPER.	LOW.	REMARKS.
Sept. 15	3 30 a.m.	E	7.3	5	29.963″	75.0 74.5	10	—	—	Wind Vel. in 24h 210 miles.
,, ,,	9.30 a.m.	NW	3.0	4	29.965	73.9 73.6	10	—	N	Rain » 5.940″.
,, ,,	3.30 p.m.	ESE	9.7	5	29.847	76.9 76.5	10	—	SE	Max. 77°.8
,, ,,	9 30 p.m.	SSE	26.6	9	29.740	76.4 75.5	10	—	—	Min. 71.1
,, 16	3.30 a.m.	SSW	7.3	5	29.724	75.2 75.1	10	—	—	Wind in 24h 181m.
,, ,,	9.30 a.m.	N	4.0	4	29.822	72.0 71.9	10	—	—	Rain » 0.610.
,, ,,	3.30 p.m.	S	7.8	5	29.849	76.4 75.4	10	—	—	Max. 77°.1
,, ,,	9.30 p.m	SW	7.3	5	29.916	73.3 72.9	10	—	—	Min. 69.1
,, 17	3.30 a.m.	SW	7.2	5	29.897	73.4 72.3	10	—	—	Wind in 24h 115 m.
,, ,,	9.30 »	SW	2.0	3	30.003	74.0 73·7	10	—	—	Rain » 0.390
,, ,,	3.30 p.m.	NE	8.2	5	29.983	75.0 73.9	10	—	—	Max. 76°3
,, ,,	9 30 »	E	7.7	5	30.060	71.3 70.9	10	—	—	Min. 71.1
,, 18	3.30 a.m.	E	3.6	4	30.055	70.7 70.4	10	—	—	Wind in 24h 86 m.
,, ,,	9.30 »	NNE	4.0	4	30.089	71.2 70.7	10	—	—	Rain » 0.005
,, ,,	3.30 p.m.	NNE	4.0	4	30.039	77.9 73.9	9	—	—	Max. 78°7
,, ,,	9.30 »	E	3.5	4	30.064	71.2 70.4	0	—	—	Min. 69.5
,, 19	3.30 a.m.	E	3.5	4	30.040	70.0 69.5	10	—	—	Wind in 24h 67 m.
,, ,,	9.30 »	ENE	3.3	4	30.062	75.2 72.8	10	—	—	Rain » 1.420
,, ,,	3.30 p.m.	E	4.4	4	30.006	80.6 75.9	10	—	—	Max. 82°0
,, ,,	9 30 p.m.	ESE	3.5	4	30.029	74.2 73.1	10	—	—	Min. 69.1
,, 20	3.30 a.m.	NE	4.4	4	29.982	73.0 72.3	10	—	—	Wind in 24h 184 m.
,, ,,	9.30 »	ENE	8.2	5	29.947	76.1 75.7	10	—	SW	Rain » 0.765
,, ,,	3.30 p.m.	ESE	11.7	6	29.793	77.1 76.4	10	—	S	Max. 80°8
,, ,,	9.30 »	SSE	10.2	6	29.743	76.5 76.3	10	—	—	Min. 71 5
,, 21	3 30 a.m.	S	10.7	6	29.674	76.6 76.3	10	—	—	Wind in 24h 320 m.
,, ,,	9 30 »	SSW	14.1	7	29.703	82.9 78.8	2	—	S	Rain » 0.000
,, ,,	3.30 p.m.	SSW	18.1	7	29.638	84.4 79.4	0	—	—	Max. 86°2
,, ,,	9.30 »	S	10.7	6	29.688	77.9 76.8	3	—	—	Min. 75.1
,, 22	3.30 a.m.	S	9.7	5	29.645	76.7 76.0	10	—	—	Wind in 24h 168 m.
,, ,,	9.30 »	S	9.2	5	29.692	81.9 78.6	9	—	S	Rain » 0.000
,, ,,	3.30 p.m.	SSW	8.7	5	29.648	81.1 78.4	9	—	S	Max 85°2
,, ,,	9.30 »	SSW	5.4	4	29.720	77.9 76.1	1	—	—	Min. 75.5

20.—OBSERVATOIRE DE ZI-KA-WEI.

COMMUNICATED BY M. DECHEVRENS S. J., DIRECTOR.

Lat. 31°12'30" N. Long. 75h6m24s E. de Paris. Altitude 7 mètres.

