from Mrs. J. M. Arms, who is in charge of nature study in the schools of Boston, Mass.:

Nature study is simply the study of nature, not the study of books. It is a course of nature lessons especially adapted for elementary schools. Minerals, rocks, plants and animals are the necessary materials for such lessons. The method of study may be expressed in three words, observation, comparison, inference. The child must be made to see the object he looks at, and to this end he tries to draw it and to describe it in writing. Comparative work is mental training, which, combined with the observational training already spoken of, gives a certain degree of mental power. This power gained in the early years increases with continued effort. Fortunately, this work is recognized as one of the potent agencies in producing efficient men and women equipped for a life work that shall make for the betterment and enlightenment of humanity.

SHORTER ARTICLES.

DISCOVERY OF TEETH IN BAPTANODON, AN ICHTHYOSAURIAN FROM THE JURASSIC OF WYOMING.

AMONG the vertebrate fossils collected by Mr. O. A. Peterson during the season of 1900 on Sheep Creek, Albany County, Wyo., there was obtained from the lower beds of the Jurassic a very complete skull of an Ichthyosaurian reptile (*Baptanodon discus?*) together with a few vertebræ and ribs.

Through the courtesy of Mr. J. B. Hatcher, curator of the Department of Vertebrate Paleontology of the Carnegie Museum, this material has been placed at the disposal of the writer for study and description.

Heretofore the American Jurassic Ichthyosaurians were supposed to be edentulous, but while preparing this specimen (No. 603) for study the remarkable discovery was made that the jaws bore teeth, two of which were found between the jaws near the end of the snout. One tooth was apparently in position in the upper jaw, while the other lay imbedded in the matrix between the jaws and entirely detached from them. The teeth are small, conical, and covered with longitudinal striæ. In general form and surface markings they resemble very closely the teeth of the Liassic Ichthyosaurs of England and Europe. The teeth were undoubtedly loosely fixed in the jaws and have been lost in all previously discovered specimens. In the present skull a few of them have fortunately been retained, and we have here the first evidence of their presence in *Baptanodon,* which may be regarded as the American representative of the Ichthyosaurian reptiles.

When the skull is entirely freed from the matrix and the jaws separated from one another, more teeth will doubtless be exposed.

From the above evidence it would appear that the generic terms *Baptanodon* (*Saurano-don*) of Marsh* are misnomers.

The reduction in size and number of the teeth in the Jurassic Ichthyosaurians is paralleled in some of the recent Cetacea. Most if not all of the early (Eocene and Miocene) cetaceans were well provided with functional teeth, while in many modern forms these either have been entirely lost or have become rudimentary, in some instances appearing only in the embryonic or young stage of the individual. Just so the early Ichthyosaurs were provided with an abundance of teeth, but in later forms the number and size of the teeth were reduced, until in *Baptanodon* a form was developed which, while still possessing teeth, was practically edentulous.

Ichthyosaurus longirostris as described by Owen,† was in this respect intermediate between *Ichthyosaurus longifrons* from the Lias of England and Europe, and *Baptanodon discus* of the American Jurassic.

The presence of teeth, though undoubtedly reduced in number and in size in American Ichthyosaurians, may perhaps be considered as invalidating the genus *Baptanodon,* for on that character alone Marsh distinguished that genus from the European genus *Ichthyosaurus.* It would seem better, however, to retain the generic name *Baptanodon* until

* 'A New Order of Extinct Reptiles, Sauranodonta,' *Amer. Journ. of Science and Arts,* Vol. XVI., January, 1879, p. 85.

† 'Fossil Reptilia of the Liassic Formation,' part third, p. 124.

it has been conclusively shown to be generically identical with *Ophthalmosaurus* or *Ichthyosaurus*. On the other hand, some may contend that the present specimen is distinguishable generically from *Baptanodon*, although the writer at present does not believe this.

Should further studies or future discoveries demonstrate the present specimen to pertain to a distinct genus and species, it might then be very appropriately called *Microdontosaurus petersonii*, and should those forms previously described by Marsh still prove to be edentulous this character would alone be sufficient to distinguish it generically from *Baptanodon*. To definitely distinguish it, however, from *Ophthalmosaurus* is at present not possible, and the American and European forms may yet prove to be generically identical.

This discovery is of further importance from a geological standpoint. The existence of forms so similar in beds which in America have been referred by Marsh and others to the lower Jurassic and in England and Europe to the Liassic is of the greatest value for purposes of correlation, and if it does not demonstrate the equivalent age of these two deposits it at least furnishes additional evidence in favor of the Jurassic age of the conformably and immediately overlying Atlantosaurus beds of Marsh, as was consistently maintained by that author.

The points it is desired to emphasize in this preliminary paper are:

1. *The presence of Ichthyosaurians with teeth in the American Jurassic.*

2. *The great similarity and perhaps generic identity of Baptanodon and Ophthalmosaurus.*

3. *The further evidence it affords in favor of the Jurassic age of the Atlantosaurus beds of Marsh, which has been seriously questioned by some authorities.*

This material will be more fully described and illustrated in a paper now in preparation by the present author.

CHARLES W. GILMORE.

CARNEGIE MUSEUM,
November 12, 1902.

CURRENT NOTES ON PHYSIOGRAPHY.

RIVERS OF SOUTH DAKOTA.

THE 'Hydrographic History of South Dakota,' by J. E. Todd (*Bull. Geol. Soc. Amer.*, XIII., 1902, pp. 27–40, maps) summarizes the work of some ten years in serviceable form. The general eastward slope from the Rocky mountains and Black hills (whether resulting from the tilting of formerly level lacustrine strata, or from the slant of fluviatile deposition) determined the delivery of six east-flowing streams to a preglacial geosynclinal south-flowing trunk river whose course is roughly represented by James river in eastern Dakota and by the existing Missouri further south. The broad James valley was invaded by a great ice lobe, 1,000 to 2,000 feet thick, in the latest (Wisconsin) epoch of the glacial period; the east-flowing streams were thereby obstructed, with the result of producing temporary lakes whose combined southward outlets across the preglacial interfluves determined the Missouri river in Dakota. Evidence of the changes thus involved is found in the abundant moraines on the present divide between Missouri and James, in the masked extension under these moraines of the preglacial east-sloping valleys and their interfluves, in the shore lines of various temporary lakes, and in the apparently younger form of the Missouri valley where it cuts through the interfluves, although but few details are given on the latter point. The associated changes in several other rivers are traced.

ARGENTINE-CHILEAN BOUNDARY.

A REMARKABLE report by the Argentine commissioners on the Argentine-Chilean boundary has been presented to the British arbitration tribunal. It consists of five quarto volumes, printed for the Argentine government by Clowes (London, 1900), with numerous photographic plates and maps, from which a great amount of geographic and physiographic information may be obtained. The dispute that the arbitration tribunal is to settle turns, as is not infrequently the case in such disputes, upon an insufficiency of physiographic detail in the description of