

nearly all the facts contained in these essays, having been collected from abroad though the value of the essays published, and the large number of competitors, show that we have persons qualified for the work. For hints very useful to the young naturalist, I may refer to the papers on collecting insects, and on the distribution of insects, by Mr. Couper, published in the *Naturalist*.

Who knows anything of the myriads of minute crustaceans and aquatic worms that swarm in our waters in summer. I have seen enough to be assured that their name is legion, but I am not aware that any one has collected or determined the species occurring here. The subject is a difficult one, but many of these creatures are exceedingly curious in structure and habits; and collections of facts and specimens might be made, by any one having time to devote to such pursuits.

Among the vertebrate animals, though there is little ground so completely untraversed as in some of the lower forms of life, much may still be done. In one department the late Prof. McCulloch and Prof. Hall long since set a good example, in collecting birds and other vertebrates, and preparing lists of those frequenting or rarely visiting this locality. The geographical distribution of the higher animals as illustrated by such collections and lists, is in itself a very important subject.

The fishes of our rivers afford a fertile subject of inquiry. Many of the smaller species are probably undescribed, and there are some of peculiar interest which deserve study in their habits and modes of life. I refer especially to the Lepidosteus and the Amia, those ancient forms of ganoid fishes which remind us so strongly of the antique species found fossil in the Palæozoic rocks, and a minute acquaintance with whose habits might throw most interesting light on the condition of the world in those bygone periods. Information on their spawning grounds, their haunts at different stages of growth, their food, their winter and summer resorts, their migrations, their peculiar instincts, if carefully collected, would be of inestimable value. Living specimens, which might be kept in vivaria and examined at leisure, would also be of great interest, and might be procured by many persons who have not themselves time or inclination for such studies. Agassiz, who has already so ably illustrated the structures and affinities of these animals, has invited collectors to contribute specimens for his great work now in progress; and any facts relating to the habits of these inhabitants of our waters, will be gladly received for this journal. I should add here, that Mr. Fowler, one of our members, has prepared a number of accurate and beautiful drawings of Canadian fishes, and can thus perpetuate for us the fleeting tints of our specimens.

Even the smaller quadrupeds of Canada are by no means well ascertained. The mice, the shrews, the bats, are very imperfectly known. There may be unknown species. There certainly are many unknown facts in distribution and habits. Mr. Billings has published in our journal an interesting summary of facts on Canadian quadrupeds; and much curious information exists in the work of Mr. Gosse, as well as in the standard works of Richardson & Audubon. I would especially invite attention to the mice and other small rodents, and the shrews. Only a few days ago a fine pair of specimens of the old Black Rat of Europe, which I did not know as a resident of Canada, were procured by Mr. Hunter, beautifully prepared by him, and presented by a friend to the College Cabinet, affording an illustration of the curious facts that may be learned even within the limits of our city.

I had almost forgotten to refer to the reptiles of Canada. The magnificent volumes of Professor Agassiz shew what may be done with one family, that of the tortoises. None of us, perhaps, can enter into the study in the manner in which this great naturalist has pursued it, but many may collect important facts and specimens. We do not yet know much about the numerous snakes, frogs, toads and newts of Canada, though many specimens exist in the collections of this Society, of Dr. McCulloch, and of the University. Even a catalogue of the specimens in these collections would be valuable. Unattractive though these creatures may appear to the popular view, they afford more than most other animals evidences of the wonders of creative skill.

One little batrachian reptile I regard, as a geologist, with peculiar interest, and would commend to your notice. I refer to the Menobranchus, or Proteus, a creature most unattractive in aspect, but most singular in its habits and mode of life, and a representative of the earliest forms of air-breathing life introduced upon our planet. No gift would afford me greater pleasure than a few living specimens of this animal, which might enable me to become better acquainted with its mode of life, and thus better appreciate the probable habits of some of its extinct congeners, whose bones I have disinterred from the carboniferous rocks. Some

time ago a living specimen was procured by Mr. Hodgkins of Toronto, but the few observations of its habits which he has recorded in the *Canadian Journal*, only stimulate the desire for further information.

