

This has a definite effect on the forecasts apart from the inevitable reduction in the completeness of knowledge of the general situation. For example, the forecaster will often cease predicting rain in a particular district because in the same type of weather the few reports he has received from the district indicate fine weather. Yet reports received later by post may show that rain has fallen in many places. Then, there are numbers of reports issued by wireless which we have at present no means of intercepting. Particularly valuable would be a long list of reports now broadcasted in Australia, the receipt of which would enable us to apply the Norwegian methods with some success in this region, in spite of the difficulties created by our ocean surroundings. Reports from New Caledonia, which are not intercepted here, would also be useful. Furthermore, we are not able to take advantage of weather reports at standard hours broadcasted by certain "selected ships" according to a recent international arrangement. I find it difficult to believe that the supplying of these reports to us would really involve any considerable expense to the Dominion or that the other restrictions imposed on us represent a real economy. It is sincerely to be hoped that the facilities available will, before long, be largely increased.

Difficulties due to the complexity of the weather have been referred to above. The meteorologist attacks them by codifying reports and so reducing their volume to a minimum. Next, in order to make all the information readily appreciable, he plots them on a suitable chart. Once this is done, a mere glance at the chart is sufficient to enable the main features of the situation to be understood. Such charts, published in simplified form, are equally valuable to the layman. In Australia each of the important daily newspapers prints a copy of the day's weather map. In other countries printed copies are delivered to subscribers and posted in numerous prominent positions. Better still, in America and Germany it is possible, with the aid of inexpensive apparatus, to receive a copy of the latest chart by wireless in the course of a very few minutes. The receiving-machine automatically prints the chart as the signals come from the issuing-station. It is often through the teaching of a certain amount of meteorology in the schools and the general employment of the weather-chart that full use can be made of a forecasting service. An elementary knowledge of meteorology is becoming of increasing importance in many walks of life, especially in connection with aviation. Therefore it is most desirable that the Meteorological Office should have sufficient staff and resources to enable it to publish a daily weather-chart.

In common with the other professions in New Zealand, meteorology suffers from the activities of persons who, without proper knowledge or training, have no hesitation in making pronouncements on the most technical subjects. A large proportion of the public is, unfortunately, unable to distinguish between these self-appointed authorities and the individual who, by the work of a life-time, has endeavoured to qualify himself as an expert in the subject, and the authority of the latter is undermined. Weather-forecasting is obviously a happy hunting-ground for the pseudo-scientist of the type referred to. The result of his efforts is to give the impression that forecasting is at best a kind of inspired divination. There is a dissipation of energy, and attention is diverted from the directions in which real advance may be made. The only successful way of combating these activities is by education and by the free dissemination of accurate information in the ways suggested above.

The non-official forecasters are of three types. The first and least objectionable have some knowledge of meteorology and of the local conditions in their particular districts. Not being cramped by having to express themselves in a telegram limited to a certain number of words, they are able to paraphrase and expand the official forecast without the use of the technical terms which brevity demands. They also have the advantage of issuing their forecasts several hours later than the official one. It would be more honest if their indebtedness to official sources were acknowledged. Their work does, however, arise from a real demand which cannot wholly be met by the methods we have been urging. This demand could be more satisfactorily catered for by having forecasting-officers stationed, say at Auckland and Christchurch. These local forecasters would receive sufficient reports to enable them to draw their own weather-chart and, on the arrival of the official forecast, expand it in accordance with their knowledge of the local weather and local interests. Such a development would not prove very expensive.

It has been shown above that recent developments have been made in the direction of increasing the accuracy of short-range forecasts. At the same time researches have been carried on with a view to finding a basis for long-range forecasting. Sir Gilbert Walker and his school have been particularly active in this respect. Many interesting relationships have been brought to light and formulæ developed which enable useful forecasts of the character of the monsoon in India, for example, to be made. But to have real practical value a seasonal forecast must be very reliable, and in the temperate regions especially results have so far not been promising. In New Zealand we are continually being urged towards the extension of our forecasts to cover longer periods. We endeavour to meet this demand as far as possible in the special forecast for farmers which is issued at 4 p.m. from the Broadcasting Stations during the months of November to April. It is quite frequently possible to anticipate the type of weather which will prevail for some days to come, but there are also many times when such is not the case. Consequently the same accuracy cannot be expected in a forecast for several days in advance as in the normal prediction for the ensuing twenty-four hours. But this desire for long-range forecasts is one that can be very easily exploited. This is done by numbers of people belonging to the second and third of the three classes of non-official forecaster mentioned above. The second class claim to base their predictions on some secret principle or formula which, if divulged, would make everything clear. This is a line of conduct which no one with genuine scientific interests would adopt. The true investigator presents his deductions to those who are acknowledged experts in the subject dealt with, and by them they are subjected to criticism. Unless unsound they are published in scientific journals when they can either be made use of or rejected by those concerned. Consequently a claim to the possession of some secret and revolutionary knowledge would naturally excite suspicion.