JOURS. 1878	HEURES.	VENT.	VITESSE. Milles.	0–12	BAROM.	TEMPER. F.	PLUIE EN POUCES. Anglais.	HUMIDITÉ.
Sept. 14	10 a.m.	NE	10.1	6	30.02	75.4		
,, 15	»	NNE	10.4	6	29.95	76.5		
,, 16	»	NNE	8.5	5	29.89	76.5		
,, 17	»	NE	11.7	6	29.86	78.1		
,, ,,	10 p.m.	NNE	9.9	5	29.75	71.8		95
,, 18	4 a.m.	NNE	10.2	6	29.67	74.8		94
,, ,,	10 »	NE	11.7	6	29.68	77.2	0.158	88
,, ,,	4 p.m.	NNE	18.1	8	29.61	76.1		86
,, ,,	10 »	NNE	12.2	6	29.57	73.8		96
,, 19	Minuit.	NNE	8.1	5	29.56	72.7	—	
,, ,,	2	NNE	7.4	5	29.52	—	—	
,, ,,	4	N	5.1	4	29.48	73.8	0.591	99
,, ,,	6	NNE	11.3	6	29.47	—		
,, ,,	8	NNE	14.3	7	29.46	75.2	—	
,, ,,	10	NNE	21.6	8	29.46	75.9	0.768	96
,, ,,	Midi.	NE	16.3	7	29.42	—	—	
,, ,,	2	NNE	19.6	8	29.36	76.7	—	
,, ,,	4	NNE	22.6	8	29.33	76.3	0.382	90
,, ,,	6	NNE	30.6	9	29.31	—	—	
,, ,,	8	N	28.3	9	29.34	73.6	—	
,, ,,	10	N	24.8	8	29.32	73.9	0.449	93
,, 20	Minuit.	N	22.6	8	29.33	—	—	
,, ,,	2	N	25.5	8	29.30	73.8	—	
,, ,,	4	NNW	25.4	8	29.30	73.4	0.472	99
,, ,,	6	NNW	23.6	8	29.34	—	—	
,, ,,	8	NW	25.4	8	29.39	72.7	—	
,, ,,	10	NW	24.9	8	29.43	74.1	0.169	95
,, ,,	Midi.	NW	26.0	8	29.45	—	—	
,, ,,	2	NW	23.7	8	29.45	76.5	—	
,, ,,	4	NW	15.4	7	29.47	74.7	0.083	94
,, ,,	6	NW	13.8	7	29.52	—	—	
,, ,,	8	NW	13.0	6	29.57	73.8	—	
,, ,,	10	WNW	12.8	6	29.59	72.0	0.154	93
,, 21	Minuit.	WNW	12.4	6	29.60	--	—	
,, ,,	2	WNW	14.9	7	29.60	70.9	—	
,, ,,	4	NW	12.4	6	29.62	70.3	—	96
,, ,,	6	WNW	10.5	6	29.63	—	—	
,, ,,	8	WNW	16.1	7	29.70	72.0	—	
,, ,,	10	NW	15.8	7	29.72	78.8	—	75
,, ,,	4 p m.	NW	11.8	6	29.67	82.2		67
,, ,,	10 »	NNW	3.5	4	29.73	70.2		93
,, 22	4 a.m.	WNW	4.3	4	29.73	63.5		100
,, ,,	10 »	NNW	5.6	4	29.79	79.7		65
,, ,,	4 p.m.	N	6.7	5	29.75	82.4		57
,, ,,	10 »	ESE	1.9	3	29.82	69.8		99

Cette tempête, remarquable par sa durée, a eu cela de particulier que le baromètre n'a pas cessé de montrer son oscillation diurne ordinaire ; tous les maxima (vers 10 h. m. et 10 h. s.) et tous les minima (vers 4 h. m. et 4 h. s.) sont bien marqués. Le minimum du baromètre a été enregistré au baragraphe à . h. du matin, le 20 ; le baromètre marquait 29.293 p. (744.04 mm.). La baisse avait commencé dès le 4; ce jour là, à 10 h. a. m., le mercure était à 762.75 mm. (30.030 p.) ; il tomba donc de 0.737 p. 18.71 mm.). Le maximum de vitesse du vent se rencontra de 6 h. à 8 h. du soir, le 19 ; elle atteignit plusieurs fois dans ce temps 32 milles (52 km.) par heure. Le centre de ce tourbillon, qui ne toucha Shanghai que par son bord occidental, s'est trouvé en mer et le météore remontait du midi au Nord ce que montre la variation du vent, qui tourna ici du NE. au NW. Le total de la pluie tombée pendant la tourmente est 3. 068 pouc. angl.

21.—NOTES FROM THE "JAPAN DAILY HERALD" AND "JAPAN GAZETTE."

a,—Floods in Shikoku, telegraphed on Sept. 17.

b,—Tamagawa (between Yokohama and Tokio) rose 13 feet on Sept. 15 and 16.

c,—Baniugawa and Sakaigawa flooded the country, Sept. 17, Telegr.

d,—The S. S. *Gleneagles* left Shanghai for Yokohama Sept. 18, 8 p. m., encountered heavy NE. gale; Sept. 19 gale increasing, bar. 29.40; Sept. 20 3 a. m. lowest barom. 28.55, when the wind suddenly shifted to W.; Sept. 20, noon, barom. 29.15, towards night moderating; Sept. 21, noon passed Satanomisaki (S. point of Kiushû).

e,—The S. S. *Aegean* left Niigata (38° N. 139° E.) for Yokohama on Sept. 21, off the western entrance to Tsugaru Straits (betw. Yezo and Nippon) experienced strong E ly gale; had to anchor Sept. 22, 4 a. m. till noon.

f,—The *Lothair* reports a NW. gale Sept. 18 in 22° N., bar. 29.37.

g,—The *Iris* left Kobe (35° N 135° E) Sept. 21, anchored for 2 days under Fukuda in Kii-Channel for a strong S ly gale.

h,—The *Haze* left Vladivostok (43° N 132° E) Sept. 16, had light NE winds and pleasant weather to the S. coast of Yezo, where on Sept. 20 had a strong N ly gale of short duration.

i,—The *Barbara Taylor* from Shanghai for Vladivostock lost all her sails and had to be run ashore on the S. coast of Quelpart 5. p.m. Sept. 20. No lives lost.

k,—The *Bianca Pertica* Italian barque of 666 tons; with a crew of 15 all told, left Nagasaki with coals for Hongkong Sept. 18. The same day at 8.30 p. m. the wind grew stronger, 9.30 p. m. mainsail and maintopsail went, laid her to the wind; (E) growing stronger, could not keep her to the wind any longer and steered W., scudding. Sept. 19, noon laid her to again; wind shifted to South (Sept. 20?) all the trysails went, no sails left. Sept. 20, noon, ship sinking, put her head N. before the wind, steering for Quelpart; 4 p. m. the ship foundered, 50 miles S. of Quelpart. Only one survivor reached the island on Sept. 29, after drifting about for 9 days without food or water in the life boat and seeing his 3 companions die one after the other from cold, hunger and exhaustion.

l,—The S.S. *Hankwing* left Chifu for Shanghai 4 hours after the *Appin*, lowest barom. 29.20.

m,—Bullock Harbour, (28° N. 121° E. Wind shifted on the 19th from NE. to NW., lowest barom. 29.38.

n,—Chinhai (30° N. 122° E.) Lowest barom. 29.18.

o,—The S. S. *City of Santiago* from Nagasaki to Shanghai, noted lowest barom. as 28.90.

