Developments are also well advanced in humidifying offices and homes and in this process both temperature and water-vapour content of the air are brought under control.

The expense involved for both temperature and humidity control is naturally heavy where wide extremes of temperature are common. For instance, the amount of fuel consumption necessary to maintain a temperature of 65°F. in winter is very closely proportional to the difference between this temperature and the outside air, all other factors, such as type of construction and size of building, being equal. The problem resolves itself into making up the deficit of heat required to maintain a building at a certain temperature, say 65°F. in any particular locality. Such a deficit is expressed by engineers and others in day-degrees and calculations show that in Victoria, B.C., for instance, a deficit of 4,935 day-degrees must be made up to maintain the winter temperature of 65°F., whereas, for Vancouver, B.C., the figure is 5,303 and for Prince Rupert, B.C., 6,195. This means that annual fuel consumption would be 8 p.c. more at Vancouver, B.C., and 25 p.c. more at Prince Rupert, B.C., than at Victoria, B.C. At Toronto, Ont., a fuel bill for a standard building such as that under consideration would be 47 p.c. more than at Victoria, B.C., at Montreal, Que., 68 p.c. more and at Halifax, N.S., 50 p.c. more.

The above examples relate only to temperature, but water-vapour content is also an important consideration. As a generality, it may be assumed that 94 grains of water vapour must be mixed with each pound of dry air at 65°F. to reach 100 p.c. relative humidity. On the Pacific Coast there are normally 31 grains per pound available outdoors in January. After such air has entered the building and been heated to 65°F., the relative humidity indoors will be 31/94 or about 33 p.c. On the prairies with only 4 grains of water vapour per pound in the outside air, living conditions indoors are at a relative humidity of about 5 p.c. unless water vapour is artificially added. In the Lower Great Lakes Region the corresponding relative humidity is 14 to 17 p.c. on the average in January, and much the same in the Atlantic Provinces.

Problems in summer time are of exactly opposite character. As air is cooled it is necessary for comfort to dispose of surplus humidity. Such problems, while within the domain of the heating and ventilating engineer, depend on practical climatology for their solution.

The Meteorological Service of the Federal Government is also called upon to supply special data in the fields of medicine and chemistry. Aeronautical engineers require precise data on the conditions that exist in different levels of the upper air, etc.

From what has been said, it will be obvious that the continental expanse of Canada cannot be dealt with other than as a number of Climatic Regions, within each of which seasonal changes are sufficiently similar so that they can be dealt with as a unit, while important contrasts with other Regions are emphasized.

These Climatic Regions are (1) The Atlantic Provinces of Prince Edward Island, Nova Scotia and New Brunswick but including the Gaspe Pensinsula of Quebec; (2) The Laurentian Plateau within the areas of Quebec, Ontario and Manitoba; (3) The Lower Great Lakes or the area lying between Lakes Huron and Ontario, north to the Ottawa River and southward to Lake Erie with an extension along the St. Lawrence River to Quebec City; (4) The Southern Prairies (approximately as far north as the North Saskatchewan River); (5) The Southern Interior Valleys of the Mountains of British Columbia; (6) The Pacific Coast and Coastal Valleys;