It would be ungracious to leave the animal kingdom, without notice of Ethnology as a field of investigation. The remarkable collection of Mr. Kane, exhibited here during the meeting of the American Association last summer, must have strongly impressed your minds with the interest of the subject, as it relates to the Indian tribes. Mr. Kane was fortunate in having so able an expositor of his collection as Dr. Wilson; and I may add that Canada is fortunate in having an ethnologist so well fitted to lead in this department. Surely, some of our members might contribute something to his great subject. Specimens relating to it are not often laid before us. We received, however, last year, through the Bishop of Montreal, a curious ancient urn, which excited much interest. I have since been in correspondence with the gentleman who made known the discovery, and hope to obtain further information and specimens. On the return of his Lordship, who possesses the original notes on the subject, I trust this interesting relic will be figured and described in our journal.

Plants afford as many local attractions as animals, but I shall occupy less time with the subject of Botany than with that of Zoology. A very large herbarium has been collected by the oldest living member of this Society, Professor Holmes; and as we now have it arranged by Professor Barnston, in the Cabinet of McGill College, it affords an invaluable means of reference to the student. Dr. Barnston is now engaged in preparing a catalogue of this and his own collections, which will, I trust, be published under the auspices of this Society; and it will then be for subsequent collectors to add to this already extensive list such species as may still remain undiscovered.

The Canadian Botanist should not, however, content himself with the mere determination of plants. I cannot doubt that much remains to be done in investigating the uses of native plants not now applied to practical purposes in the art or in domestic life; and that as Canada becomes more populous, and agriculture less rude in its practice, the cultivation of many neglected plants fitted to contribute to minor practical uses, will be undertaken. Nor should our forests and the means for their preservation and restoration to such an extent as may be desirable for shelter and for the supply of wood, be neglected by scientific men. Rich gleanings, applicable to Canadian practice, may be made in this direction, from the expedients employed in European countries; and in a country in which one-third of the soil should probably remain in forest to supply the permanent demand for fuel and other uses, this subject is of great practical importance.

Another subject less practical, but profoundly interesting, is the geographical distribution of plants, so ably expounded by De Candolle, and on our side of the Atlantic by Professor Gray. The curious facts respecting the geographical distribution of the Ranunculaceæ, so pleasantly stated by Mr. George Barnston, in an article in the last volume of the *Canadian Naturalist*, show how much can be done in this field. But it is not merely in relation to botany that this inquiry is of interest. Edward Forbes has shewn that great questions in geology are illustrated by it; and nowhere better than on the American Continent can it be studied in this aspect. Let us inquire respecting any plant, what are its precise geographical limits? To what extent do these depend on climate, elevation, exposure, soil. What inferences may be deduced as to the centre from which it originally spread, and what as to the changes in the extent of the land and the relative levels of land and sea that have occurred since its creation? Here are fertile subjects of inquiry, leading to the grandest conclusions in reference to the history of life upon our planet.

But I must turn for a moment from this great subject to the humbler members of the vegetable kingdom, no less curious than the higher, and less known. One of our members, the Rev. Mr. Kemp, has directed his attention to the fresh-water Algae, and has contributed a valuable paper as the first result of his inquiries. Mr. Poe, another of our members, is an enthusiastic student of the Fungi, and other more minute and simple forms of plant life. A summary of what is known of these objects, as occurring in Canada, will be given to us by Mr. Poe in the present winter; and I have no doubt will excite some interest in these singular and anomalous structures, so curious in their habits and often so injurious to our property.

The Mosses, Lichens, Lycopodiaceæ, Ferns, and other allied families, offer many rewards to any diligent student; and the excellent arrangement and descriptions in Professor Gray's new edition of his manual, give facilities heretofore within the reach of