A.—BEARING OF CENTRE,

IN POINTS AND TENTHS, WITH NUMBER OF OBSERVATION ( ); ALL OBSERVATIONS AND ALL FORCES OF WIND TAKEN FROM SEPT. 15 NOON TILL SEPT. 20, NOON. (XIII).

DISTANCE FROM CENTRE IN MILES.	DIRECTION OF WIND.			
	N-ENE	E-SSE	S-WSW	W-NNW
100 m. and less.	8.8 (5)	12 (1)	10.7 (2)	9.2 (3)
200 » »	9.5 (15)	8.4 (8)	11.0 (10)	10.2 (19)
300 » »	9.1 (23)	9.4 (14)	11.3 (8)	9.1 (10)
400 » »	10.2 (25)	8.1 (8)	12.5 (10)	10.7 (6)
500 » »	10.4 (15)	6.5 (5)	12.8 (5)	12.5 (1)
600 » »	11.2 (17)	7.7 (7)	12.5 (3)	
700 » »	11.3 (10)	6.5 (1)		
800 » »	14.7 (3)	6.5 (1)		
900 » »	16.0 (14)	10.2 (14)		
1000 » »	15.7 (3)	11 (3)		
1100 » »	16 (1)	12 (2)		

A^1 The same table, in points and quarters, corrected by projection :

	N-ENE	E-SSE	S-WSW	W-NNW
100 miles or less.	8 ¾	10 ½	10 ¾	9 ¼
200 » »	9	9 ½	11	9 ½
300 » »	9 ½	8 ¾	11 ½	10
400 » »	10	8	12	10 ½
500 » »	10 ½	7 ½	12 ½	11 ½
600 » »	11 ¼	7	13 ¼	—

A^2 Means of A up to 400 miles :

N-ENE	E-SSE	S-WSW	W-NNW
9 ½	9 ½	11 ½	9 ¾

Means of A up to 400 miles, all winds 10 points.

A^3.—BEARING OF CENTRE,

IN POINTS AND TENTHS FROM ALL OBSERVATIONS SEPT. 15 NOON TO SEPT. 20 NOON; BUT NO WINDS TAKEN BELOW FORCE 7.

DISTANCE FROM CENTRE.	N-ENE.	E-SSE.	S-WSW.	W-NNW.
100 miles and less.	8.8 (5)	12. (1)	10.7 (2)	9.2 (3)
200 ,, ,, ,,	9.5 (15)	8.4 (8)	11.0 (10)	10.2 (19)
300 ,, ,, ,,	9.1 (22)	9.6 (10)	11.8 (6)	9.1 (10)
400 ,, ,, ,,	10.8 (11)	9. (2)	12.8 (6)	11.8 (3)
500 ,, ,, ,,	8. (1)	8.2 (3)	13.7 (2)	12.5 (1)
600 ,, ,, ,,	8.7 (2)	6.5 (1)	12.2 (2)	
700 ,, ,, ,,	8.5 (1)			

A^4.—FORCE OF WINDS.

(0-12 AND TENTHS) CORRESPONDING TO TABLE A.

DISTANCE FROM CENTRE.	WINDS OF ALL GRADES.			
	N-ENE	E-SSE.	S-WSW.	W-NNW.
100 miles and less.	10.8	9	11	10.7
200 ,, ,, ,,	10.0	8.6	9.8	9.8
300 ,, ,, ,,	9.1	8.1	7.7	8.3
400 ,, ,, ,,	6.8	5.9	7.4	6.2
500 ,, ,, ,,	4.9	4.7	4.6	5
600 ,, ,, ,,	5.4	4.6	7.3	—

A^5.—Mean force up to 400 miles:

N-ENE.	E-SSE.	S-WSW.	W-NNW.
9.2	7.9	9.0	8.8

B.—BEARING OF CENTRE,

IN POINTS AND TENTHS; ONLY OBSERVATIONS FROM VESSELS AT SEA FROM SEPT. 17 MIDNIGHT TILL SEPT. 20 NOON.

DISTANCE FROM CENTRE.	WINDS OF ALL GRADES.			
	N-ENE.	E-SSE.	S-WSW.	W-NNW.
100 miles and less.	8.8 (5)	12. (1)	10.7 (2)	9.2 (3)
200 ,, ,, ,,	9.6 (11)	8.9 (4)	10.9 (9)	11.1 (11)
300 ,, ,, ,,	9.6 (8)	6.3 (6)	11.6 (9)	8.5 (2)
400 ,, ,, ,,	9.4 (8)	7. (5)	12.4 (8)	10.8 (3)
500 ,, ,, ,,	9.2 (3)	5.5 (3)	12.8 (5)	—
600 ,, ,, ,,	—	6.5 (2)	12.5 (3)	—

B^1.—The same table in points and quarters, corrected by projection, see under-Remarks-Chart I.

B^2.—Means of B. up to 400 miles from centre in points:

N-ENE.	E SSE.	S-WSW.	W-NNW.
9 ¼	8 ½	11 ½	10

Mean of B. up to 400 miles, all around 9¾ points.

B^3.—THE SAME TABLE,

IN POINTS AND TENTHS AS IN B. BUT NO WINDS TAKEN BELOW FORCE 7.

