

holidays. The table of values makes no mention of the results at New Plymouth, which may be assumed to be the same as Opunake for direction, force, and barometer, and as Castlepoint for sea results. I have made no returns for Wellington, as I should have to keep them myself, and the result, therefore, might be considered as too favourable; the forecasts may be considered as very close to Castlepoint and Blenheim. From the experience gained in forecasting during the past three years, I have no hesitation in stating that public intimation of approaching bad weather may be given with as much success as is now the case in older countries; and it may not be out of place to enumerate the principal difficulties that have to be encountered in forecasting. These are—The distance of New Zealand from other countries; its peculiar shape (being in width only about one-third of its length); the rapidity with which some of the heaviest gales or depressions advance; the want of a well-organized system of observations at sea; the hour at which the daily weather report is usually received for discussion, and the limited amount of information it contains. In the first of these cases the distance to Australia is such as to allow storms which pass over that country to expend themselves before reaching us, and from such experience as I have had in the duties of weather forecast I am fully of opinion that very few of the disturbances which visit this colony arrive from that quarter, the general route of their centres being between West, South-west, and South-south-west proceeding to the opposite quarter; and for this reason I have no hesitation in stating that, for purposes of weather telegraphy, cable messages will hardly be of the value generally supposed. The second prevents the extension of weather-reporting stations to either side, and makes it necessary that they should be closer together than is generally considered requisite. The third will continue the greatest difficulty that weather forecast in this country will have to contend against, and can only be partially met by vigilant observation of instruments and signs of changing weather. The fourth would form a very valuable addition to the material available for study, and there are now a considerable number of steam services with Australia which might be taken advantage of. The fifth cause arises from the daily report being published at so many places; in all other countries where weather reports are used no information of this nature is made public until it has been revised; but under the system now in use this is impossible, and I therefore consider that it should be discontinued, and the whole of the material required should be telegraphed direct to the central office by means of such part of the cypher code used in the United States as may be found necessary. This would enable the warnings to be forwarded at least three hours sooner than is possible under present circumstances. Should the report as now published be considered indispensable the information for weather forecast should have precedence of it, for, if efficiency in the storm-warning service is to be considered, its information must be supplied direct and without reference to similar matter for other purposes. That real efficiency in storm-signalling is only to be attained by giving every facility for distribution and receipt of weather telegrams is shown by the following extract from the report of a Sub-Committee of the International Meteorological Conference of 1873:—"It is sufficiently evident from the various answers of scientific men who have been asked for their opinion, as well as from other official and non-official reports of the individual directors of Meteorological Institutes, that there is a general conviction of the importance of weather telegraphy for the purposes of practical life, and that the existence of such a system is considered a necessity; this is shown from the results obtained hitherto from the system already in existence. . . . It seems desirable that the system of weather telegraphy should be developed as generally as possible, and on as uniform a plan as possible. In all countries in which up to the present time such systems have not been organized, steps leading to such organization should be taken as soon as possible. . . . In order to make the systems of warning as perfect as possible, according to the present rate of the science, the Sub-Committee must indicate that it is desirable that the observations and reports based thereon should be made as complete and continuous (as regards the former) as is possible; *i.e.*, neither Sundays nor holidays should make any difference to them, and there should not be a complete interruption during the night. . . . If telegraphic weather reports are delayed from a consideration of other messages the operation of the system will, in the opinion of the Sub-Committee, be seriously interfered with."

If such a direct system has been found desirable in countries of large area and extended communication, it is evident that it must be equally useful in this country, whose peculiar disadvantages have been already alluded to. I understand that the result of the investigation of a Royal Commission appointed to inquire into the result of weather warnings in England has been to recommend an increased expenditure of about £5,000 per annum.

I must here add a word in favour of the only instruments hitherto in use—namely, mercurial barometers by Casella, of the London value of 25s. and 50s., and I have no hesitation in stating that they are thoroughly reliable in every respect.

My thanks are due to Dr. Lemon and the officers of the Telegraph Department for their careful co-operation in the distribution of the standard barometers.

I now most respectfully suggest that, if it be considered desirable to utilize the information which will soon be available, some assistance should be given to me, not only in the ordinary work of the office, which continues to devolve solely on me, but also in preparing forecasts. This should be the duties of myself and an officer fully competent to share the responsibility and undertake the charge of affairs in case of my being unable to carry out the work. It will be at once seen that it is most desirable that such assistant should take a great interest in these duties, and should be selected from the staff employed upon this experimental service since its commencement, as it would not, in my opinion, be advisable to place in charge one who has not taken an active part in the work; neither would it be just to those to whose zealous co-operation I am so much indebted for the satisfactory results shown in this report. The want of such aid has prevented the careful investigation of the material as soon as possible after its receipt.

I forward herewith return of percentage values already alluded to, and copies of the storm-warning returns received from Queenstown, Opunake, Poverty Bay, and Hokianga during June.

I have, &c.,

R. A. EDWIN,
Commander R.N.

The Hon. the Commissioner of Customs.