

having unanimously resolved in favour of cablegrams between Australia and New Zealand, it was very desirable to test the proposition; remarked that it was proposed to send information from Queensland; and pointed out that the messages proposed by the Conference were merely statements of existing conditions, unburdened by any theoretical matter which might not be correct, though it might, if of great importance, be appended as a remark, as it sometimes now is, in the cypher telegrams exchanged by Australian Colonies.

8. Dr. Hector then handed in certain papers on the subject of amalgamating and reorganizing the Weather Forecast and Meteorological Departments of New Zealand. The correspondence showed that on the 5th of April, 1880, Dr. Hector addressed to the Hon. the Colonial Secretary a letter pointing out that a saving might be effected, and drawing attention to the fact that in 1867 and on several occasions since he had suggested a complete reorganization of the department with a view to a better application of the vote, though nothing had been done. This letter enclosed extracts—(1) From a memorandum, dated the 12th of June, 1867; and (2) from a letter to the Hon. the Colonial Secretary, dated the 23rd of September, 1874, both signed by Dr. Hector. In the former it was proposed to establish four principal stations where the daily periodic elements would be determined by frequent direct observations, and twenty second-class stations at which daily records should be taken of the indications of self-registering instruments. These could be maintained for £600 per annum, and would be quite sufficient for scientific purposes. The new arrangements were proposed to be brought into operation on the 1st of January, 1868. In the latter, Dr. Hector recommended the reduction of the number of first-class meteorological stations to three, and the placing of the other stations under the Weather Signal Department. He advised that self-registering instruments should be procured; that no break in the continuity of the observations should be allowed to occur; and that the changes should be deferred to the end of 1875. In reply to the letter dated 5th April, 1880, and its enclosures, Captain Edwin sent a memorandum, dated 11th September, 1880, wherein he set forth the impossibility of maintaining efficient weather forecasts with a reduced expenditure, the necessity for an assistant in that branch of the service, the impossibility that one person could discharge efficiently the duties of both departments, and several facts which in his opinion made the duties of a meteorological observer incompatible with those of an observer for the Forecast Department. Captain Edwin laid stress on the difference which he conceived to separate meteorology from weather forecast, remarking that the former required trained observers, exact registration, and laborious calculation, in order to obtain results which it was hoped would prove valuable in the future for the prediction of seasons and climatic changes, though they had not yet been found reliable for those purposes even where (as in Great Britain) observations had been made carefully for over fifty years; while the latter, requiring no special training of observers, demanded of the forecasting officer skill and despatch, while it gave daily value for the daily expenditure.

9. In order to explain to the Conference the method on which Captain Edwin conducted the Signal Department, Dr. Hector laid before the Conference a copy of Captain Edwin's paper communicated to the New Zealand Institute on the Principles of Weather Forecast in New Zealand, with a sheet showing the succession of weather as recorded in that colony, plotted on his principle for a period of six months from January to June, 1880. He explained that Captain Edwin's method was in the main the same as that adopted by the Meteorological Council of Great Britain, although it involved the acceptance of certain hypotheses which are not yet generally received. Since the beginning of the year, the Weather Signal Department having been placed under the charge of Dr. Hector as Meteorological Director, the method of observing, recording, and reporting has been modified so as to agree with the wishes of the Conference.

10. Thirty-seven reporting stations are now fitted with complete instruments, and supply information at 9 a.m. of every day as to the wind, pressure, temperature, humidity, and general weather. These telegrams are grouped according to the aspects decided on by the Conference—viz., (A) north-east, (B) north-west, (O) southern, (D) south-eastern, and (E) Cook Strait. From the data thus obtained, and from telegrams when found necessary, an isobaric map is constructed each day, and a general report for each of the above aspects is prepared, below which the forecast for each aspect is written in such a way as, if correct, would agree with the report for the following day, and warnings are issued when necessary to any part of the coast where dangerous winds are apprehended. The data thus obtained will be used as second-class station returns for statistical purposes.

11. Dr. Hector submitted these isobaric maps and the data upon which they were founded for the months of February and March, during which the new system was in operation, and stated as the result of his experience that it afforded the most satisfactory method of tracing and recording the changes of weather, and distinguishing the characteristics of a season.

12. The correspondence had resulted in arrangements for the future, whereby one or all of the three first-class stations should be gradually so improved as to approximate in their equipment to that of the central or observatory stations in Australia, while, in addition to the thirty-seven second-class stations, a large number of third-class or rainfall stations are being established. These last will be kept by lighthouse-keepers (where not in telegraphic communication), by pilots, by harbourmasters, and by other Government officers, and by amateurs. At these stations temperature, rain, wind, and weather observations are made.

13. Valuable meteorological observations are received from Fiji, and were published in Dr. Hector's last report for the years 1877, 1878, and 1879. An additional first-class station has been established at the Chatham Islands, and has been in operation since January, 1879. The results for that year having been published in the report just mentioned, a copy thereof was laid upon the table, and attention was drawn to the fact that it contained daily readings for the three stations at Auckland, Wellington, and Dunedin for pressure, wind, and rainfall for a period of three years, accompanied by curves which showed a very remarkable agreement of the atmospheric disturbances throughout that range of latitude, which is equal to a distance of 800 miles. Dr. Hector also submitted the daily observations for 1880 made at the Wellington Station, and the monthly abstracts from all stations for the same year.