DISTANCE FROM CENTRE.	N-ENE.	E-SSE.	S-WSW.	W-NNW.
100 miles and less.	8. 8(5)	12. (1)	10.7 (2)	9.2 (3)
200 ,, ,, ,,	9.6 (11)	8.9 (4)	10.9 (9)	11.1 (11)
300 ,, ,, ,,	9.6 (8)	6.9 (4)	11.8 (6)	5.5 (1)
400 ,, ,, ,,	10.1 (4)	9. (2)	12.8 (6)	15.5 (1)
500 ,, ,, ,,	8. (1)	8.5 (1)	13.8 (2)	—
600 ,, ,, ,,	—	—	12.2 (2)	—

B [4].—FORCE OF WIND,

0-12 AND TENTHS CORRESPONDING TO TABLE B.

DISTANCE FROM CENTRE.	WINDS OF ALL GRADES.			
	N-ENE.	E-SSE.	S-WSW.	W-NNW.
100 miles and less.	10.8	9	11	10.7
200 ,, ,, ,,	10.6	9.5	9.7	9.8
300 ,, ,, ,,	10.8	7.2	7.9	11
400 ,, ,, ,,	6.5	5.8	6.8	5.3
500 ,, ,, ,,	5	4.7	5.8	
600 ,, ,, ,,		2.5	7.3	

B [5].—Mean of wind force up to 300 Miles :

N-ENE.	E-SEE.	S-WSW.	W-NNW.
10.7	8.6	9.5	10.5

C.—DISTANCE OF THE CORRESPONDING POSITIONS OF CENTRE

AS FOUND BY THE TWO LAST CONSTRUCTIONS.

DATE.		DISTANCE IN MILES.	NUMBER OF SHIPS LOGS USED
Sept. 17	midn.	10	3
,, 18	noon.	28	3
,, ,,	midn.	15	5
,, 19	noon.	10	5
,, ,,	midn.	30	5
,, 20	noon.	15	4

APPENDIX TO PART II.

LIST

OF

CONTRIBUTORS, SHIPS AND STATIONS.

FIRST TAIFUN.

1.—British P. O. S. S ..... *Malacca*,..... Capitain H. E. SMITH.

2.—Japanese M. B. S. S ..... *Kiushũ maru*,.. » W. THOMPSON {Commun. by J. Mc Kechnie. Esq. Chief-Officer.

3.—I. J. Japanese Observatory at *Nagasaki*..... Commun. by H. MASATO Esq.

4.—I. J. Japanese » » *Tokio*..... J. ARAI Esq. Surveyor-in-Chief.

5.—Newspaper Report..... *Black Adder*.

SECOND TAIFUN.

6.—British P. & O. SS..... *Sunda*..... Capitain REEVES.

7.—I. J. Japanese Observatory at *Nagasaki*..... Communicated by H. MASATO Esq.

8.—Japanese M. B. S. S ..... *Kiushũ Maru* .. Capitain W. THOMPSON {Commun. by J. Mc Kechnie Esq. Chief-Officer.

9.—I. J. Japanese Observatory at *Tokio*..... Commun. by J. ARAI Esq. Surveyor-in-Chief.

10.—American Ship ..... *Loukout*..... Extract from the *Japan Daily Advertiser*.

1.—P. & O S. S. "MALACCA," CAPTAIN H. E. SMITH.

HONGKONG TO YOKOHAMA.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	BAROM. red. 32° S. L.	THERM.	REMARKS.
Aug. 31	noon.	27°13′	124°57′	NNE	5	29.72	83	Fresh breeze, passing q.
,, ,,	6 p.m.			NE	5	29.60	84	Bar. depressed since midnight.
,, ,,	midn.			E	6	29.52	84	c. q. high sea strong wind.
Sept. 1	2 a.m.			E	8	29.48	83	q. high sea, fresh gale, 1.
,, ,,	4 a.m.			E by S	9	29.41	83	Strong gale qq. un. hove to with head at East, 2.
,, ,,	6 a.m.			E by S	10	29.36	83	Heavy gale q. q. q. v. h. confused sea, 3.
,, ,,	8 a.m.			E by S	10	29.31	84	,, ,, ,, ,, 4,
,, ,,	noon.	27 55	127 24	E by S	10	29.21	81	Heavy gale; v.h. confused sea, 5.
,, ,,	2 p.m.			E	11.12	29.01	81	qqq. rrr. storm increasing, 6.
,, ,,	3 p.m.			NE by E				
,, ,,	4 p.m.			NE	11.12	28.98	81	Same tempestuous weather throughout.
,, ,,	8 p.m.			,,	11.12	28.98	81	Furious gale qqq. rrr. 7.
,, ,,	midn.			,,	11.12	28.98	83	,, ,, ,,
,, 2	1 a.m.			,,	11.12	28.96	83	Viol. gale with furious qqq. 8.
,, ,,	2 a.m.			,,	moder.	28.94	83	Wind suddenly moderated 9.
,, ,,	4 a.m.			,,	,,	28.94	83	Light wind with vivid lightning, 10.
,, ,,	6 a.m.			NNE	9	28.94	84	qqq. rrr. 11,
,, ,,	7 a.m.			N by E	8	28.98	84	Moderating, kept course, 12.
,, ,,	8 a.m.			NW by W	8	29.01	84	Fresh gale w. high cross sea.
,, ,,	10 a.m.			W by N	8.9	28.96	84	Strong increasing gale, 13.
,, ,,	noon.	28 52	128 26	,,	8	29.08	84	Fresh gale qq. 14,
,, ,,	2 p.m.			NW by W	7	29.22	83	Gale moderating.
,, ,,	3.45 p.m.			,,	7	29.28	83	Kept ship on her course.
,, ,,	8 p.m.			NW	6	29.45	83	Strong breeze, high confused sea.
,, ,,	midn.			,,	4	29.44	83	Moder. breeze, cloudy weather.

