

Yukon. Most of the general principles applying to the lower or lesser forms will also apply to the larger vertebrate fauna. Essentially, they all depend upon the vegetable life of the earth, the plants transform inorganic chemical elements into organic food which can be assimilated by the animals, either directly as vegetable food by the herbivores, or indirectly by the carnivores which prey upon their herbivorous neighbours or upon each other. The bird fauna numbering about 600 forms, and the mammals about 540 are better known to the general observer, and will be treated more fully in the following pages.

The Study of Modern Faunas.—The first natural approach to systematic study of animals is to learn to tell one species from another, even if the names are not known. Following this, a knowledge of their economic uses for food, clothing, or shelter, and the information on habits and distribution which is necessary to successfully prosecute the chase is usually acquired. When such empirical knowledge is thoughtfully studied and systematized, it is soon noticed that while certain species are found almost everywhere, making their living under very diverse conditions, all types are not found in the same region. Each species is found where climate and physiographic conditions produce the kind of food and shelter which it likes. Some prefer hot climates to cold, arid to humid, or lowland valleys to timberline habitat. Several species of widely different families may be found in an identical habitat, as the distribution of the plants varies as widely as the distribution of animals. Vegetarian species may need some particular kinds of plants for food, but the predatory species find their food wherever weaker species exist which can be preyed upon.

The *Recent Fauna* of Canada as a whole is classified as *Nearctic*, essentially that of the northern half of the New World, and the typical native resident species, while showing decided differences from the faunas of South America, Africa, and southern Asia, display close similarity to the typical forms of northern Asia and Europe, which are known as *Palaearctic* faunas. We may therefore assume that the species of these two great faunal areas have a common origin. In a previous paper² the writer stated:

The movements of plant and animal life and the populating of new regions by other forms have been indicated by geological history since the appearance of life on the earth

That these movements and changes of environment have resulted in the displacement and ultimate extinction of many new forms is also apparent. Various theories have been proposed to account for these shiftings and changes of forms; the rising or submergence of land bridges, shifting of continents, change of climates due to glaciation, progressive desiccation of certain regions, or cataclysmic eruptions, but in general such changes must have been very gradual, extending over enormous periods of time.

It seems evident that in past times the continents in the northern hemisphere were more closely connected. The birds of North America mostly belong to families that are found in northern Europe and Asia, and even though birds can and do fly across wide bodies of water, they seldom spread out and establish themselves as permanent residents unless there is land connection. The close similarity of Asiatic species to many kinds of Canadian mammals, such as moose, elk (wapiti), caribou, bighorn sheep, big brown bears, wolves, foxes, ermine, marten, otter, wolverine, beaver, hare, pika, and many of the smaller rodents and insectivores, makes it seem probable that the ancestors of many of these species came originally from Asia, presumably at a time when there was a land bridge or solid ice connection between Asia and North America in the Bering Strait region. Osborn³ considered from both palæontological and zoological evidence that this land bridge was intermittent,