

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.

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#### 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 fluvatile 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

the international boundary in the treaty by which it was defined. "The frontier line shall run \* \* \* along the most elevated crests of said Cordilleras that may divide the waters, and shall pass between the slopes which descend one side and the other." The Argentines, therefore, claim that the line should follow the crest of the Andes, crossing where necessary the courses of those rivers which flow through the range; while the Chileans claim that it should follow the water parting, even when that would lead the line far out upon the open pampas many miles east of the mountains. The fact that mountain ranges are sometimes cut through by the deep gorges of through-going, transverse rivers was well known as a general physiographic occurrence at the time when the boundary treaty was drawn up (1881), though the numerous specific instances of this kind in the mountain range in question had then been hardly recognized. In spite of this want of local information, it does not seem unreasonable to blame the diplomats who drew up the boundary treaty for being so careless with respect to complications of known possibility. They might have learned a profitable lesson from the practice of patent lawyers, who make so thorough a defense of a new invention. The only disturbing complications mentioned in the treaty were those arising in valleys formed by 'bifurcation of the Cordillera' where 'the watershed may not be apparent.'

The maps, plates and text of the 'Report' give many details concerning the crest line of the Andes, the deep gorges by which the mountains are cut through, and the topography, frequently morainic, of the pampas around the headwaters of the through-flowing rivers. These features have been described in abstract in certain of the European geographical journals, where at least one writer explains the transverse gorges by the capture of eastern drainage areas by the normal retrogressive erosion of streams on the western mountain slope. It is difficult to accept this explanation, because it is not shown that the western streams have enjoyed any advantage, such as should have led them to acquire so much drainage from their eastern competitors at so

early a stage of mountain dissection as that now reached by the Andes. Hatcher has suggested, on the basis of his own observations, that the peculiar river courses result from relatively recent deformation of the region. The aid that glacial erosion may have given does not seem to have been considered, although the possible sawing down of divides by overflowing glaciers has elsewhere been shown to be an important process in heavily glaciated regions.

#### MAPS OF FAROE ISLANDS.

THE Danish General Staff has published fifty-three sheets of an elaborate topographical map of what we tautologically call the Faroe Islands. The map is printed in four colors on a scale of 1:20,000, with contours every ten (sometimes every five) meters. Only the skeleton of what was originally a lava plateau now remains. The larger islands are divided into separate uplands by broadly open, trough-shaped, through-going valleys that descend with gentle slope in both directions from a low valley-floor divide. The sounds by which the islands are separated seem to be only submerged valleys of the same kind. Great cirques, from half a mile to a mile across, open from the main valleys. The strong slopes of the valleys and cirques are notably smooth, unravined by the numerous streams that descend from the uplands; and hence it may be concluded that much of the dissection of the lava plateau has been accomplished by ice action. If so, it is here, as elsewhere, unsafe to infer postglacial submergence simply because some of the valleys are drowned; for if glaciers can erode at all they can certainly erode to a significant depth beneath sea level. The sea-cut cliffs are very bold on the western coast; those of Strömö are 500 or 600 meters high at a distance of only 200 or 300 meters inland from the shore line.

W. M. DAVIS.

#### THE MAGNETIC SURVEY OF LOUISIANA.

ARRANGEMENTS have just been completed between Superintendent Tittmann and the State Geologist, Professor G. D. Harris, for making a detailed magnetic survey of Louisiana under