1,—Ship laboring heavily.

2,—Violent squalls and every appearance of a coming typhoon; engines going quite slow or as required to keep ship head to sea.

3,—Heavy easterly gale with terrific q., ship laboring heavily.

4,—Ship continually rolling her boats under water.

5,—Furious gusts of wind.

6,—Frequent squalls of hurricane force with very heavy confused sea and torrents of rain. Ship enveloped in a continuous sheet of spray.

7,—Terrific squalls, very heavy confused sea, torrents of rain.

8,—Very heavy confused sea.

9,—Flashes of lightning.

10,—Very threatening appearance all around.

11,—Wind suddenly freshened to a strong gale with violent squalls and torrents of rain.

12,—Weather clearing a little.

13,—Hove ship to with head at W.

14,—Hard squalls, high cross sea, ship laboring heavily.

2.—M. B. S. S. "KIUSHU MARU", CAPTAIN W. THOMPSON.

COMMUNICATED BY J. Mc KECHNIE, ESQ. CHIEF-OFFICER.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	ANER.	THERM.	REMARKS.
Aug. 30	noon	33°17′	129°20′	NE	5-6	30.03-30.10	73 to 79	
» 31	»	33 47	131 42	NE to SE	5-6	30.04-30.10	74-75	dark and gloomy.
Sept. 1	»	34 17	132 31	SE to E	5-6	30.08-30.02	74-76	» »
» 2		34 41	135 11	East	5-6	30.01-29.95	74-73	» (Kobe Hr.)
» 3		»	»	E to NE				

The Kobe Taifun began Sept. 3 9 a.m. wind at E. by N. with heavy rain showers; An. at 6 a m. 29.92, noon 29.81; at 5.40 p.m. it was blowing its strongest, An. 29.64; it then commenced to moderate, wind hauling to NE., Th. 74 to 65

September 4	Kobe Hr	NE & N	29.92-29.98	71°	clear weather.
» 5	»	light Ely airs & variable	30.00-30.01	72	fine clear weather.

3.—NAGASAKI, I. J. METEOROLOGICAL OBSERVATORY.

COMMUNICATED BY H. MASATO ESQ., IMPERIAL OBSERVATORY, TOKIO.

DATE. 1878	HOUR.	WIND.	FORCE.	0-12.	BAROM. RED. to 32° a. S. L.	THERM. Dry	THERM. Wet.	CLOUDS.	UPPER.	LOW.	REMARKS.
Aug. 31	8.50 a.m.	N	5.58	4	29.956	75.5	74.8	10	—	SSW	Wind in 24h
,, ,,	9.30 ,,	NE	4.15	4	29.946	77.1	75.2	10	—	NNE	75.8 miles.
,, ,,	2.50 p.m.	WNW	3.30	4	29.880	85.4	78.4	9	SE	N	Rain in 24h
,, ,,	3.30 ,,	NW	5.16	4	29.880	86.3	79.3	9	—	SE	0.023″.
,, ,,	8.50 ,,	NE	1.56	3	29.910	78.3	75.7	1	—	—	Max. 87°6
,, ,,	9.30 ,,	NNE	6.68	5	29.910	77.8	75.7	2	—	—	Min. 75°4
Sept. 1	8.50 a.m.	E	3.09	4	29.862	85.9	78.3	0	—	—	Wind in 24h
,, ,,	9.30 ,,	SE	6.32	4	29.859	86.1	78.4	0	E	—	88.3 miles.
,, ,,	2.50 p.m.	SE	7.53	5	29.766	90.2	78.4	0	SE	—	Rain in 24h
,, ,,	3.30 ,,	E	7.90	5	29.762	91.1	79.0	1	E	—	0.000
,, ,,	8.50 ,,	NNW	5.94	4	29.783	79.7	77.1	1	—	—	Max. 92°3
,, ,,	9.30 ,,	NNW	3.12	4	29.794	79.5	77.1	8	—	E	Min. 75°5
,, 2	8.50 a.m.	NE	15.06	7	29.658	82.7	73.6	10	—	ESE	Wind in 24h
,, ,,	9.30 ,,	NE	13.04	6	29.646	83.5	74.4	10	—	SE	333.04 miles.
,, ,,	2.50 p.m.	NE	19.02	8	29.549	81.8	75.2	10	—	ESE	Rain in 24h
,, ,,	3.30 ,,	NE	19.45	8	29.541	81.4	73.7	10	—	ESE	0.066″.
,, ,,	8 50 ,,	NE	21.45	8	29.489	77.6	73.9	10	—	—	Max. 86°6.
,, ,,	9 30 ,,	NE	18.63	7	29.466	77.2	73.8	10	—	—	Min. 76°0.
	6.30 p.m. orange coloured sky.										
,, 3	8.50 a.m.	NNE	9.45	5	29.554	80.1	75.3	10	—	N	Wind in 24h.
,, ,,	9.30 ,,	NNE	12.97	6	29.552	79.8	75.0	10	—	N	254.86 miles.
,, ,,	2.50 p.m.	NNE	12.84	6	29.595	78.5	75.5	10	—	N	Rain in 24h. 0.000
,, ,,	3.30 ,,	NNE	14.10	7	29.602	78.5	75.1	10	—	N	Max. 81°9.
,, ,,	8.50 ,,	NNW	5.16	4	29.723	76.1	73.3	10	—	NW	Min. 75°8.
,, ,,	9.30 ,,	NNW	4.09	4	29.726	75.9	73.2	9	—	NNW	Wind 191.00 m.
,, 4	8.50 a.m.	NE	6.57	4	29.823	79.0	72.9	3	—	NE	Rain in 24h 0.000.
,, ,,	9.30 ,,	NNE	8.13	5	29.819	79.5	72.7	2	—	NE	Max. 83°8.
,, ,,	2 50 p.m.	NNE	12.99	6	29.802	82.7	73.7	8	SW	NE	Min. 73°9.
,, ,,	3.30 ,,	NNE	13.85	7	29.798	81.0	72.9	10	NE	—	Earthquake
,, ,,	8.50 ,,	NNE	4.74	4	29.851	75.6	70.2	4	ESE	—	7.50 p.m.
,, ,,	9.30 ,,	NE	6.01	4	29.854	75.5	70.0	6	—	—	

4.—TOKIO, I. J. METEOROLOGICAL OBSERVATORY.

