

The Hadrosaur *Edmontosaurus* from the Upper Cretaceous of Alberta.

INTRODUCTION.

The Hadrosauridæ¹ are a group of herbivorous dinosaurs of which most of the genera are from the continent of North America. The literature relative to this family is both voluminous and involved. The earlier descriptions were based often on inadequate material which gave little information as to the relations of the forms represented and their variety which has proved to be much greater than was at first supposed. The rapidity of the evolutionary changes that took place in these reptiles during Cretaceous times, especially toward the close of the period, resulting in a wonderful diversity of form, could not, in the circumstances, be fully appreciated. At the early stage of geological and palæontological investigation the horizons supplying dinosaurian remains had been only broadly determined. Geological exploration was at that time carried on, in the west particularly, under trying and arduous conditions; transportation was difficult; and rough-and-ready methods of collecting were used by parties most inadequately equipped for field work according to present day standards. It is not surprising, therefore, in spite of the brilliancy of the pioneer few who undertook palæontological investigation, and the ardour which they brought to bear on their work and by which they were upheld, that errors were not avoided. It does not detract from the excellence of their results to now find that diversity of form was not always recognized, that, for instance, generic terms were employed to include types not only widely separated by time intervals but also by very decided differences in structure.

Recent discoveries during the last six years in the Belly River and Edmonton formations on Red Deer river, Alberta, of nearly complete skeletons of several distinct types of hadrosaurs have provided excellent material for study and description, thrown much light on the osteology of the group, and opened the way for a classification of its members.

In the following pages a description of the large hadrosaur *Edmontosaurus regalis*, Lambe² from the Edmonton formation of Red Deer river, Alberta, is followed by a proposed division of the Hadrosauridæ into three subfamilies the classification being based principally on type and other material resulting from the exploratory work of vertebrate palæontological field parties of the Geological Survey, Canada, in Alberta, largely supplemented by the discoveries of the American Museum of Natural History, New York, in the same region and to the south of the International Boundary.

Of the two skeletons on which the genus *Edmontosaurus* was established in 1917, one is unique in that the majority of the bones of the head and of the remainder of the skeleton were found together naturally dis-

¹The name Hadrosauridæ proposed by Cope in 1869 (1871) has precedence over Trachodontidæ used by Lydekker in 1888 and later by Marsh in 1890.

²A new genus and species of crestless hadrosaur from the Edmonton formation of Alberta; Ottawa Naturalist, vol. XXI, No. 7, Oct. 1917, pp. 65-73, pls. II and III.