

— its temperature and wind, the nature of the waves, and the water temperature, for instance — are uniquely difficult from a moving ship.

### Global Observing System

To remedy the weaknesses in observations from sea and land, a global observing system has been developed that seeks to correct the deficiencies in the present system and incorporates the newer techniques. Many studies and intensive design and development work are in progress. Moored and free-floating ocean buoys are being tested; other forms of automated equipment for use at isolated stations are becoming more adaptable, more sophisticated and more costly.

Deficiencies in theoretical knowledge, weaknesses in the definitions covering the precise nature of data and the density of observing networks needed and in techniques for processing the data into usable and useful services have been identified and allocated for thorough study and solution to leading scientists in many countries.

The necessity for rapid and efficient communication of meteorological information has led to planning meetings, problem projects and development of new techniques. The plan for a new global telecommunications system calls for a reliable global system on a three-level basis; high-speed main-trunk circuits between world centres, regional networks, and national meteorological communications networks. Modern equipment and new facilities will be incorporated into the design of the system so that every country will obtain the observed and processed data it needs with the least possible delay. The capacity of satellites for efficient collection and relay of data from isolated points on the earth's surface is one of the newer methods being fully explored and tested.

Although mutually-helpful arrangements have been made between neighbouring countries or groups of countries in which forecasts, analyzed weather charts and similar processed material are exchanged, the World Weather Watch introduces a system by which co-operation and efficiency are fully exploited. World meteorological centres at Washington, Moscow and Melbourne are responsible for providing global analyses of weather patterns and large-scale, long-range forecasts of the basic processes taking place. Regional meteorological centres (one to be located in Montreal) will serve many of the common needs of countries and avoid much duplication of effort within a region, and national meteorological centres, operated by individual nations, will, in turn, provide the full range and number of weather services appropriate to the needs and the developing resources of each country.

This three-level system follows closely the pattern established in Canada some years ago in which a Central Analysis Office in Montreal is responsible for studying the large-scale atmosphere and for feeding its charts and advice by facsimile — a chart-transmission technique — to offices across the country. Weather centrals located at strategic points provide more detail and close support to the dozens of weather offices in Canada's major cities and industrial