COMMUNICATED BY J. ARAI ESQ., SURVEYOR-IN CHIEF, TOKIO.

DATE. 1878	HOUR.	WIND.	FORCE. Miles.	0-12	BAROM. 32° S. L.	THERM. Dry	THERM. Wet.	CLOUDS.	UPPER.	LOW.	REMARKS.
Aug. 31	3.30 a.m	NE	4.9	4	29.924	72°.0	68°.9	10	—	—	Wind in 24h 179 Miles.
,, ,,	9 30	NNE	7.8	5	29.961	76.0	72.4	10	—	E	Rain ,, 0.000.
,, ,,	3.30 p.m.	ENE	6.3	4	29.913	81.4	74.2	7	—	E	Max. 83°1.
,, ,,	9 30	ENE	13.1	6	29.967	69.9	66.8	10	—	—	Min. 68.1.
Sept. 1	3.30 a.m.	NNE	7.7	5	29.969	67.3	63.8	10	—	—	Wind in 24h 183 Miles.
,, ,,	9.30	NNE	12.6	6	29.984	73.8	67.3	7	NE	—	Rain ,, 0,000.
,, ,,	3.30 p.m.	NE	7.2	5	29.921	72.9	67.9	10	—	—	Max. 74°.7.
,, ,,	9.30	ENE	3.6	5	29.964	68.3	66.6	5	—	—	Min. 65°.4.
,, 2	3.30 a.m.	ENE	1.8	3	29.937	65.9	64.8	10	—	—	Wind in 24h 56 Miles.
,, ,,	9.30	ENE	3.0	3	29.930	69.5	65.6	10	—	—	Rain. ,, 0,000.
,, ,,	3.30 p m.	E	3.5	4	29.850	74.9	69.4	10	—	—	Max. 75°.9.
,, ,,	9 30	E	4.4	4	29.914	64.5	63.4	1	—	—	Min. 63°.1.
,, 3	3.30 a m.	E	3.6	4	29.882	64.0	63.1	10	—	—	Wind in 24h 101 Miles.
,, ,,	9.30	NE	4.0	4	29.902	73.9	67.9	10	—	—	Rain ,, 1,460″.
,, ,,	3.30 p.m.	NE	8.7	5	29.823	76.6	70.5	10	—	—	Max. 78°.2.
,, ,,	9.30	NE	4.4	4	29.881	68.7	66.8	10	—	—	Min. 3°.63.
,, 4	3.30 a.m.	NNE	9.7	5	29.790	67.4	67.0	10	—	—	Wind in 24h 171 Miles.
,, ,,	9.30	N	6.8	5	29.856	66.3	66.0	10	—	—	Rain. ,, 2.640″.
,, ,,	3.30 p.m.	N	8.7	5	29.822	67.0	66.7	10	—	N	Max. 68°.9.
,, ,,	9 30	N	6.3	4	29.884	66.8	66.7	10	—	—	Min. 65°.6.

Wind at Tokio at 3.30 etc.

September 5.....	NNW 8.2 miles....	NNW 9.2....	NNW 7.3....	NNW 3.6.
,, 6.....	NNW 2.0 ,, ...	NNW 2.0....	SSE 5.4....	S 2.0.

Lowest Barometer September 6, 3.30 p.m. 29,715.

5.—SHANGHAI NEWSPAPER.

The British Barque *Black Adder* left Sydney N.S.W. on the 30th July. Had Sly winds and fine weather to the Equator, witch was crossed on the 15th August. Thence had moderate winds and favourable weather until the 31st August, when encountered a heavy gale from SSW. with high cross sea, and accompanied by heavy rain, thunder and lightning. Then had a fortnight of fine weather and moderate winds.

6. P. & O. S. S. "SUNDA," CAPTAIN REEVES.

HONGKONG TO YOKOHAMA.

DATE. 1878	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	BAROM. red. 32° a.S L	THERM.	REMARKS.
Sept. 10	midn.	26.°40′	122.°23′					
,, ,,	1 a.m.			E				q. r.
,, ,,	4 a.m.	26.54	123. 5	SSE	4	29.77	79	o. r.
,, ,,	5 ,,			NE				
,, ,,	8 ,,	27.10	123.43	NE	2	29.82	76	o. rr.
,, ,,	noon.	27.29	124.23	NE	2	29.87	77	c. rr.
,, ,,	1 p.m.			NNE				
,, ,,	4 ,,	27.42	125. 7	NNE	4	29.83	79	o. r.
,, ,,	8 ,,	27.55	125.48	NNE	4	29.86	78	Fine.

