

tions show well the physical characters of this forest-clad region, which, with its lakes, rivers, and low hills, is, indeed, typical of the pre-Cambrian lands of North America.

Mr. Collins also reports on the "Region lying North of Lake Superior between the Pic and Nipigon Rivers, Ontario" (1909), where he was again on the great Archæan peneplain. The soils, still so deficient on this recently glaciated surface, fill the river-valleys and depressions, and "form a thin, discontinuous blanket that ineffectually covers the underlying Archæan floor." Mr. W. J. Wilson's report on parts of Algoma and Thunder Bay districts, Ontario, is bound up with that by Mr. Collins, and covers the river-courses of the country to the north and east. The large map illustrating both papers, on the scale of eight miles to one inch, together with the photographic illustrations, shows how exploration must for a long time be confined to the natural channels through the woodlands. Fossiliferous beds of Silurian age have been found on the tributaries running from the south and west into the Albany River. Their fauna is described by Mr. Whiteaves in an appendix (p. 34), and the report, with characteristic Canadian foresight, also illustrates the modern fauna in the form of speckled trout and store-clad Indians.

Mr. O. E. Leroy writes on the "Main Coast of British Columbia and Adjacent Islands in New Westminster and Nanaimo Districts" (1908), where he has a fascinating field among the fjords north-west of Vancouver. The drainage-grooves now entered by the sea are believed to have originated in early Cretaceous times, when great erosion prevailed. The country has been modified by local glaciation and by the passage of the lobe of an ice-sheet down the Strait of Georgia, inside Vancouver Island. A great batholite, varying in composition from a granite to a gabbro, invaded the Palæozoic sediments and igneous series, probably in the Upper Jurassic epoch, and has left conspicuous traces of its gradual advance by "stoping" (p. 17). This mass is responsible for a large part of the steep and rocky scenery along the fjords. The country appears rich in lead and copper ores, and magnetite awaits further development on Texada Island. The coal on Vancouver Island and the limestone on Texada Island are suggested as local means of smelting.

Mr. D. D. Cairnes's report on part of the Conrad and Whitehorse mining districts (1908) gives impressive illustrations of the grim scenery of Yukon. Aerial tramways now bring up fuel and food to claims on Alpine ridges, and the telephone prevents the feeling of isolation which tends to grow on pioneers. Conrad City is so young that it does not appear on the contoured map constructed in 1906, but we understand it to be at the foot of the Montana tramway. A photograph of it, facing the huge mountain-wall across the lake, assures us of its reality. As usual, the best is made of everything, and we are told that the long summer days may be delightful, although the lake waters remain so cold as to threaten death to those immersed in them. The gold-mining is in vein-quartz traversing Palæozoic schists, as in the Klondike fields. The granite that is so conspicuous on the coast of British Columbia cuts these schists, and is overlain by porphyrites and the Lower Cretaceous Tutshi series. A post-glacial eruption (p. 37) of considerable magnitude has formed a layer of volcanic ash 3 to 6 inches thick over a wide area in the valley-floors.

The Canadian Survey is not entirely absorbed by the excitements of mining enterprise. Dr. D. P. Penhallow, in a handsome quarto, reports on the Tertiary plants of British Columbia. This includes a review of all the known species, conveniently arranged alphabetically under genera, which are also in alphabetical order. The basis of the present work is an extensive series of plant-remains collected by Mr. L. M. Lambe for the Survey in 1906. East of the Rocky Mountains, the Canadian lignites are of "Laramie" (Eocene) age, though they have been referred by Heer, as was his general practice, to the Miocene. Similarly, the "Miocene" lignites of British Columbia are shown, by Dr. Penhallow's analysis of species, to be partly of Laramie and largely of Oligocene age. Sir William Dawson's views have thus been verified in detail. The table on p. 152 will be useful to stratigraphers.

Part iv. of the third volume of "Contributions to Canadian

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Palæontology" is by Mr. Lambe, on the Vertebrata of the Oligocene of the Cypress Hills, Saskatchewan. This is a continuation and revision of a previous work by Cope, and describes several new species, including *Amia exilis* and *Lepidosteus longus* among fishes, represented by fragmental remains, a probable anthracotherian tooth, and the well-preserved lower jaw of a Titanother, *Megacerops primitivus*. Eight excellent plates, from the author's drawings, accompany the memoir. G. A. J. C.

PAPERS ON AMERICAN INVERTEBRATES.

NO. 1706, 1710, 1712, and 1713 of the Proceedings of the U.S. National Museum are devoted to the descriptions of various groups of invertebrates from American territory. In No. 1713 Mr. S. S. Berry deals with a series of new cephalopods from the Hawaiian Islands, among which special interest attaches to the new genus and species *Stephanoteuthis hawaiiensis*, an apparent member of the Sepiolidæ, characterised by the peculiar shape of the body and the ventral anterior extension of the mantle to cover the funnel. In other respects the genus is, however, related to *Heteroteuthis*. A remarkable globular form, described as *Cranchia globula*, is related to *C. reinhardtii*, in which globularity appears to be a feature of immaturity, but whether the same holds good for the new form—if, indeed, it be really distinct—remains for future determination.

Cœlenterates from Labrador and Newfoundland form the subject of No. 1706. These have been investigated by Mr. H. B. Bigelow, who finds that all of them belong to previously described species, so that their interest is largely geographical. Several of them have been hitherto known only from Greenland and northern Europe. The species *Catablema vesicaria* and *Æginopsis laurentii* have, however, proved of interest from an anatomical point of view, and are important in regard to the classification of the Narcomedusæ.

In No. 1710 Mr. E. B. Williamson revises the arrangement of the North American dragon-flies of the genus *Macromia*, from which he finds those described as *Epophthalmia* to be inseparable. *Didymops*, as regards venation, appears to come very close to *Macromia*, but may seemingly be distinguished by other characters. Two new species of the genus under review are named and described.

No. 1712 is devoted to the second part of Dr. N. Annandale's account of the fresh-water sponges in the collection of the U.S. National Museum, none of the few forms referred to being new to science.

EDUCATION IN ENGLAND AND ABROAD.¹

FROM the eighth century to the time of the Reformation the history of education in England, France, and Germany was in many respects similar. The one champion of learning was the Church; and in the religious houses we find an organised and established system of education, of which not only the lower rank of people, who could not pay for their learning, but noblemen and gentlemen's sons might take advantage. In England the system was particularly successful; as early as the year 1201 there are said to have been more than 3000 scholars at the University of Oxford, and Roger Bacon tells us that there never had been so great an appearance of learning and so great an application to study as at that time, when schools were erected in every city, town, and borough. The learning of Englishmen compared favourably at this early date with that of scholars on the Continent. We are told that in 1169 there was a "colony" of English students at the University of Paris, belonging to the faculty of arts, of which it is said that they "in particular were so numerous that they occupied several schools or colleges, and made so distinguished a figure by their genius and learning, as well as by their generous manner of living, that they attracted the notice of all strangers."

Against the Church, in this matter of education, were arrayed both the general opinion of the aristocratic classes and also the power of the law. Not all the sons of gentle-

¹ From a paper read at the North of England Education Conference Leeds, on January 8, by Otto Siepmann.