

Ornithology.—A great deal of special research has been done on the life histories of birds that, because of their usefulness or destructiveness, are considered to be of economic importance, and on factors affecting the population of these important birds. The subjects embraced are: the reproductive rate of the Southern Eider Duck; eel-grass disease, and the introduction on the Atlantic Coast of eel-grass from the Pacific Coast; waterfowl food plants of the Precambrian Shield; effect of drought on waterfowl breeding grounds of the prairies; relation of waterfowl to sockeye salmon; relation of screech owl to agriculture; relation of the European gray partridge to agriculture; waterfowl disease in Alberta; cormorants and food fishes in Manitoba; food habits of hawks and owls; waterfowl and herring; the American merganser and fisheries; the red-breasted merganser and fisheries; food of the common mallard; the ring-billed gull in Alberta; food of the bald eagle; life history of the golden-eye ducks; relation between ducks and certain of their bird enemies; relation between ducks and coots; distribution of waterfowl; extent and productivity of nesting grounds; food resources of waterfowl; life histories of waterfowl; and relation of waterfowl to fisheries.

General topics studied are: the numbers and distribution of birds in Canada; the migrations of Canadian birds; phenomena of the manner of bird migration, particularly anemotaxis; the migrations of the white-bellied brant. Research has been carried on concerning the distribution of birds and mammals in the Canadian National Parks, factors affecting animal population in the National Parks, and factors affecting game-fish populations in National Parks.

Research in the Dominion Observatories.—The Dominion Observatory at Ottawa carries out research in the fields of solar physics, the photo-electric and photographic study of stars, seismology, magnetism, and gravity.

Research in solar physics includes a detailed study of the solar rotation, investigation of relations between the sun-spot cycle and temperature, rainfall, and vegetable and animal life, and other related subjects; incidentally a new generalized formula has been developed for the representation of the speed of solar rotation.

With the equatorial telescopes the work at present is mainly devoted to the study of variable stars by photo-electric and photographic methods; occasional work is done in direct photography and in spectroscopy.

Seismographs are maintained at Ottawa and at six subsidiary stations distributed from Halifax to Victoria, for the study of Canadian earthquakes and for international collaboration; one important problem is the measurement of the velocity of seismic waves under the Canadian Shield, with its relations to crustal phenomena and structure. Particular attention is being paid at present to the application of physical and seismic methods to the problem of rock-bursts in mines in northern Ontario.

Two magnetic observatories are maintained (at Agincourt, Ont., and Meanook, Alta.), to furnish a continuous record of magnetic declination and horizontal and vertical force; a magnetic survey covering the whole country is also carried on, repeat observations over a network of stations being made every five or ten years, for control of secular variation and its changes.

A gravity survey is in progress, and measurements of the intensity of gravity have been made at about 150 stations distributed throughout the more settled regions of the country; isostatic reduction of the available data shows that, in the main, the earth's crust in Canada is nearly in isostatic equilibrium, though important questions remain to be solved.