DATE. 1878.	HOUR.	LAT. N.	LONG. E.	WIND.	FORCE.	BAROM.	THERM.	REMARKS.
Sept. 10	midn.	28.10	126.28	NNE	4	29.85	81	Fine.
,, 11	1 a.m.			NNE	6			
,, ,,	4 ,,	28.25	127. 9	NNE	6	29.83	79	Rising head sea.
,, ,,	5-6 ,,			NNE-E				
,, ,,	8 ,,	28.38	127.50		4-6	29.84	81	q. head sea.
,, ,,	9 ,,			N ly				
,, ,,	noon.	28.52	128.29	N ly	7	29.81	84	c. rising sea.
,, ,,	1 p.m.			NNE				
,, ,,	4 ,,	29. 2	129. 2	NNE	7-8	29.73	84	High sea, heavy swell from SE with every indications of a cyclone to the E rd. put the ships head WNW.
,, ,,	5 ,,			NE ly		29.75		
,, ,,	6 ,,					29.75		
,, ,,	7 ,,					29.76		
,, ,,	8 ,,	29.24	128.41	N	7-8	29.80	84	c. h. swell from SE.
,, ,,	9 ,,					29.81		
,, ,,	10 ,,					29.83		
,, ,,	11 ,,					29.82		
,, ,,	midn.	29.50	128.41	N	8-9	29.79	84	o. high head sea.
,, 12	1 a.m.			N by E	10	29.78		c. o. high sea, h. SE swell.
,, ,,	2 ,,					29.76		
,, ,,	3 ,,					29.76		
,, ,,	4 ,,	30.12	128.41	N by E	8-9	29.76	80	w. improving, stood on course.
,, ,,	5 ,,					29.75		
,, ,,	6 ,,					29.73		
,, ,,	7 ,,	30.21	129. 0		10	29.69		u. stood to the W rd.
,, ,,	8 ,,	30.22	128.49	N	10	29.71	84	Heavy sea.
,, ,,	9 ,,			N by W		29.73		
,, ,,	10 ,,					29.75		
,, ,,	11 ,,					29.76		
,, ,,	noon.	30.18	128	NNW	9	29.76	85	v. heavy ENE swell, u. in SE.
,, ,,	1 p.m.				7	29.76		
,, ,,	2 ,,			NNW	9	29.75		Hove to.
,, ,,	3 ,,					29.74		
,, ,,	4 ,,	30.20	128. 8	NW	6	29.76	84	c. v. heavy NE swell.
,, ,,	5 ,,				5	29.76		Gen. improvem. in weather.
,, ,,	6 ,,					29.76		
,, ,,	8 ,,	30.27	128.30	NNW	4	29.80	84	o. heavy cross sea, NE swell.
,, ,,	10 ,,				2	29.83		
,, ,,	midn.	30.36	129. 6		2	29.84	82	c fine, long NE swell at intervals.
,, 13	4 a.m.			NNW	2	29.85	82	
,, ,,	5 ,,	30.47	129.58	SE rly				
,, ,,	8 ,,				0	29.86	83	c. m.
,, ,,	10 ,,			E ly				
,, ,,	noon.	31. 8	131.00	SE ly	3	29.89	83	Fine.
,, ,,	3 p.m.			W ly				
,, ,,	4 ,,	31.20	131.41		2	29.88	82	c. NE swell.
,, ,,	7 ,,			E ly				
,, ,,	8 ,,	31.40	132.22		2	29.93	80	Fine SE swell.
,, ,,	9 ,,							Increas. E ly swell.
,, ,,	10 ,,				2			p. q. from E. c.
,, ,,	midn.	31.52	133.00		3	29.95	81	Fine, head swell.

7.—NAGASAKI, I. J. METEOROLOGICAL OBSERVATORY

COMMUNICATED BY H. MASATO, ESQ., IMPERIAL OBSERVATORY, TOKIO

DATE. 1878.	HOUR.	WIND.	FORCE. Miles.	0-12	BAROM.	THERM. Dry	THERM. Wet	CLOUDS	UPPER.	LOW	REMARKS.
Sept. 11	8.50 a.m	NNW	6.48	4	29.870″	79.3	75.1	8	...	NE	Wind 24h
,, ,,	9.30 ,,	NNW	6.59	4	29.867	79.3	74.5	9	—	NE	94.40 Miles.
,, ,,	2 50 p.m.	NNW	6.48	4	26.796	86.7	77.0	10	—	SE	Rain.
,, ,,	3.30 ,,	NNW	5.90	4	29.791	85.9	77.1	10	...	ESE	0.00.
,, ,,	8 50 ,,	NE	2.04	3	29.852	77.4	74.8	3	S	—	Max. 87°.72.
,, ,,	9.30 ,,	NE	1.19	3	29.852	77.2	75.1	6	S	—	Min. 71°.00.
,, 12	8.50 a m.	ENE	5.34	4	29.791	80.9	74.6	10	E	—	Wind in 24h.
,, ,,	9.30 ,,	NE	8.59	5	29.783	82.1	74.6	10	ENE	—	279.02 Miles.
,, ,,	2 50 p.m	NE	18.18	7	29.703	78.1	74.1	10	E	--	Rain.
,, ,,	3.30 ,,	NE	19.03	8	29.701	79.4	75.0	10	—	NE	2.640″.
,, ,,	8.50 ,,	NE	29.67	9	29.561	74.5	73.5	10	—	—	Max. 83°.94.
,, ,,	9.30 ,,	NE	37.73	10	29.481	73.9	73.5	10	—	—	Min. 74.°30.
	Orange coloured sky at 6 p.m.										
,, 13	8.50 a m.	NNW	1.89	3	29.844	76.6	73.8	10	—	N	Wind in 24h.
,, ,,	9 30 ,,	NNW	4.88	4	29.843	78.3	76.3	10	—	N	229.13.
,, ,,	2.50 p.m.	NNW	12.24	6	29.840	80.0	75.0	1	—	NNE	Rain.
,, ,,	3.30 ,,	NNW	13.31	6	29.840	79.3	74.5	1	—	N	0.000,
,, ,,	8.50 ,,	NE	6.60	5	29.891	74.0	71.6	10	—	—	Max. 80°.92.
,, ,,	9.30 ,,	NE	3.30	4	29.892	74.0	71.4	9	SW	NE	Min. 71°.90.

