

V. Ordinary Meteorological Stations.

These stations may be arranged in subclasses in the order of the extent and frequency of the observations.

(a) Stations at which observations of all the ordinary elements are made at least three times a day.

(b) Stations where records are kept of the temperature, the direction and velocity of the wind, the amount of rain and snow, and the general state of the sky, with notices of Miscellaneous phenomena, the observations being made two or three times each day.

(c) Stations where records are kept of the amount of rain and snow, with notices of miscellaneous phenomena.

(d) Stations where notices are made of phenomena for observing which no instruments are needed, and where records are kept of events relative to the animal and vegetable kingdom, and other miscellaneous events, connected with the progress of the seasons.

For the maintenance of ordinary meteorological stations voluntary unpaid labor will probably be sufficient in Canada, as it is found to be in Europe and in the United States.

THE FORMATION OF THE ORGANIZATION MUST BE GRADUAL.

According to the foregoing scheme, the work of observing will be in the hands of agents who derive their incomes wholly or chiefly from other employments, from which, as a rule, they cannot absent themselves for instruction at head quarters. Much time therefore must necessarily be taken up in the formation of an efficient corps of observers.

As regards a telegraph system, the machinery could be brought into working order more speedily by employing none but fully salaried servants; but even this would not supersede the necessity of time for accumulating the data without which it would be impracticable to give a right interpretation to current weather indications.

Hence, in the present stage of the work, the most economical and ultimately the most effectual mode of procedure will be to procure, as at present, through the Post office, detailed returns from the stations now or about to be in operation, and to give gradual development to the telegraph system, as volunteer observers at proposed telegraph stations acquire the necessary experience.

ON THE ARRANGEMENTS MADE PROVISIONALLY IN PREPARATION FOR A MORE COMPLETE SYSTEM HEREAFTER.

I. The duties of the central meteorological office have been undertaken provisionally by the magnetic observatory at Toronto.

II. Six chief stations are or shortly will be in full or partial operation.

III. } No telegraph stations, *properly so*
IV. } *called*, are as yet in operation; but as a temporary measure, arrangements are in progress for a daily interchange of signals between Washington and a few selected points in Canada, by means of which a description of present and recent atmospheric conditions in various parts of the United States, and in some cases a statement of probabilities, will be placed day by day at the disposal of the Canadian public.

V. In seeking out new observers, territorial and numerical extension to observations of a simple kind has been aimed at, rather than the formation of a few well equipped ordinary stations.

This has been suggested partly by the consideration that the simpler observations are concerned with elements which are much affected by local disturbing causes, and which, for the elimination of such irregularities, need to be the more numerous; and also as the course by means of which agents suitable for heavier duties will be most readily discovered.

In accordance with this view a considerable addition has been made to the number of smaller stations, as will appear on comparing the list given below with that contained in the Year Book of 1871.

In procuring this addition much success has been owing to the official assistance afforded by the following gentlemen:

C. J. Brydges, Esq., Managing Director of the Grand Trunk Railway.

W. K. Muir, Esq., General Superintendent of the Great Western Railway.

F. Cumberland, Esq., Managing Director of the Northern Railway.

H. Abbott, Esq., Brockville and Ottawa and Canada Central railways.

Sandford Fleming, Esq., Chief Engineer of the Intercolonial Railway.

Lewis Carvell, Esq., General Superintendent of Government railways in New Brunswick.

H. D. McLeod, Esq., Local Superintendent of European and North American Railway, New Brunswick.

W. Moore, Esq., Manager of Gulf Port Steamship Company, Quebec.

Geo. Thompson, Esq., Assistant Superintendent of Schools, New Brunswick.

Thanks are also due to Capt. Ashe, R. N. of Quebec, through whose intervention the Revd. Père Bonneau, Chaplain to H. M. Forces at Quebec, procured permission from the Vicar-General for establishing rain stations at 26 convents in the diocese of Quebec, under care of the ladies in residence.

It was the opinion of the Revd. Père Bonneau, of whose kind and active cooperation it would be difficult to speak too highly, that these ladies would cheerfully undertake the service, and that from their systematic and punctual habits they were eminently qualified to do so. The names of the various conventual establishments to which apparatus has been sent will be given further on.

Light Houses.

In the close of 1870 the Hon. Peter Mitchel gave his consent to the proposal that some of the Light House keepers should be employed in keeping records of the direction and force of the wind, the general state of the weather, and, in some cases of temperature and rain-fall.

It was considered that the light houses, being situated for the most part near the high ways of commerce, and usually in exposed positions, were well suited *locally* for furnishing data whereby atmospheric movements might be studied; and that from the nature of the duties and habits of the keepers, these stations offered also singular facilities of a *personal* kind.

A serious draw back to the usefulness of the light houses in a meteorological point of view, lies in the fact that many of them are beyond the reach of the Post office, and that some can be visited only two or three times in the year. Their records cannot therefore systematically be made available for speedy use, as in the case of ordinary land stations, whose reports are