

The CHAIRMAN: Thank you very much. Could we have these articles distributed.

Mr. McTAGGART-COWAN: I think the simplest way to define meteorology is that it is the scientific study of the atmosphere and, in the context with which we will deal today, it is a study of the lower 20,000 to 30,000 feet of the atmosphere which is important. In the context of the space age, of course, the atmosphere surrounds the whole of the sun. In this context then our weather and climate are themselves a basic natural resource; and it is only through the knowledge and understanding of the water and the climate that the management of the other natural resources such as water, forests and agriculture can be progressed intelligently and managed effectively.

In regard to this concept of water and climate as a basic natural resource, the thought has been creeping over the world, largely in the post-war years, and to a considerable extent brought about by the realization that the world has a real water shortage over most of its area, that the effective management of this condition depends, to some extent, on our knowledge of the weather and climate of the area concerned.

Now, naturally I will confine my remarks today, to the subject on which I am competent to speak—meteorology. I would not want for a moment to leave the impression that the related disciplines in this water problem are less important simply because I did not mention them. However, I hope, as I go along, that you will see that the meteorological aspect is really a science service that has to be provided to the hydrologist, the hydraulic engineers, agronomers, forest scientists, and so on, so that they can play their part in the over-all management of water. And while, perhaps, the knowledge we have is a key part of the whole machinery, it is nothing more than just a cog in the whole complex problem.

Meteorological activities of importance to this problem fall into four main categories.

The first is the field of measurement; and in any of the natural resources the understanding of the problem depends on getting out and measuring the physical parameters—the variables, that define the field. The rest of your work is only as effective as those measurements are accurate. However, I will come back to that later.

The second role of the meteorological service is perhaps the most widely known, and that is the forecasting role. To most people of the world this conjures up in their minds that this concerns the forecasting of civilian or military activity but, at the present time, that is only one part of the forecasting or predicting role of meteorology, and it enters, equally importantly, in the water management complex as it does to land, water and air transportation, as it does to forest management, and almost every activity. This is consequent on the increase of our ability to predict meteorological phenomena.

The third facet we call climatology, which use the same basic measurements which are used in forecasting; and we process them in a statistical manner to define the climate of the area or to determine probabilities of certain events occurring, or the probability of certain maximum events recurring again in "X" number of years. The field of climatology depends on the amassing not of one or two years of records but of 30, 50 or 100 years, in order to draw a sound conclusion.

Finally, there is the field of research, wherein we hope to plug gaps—and there are many—in our present knowledge. I will return to this again in connection with the water problem, where there are real gaps in our knowledge. So perhaps that, sir, gives you a capsule picture of the field in which we operate.

From the standpoint of our capability naturally with the development of Canada over the last hundred years the primary initial requirement was