8.—M. B. S. S. "KIUSHU MARU" CAPTAIN W. THOMSON.

KAGOSHIMA IP.

COMMUNICATED BY J. MC KECHNIE, ESQ. CHIEF OFFICER.

September.	10.. 1878..	Moderate variable airs and cloudy	Aneroid..	30.01	Th. 78°
»	11..	Fresh NE-ENE & E wind a. sea..	»	30.00 to 29.98	» 74 to 73
»	12..	2 a.m. strg. E ly squalls rr.			
		noon dark & gloomy.....	»	29.68	
		9 p.m. gale at its height, aneroid			
		from.....	»	29.62-29.72	» rr.
		midn. wind hauled round to SW..	»	29.76	
»	13..	a.m. light var. airs, midn. fresh			
		N wind and cloudy.....	»	29.99-29.94	74-78.

9.—TOKIO, I. J. OBSERVATORY.

COMMUNICATED BY J. ARAI ESQ., SURVEYOR-IN-CHIEF, TOKIO.

DATE. 1878	HOUR.	WIND.	FORCE. Miles.	0-12	BAR RED.	THERM. Dry	THERM. Wet.	CLOUDS.	UPPER.	LOW.	REMARKS.
Sept. 11	3.30 a.m.	S	10.2	6	29.954	77.0	76.3	10	—	SW	Wind, 24h 211 m.
,, ,,	9.30 »	SSW	8.2	5	29.997	77.9	76.5	10	—	--	Rain 24h 0°.100.
,, ,,	3.30 p.m.	S	10.2	6	29.989	78.9	76.6	10	—	—	Max. 80°.2.
,, ,,	9.30 »	SSW	6.8	5	30.041	75.4	74.2	10	—	—	Min. 73°.4.
,, 12	3.30 a m.	SSW	3.6	4	30.030	73.9	73.9	10	—	—	Wind 98.
,, ,,	9.30 »	WNW	2.0	3	30.089	78.3	75.9	9	—	SW	Rain 0°.000.
,, ,,	3.30 p.m.	SSW	9.7	5	30.025	85.9	77.4	2	--	S	Max. 87°.3.
,, ,,	9.30 »	S	3.2	4	30.094	75.0	73.6	0	—	—	Min. 70.1.
,, 13	3.30 a.m.	S	3.3	4	30.076	70.7	70.1	9	—	—	Wind 79 m.
,, ,,	9.30 »	NNE	3.6	4	30.081	77.3	74.7	9	NE	—	Rain 0.020.
,, ,,	3.30 p.m.	SE	5.8	4	29.988	84.4	72.3	1	—	—	Max. 85°.7.
,, ,,	9.30 »	S	3.3	4	30.028	74.8	72.7	10	—	—	Min. 68.3.
,, 14	3.30 a.m.	W	3.5		29.996	71.4	70.3	10	—	S	Wind 77 m.
,, ,,	9 30 »	N	2.0		30.023	77.5	74.1	9	S	—	Rain 1°.255.
,, ,,	3.30 p.m.	SSE	4.4		29.960	83.5	76.8	9	—	—	Max. 85°.4.
,, ,,	9.30 »	ESE	4.4		29.988	78.0	76.4	8	—	—	Min. 69° 6.

Extract from the *Japan Daily Advertiser*, Oct. 18, 1878.

a,—The American ship *Lookout* of San Francisco.

Left our anchorage under the Saddles, Sept. 10 2 a. m., were at noon in 31°36′N, 124°6′E with moderate NNW winds and fine weather. On the 11th the weather continued fine, with N ly breezes. At 6 p. m. passed close to Kusaki-sima, (Kusakakishima, Ingersoll or Morrison Rocks in 30°51′N., 129°27′E. E K.) and at midnight had run by log from the island 31 miles SE, when we hove to under lower topsails in 30°32′N., 129°55′E. At this time, the barometer beginning to fall rapidly, took in all sail, after having reefed fore and main courses and spanker. At 2 a. m. (Sept. 12) laying to under bare poles, with gale increasing rapidly. By 5. a. m. the gale had increased to a typhoon. At 7 a. m. a perfect tornado. Maintopmast went by the board, taking head of lower mast above the eyes of rigging, and at about the same time the fore topgallantmast was carried away. At 7.30 the mizzentopmast went by the board, carrying away head of lowermast. At 9.30 the ship struck twice or thrice on a reef and went over. Sounded pumps and found she was making no water. At 10 a. m. breakers were seen under our lee and in three minutes we were cast upon a rocky beach where the ship thumped fearfully. Three volunteers of the crew tried to get a line on shore but were drowned, the remainder stayed on board and was saved afterwards by the assistance of the inhabitants of the island (Kutsunoshima in about 30°0′N 130°0′E.) We were on the island 16 days treated kindly by the islanders, and then embarked in two fishing boats for Kagoshima.

b,—*Japan Daily Advertiser*, Oct. 4 and 5.

Another heavy gale and much rain at midnight of the 12th ultimo in the districts of Kiushū are reported; the overflow of the rivers was so serious, that the water rose some inches above the floor of the dwelling houses in each street.

c,—A communication from the Fukuoka Ken (NW coast of Kiushū) states, that in consequence of the continued violent rain on the 14 and 15th ultimo the overflow of the rivers caused breaches in their embankments in thirty two places, sweeping away nine bridges; the damage done to the cultivated lands laid waste is estimated at 159 chō, many dwelling houses were carried away, the waters of the Abukumagawa rising some 16 feet.

NOTE

Through a misunderstanding of the engraver the number of feathers in the wind-arrows of chart 1 does not correspond with the force of the wind.