chelonians. Ponds, creeks, marshes and rivers are swarming with them, and surely a place could be found which only requires fencing to be turned into a scientific, experimental 'crawl,' where some hundreds of turtles of a suitable kind could be turned loose, labeled, of course, and examined from time to time whether any of them are amending their abnormal shells. For physical reasons such an experiment of possibly far-reaching, fundamental importance, can not be made in Europe.

H. Gadow.

Cambridge, Eng.,
September 4, 1905.

NOTE ON VECTOR SYMBOLS.

The question of notation was always of importance, and the introduction of new methods depends a good deal on it. It is, of course, highly desirable to have *one* system of notation used by all the scientific world, but at the same time it is also desirable that the system in use shall be a simple and easy one.

The vector-analysis becomes more important every day in the study of physics. It is, therefore, necessary to have a vector notation as simple as possible. The notation used today is far from being uniform, and still the tendency is towards the introduction of German letters for the symbolization of vectors. May be that when printed, the German letters look well, and are well distinguished from the Latin alphabet. The student, no matter of what nationality, can learn to recognize them just as he learns to recognize the Greek alphabet. But the question is the *writing* of the German characters. Those that try to picture a German print-letter on the board when necessary to use the vector symbols in a lecture before a class will know how difficult this is. And to use different signs when written and different signs when printed does not seem reasonable. Why not use as symbols for vector quantities the Latin alphabet? The Latin alphabet is almost universal, and there is no difficulty whatever to write this alphabet. I, therefore, propose—with Professor Karl Heun in Germany—to use the following notation for vectors, a notation as simple as it can be.

All vector quantities are written as follows: $\bar{a}$, $\bar{b}$, $\bar{d}$, $\cdots$, $\bar{A}$, $\bar{B}$, $\bar{G}$, $\cdots$, and their tensors respectively: $a, b, d, \cdots, A, B, G, \cdots$. The scalar-product of two vectors $\bar{a}$ and b is written: $\bar{a}\,\bar{b}$, which, by definition, is $= a\,b \cos(a, \bar{b})$. The vector-product of two vectors $\bar{a}$, $\bar{b}$ is written thus: $\overline{ab}$, and because it is itself a vector it can be written: $\bar{c} = \overline{ab}$. The tensor of this vector: $c = ab \sin(\bar{a}, \bar{b})$. The unit vector can be written, for instance, $\bar{a}_1, \bar{b}_1, \cdots$, so that $\bar{a} = a\,\bar{a}_1$, $\bar{e} = e\,\bar{e}_1$, $\cdots$.

The advantage and simplicity of this system of notation speak for themselves.

H. Schapper.

University of Arkansas,
Fayetteville, Ark.,
August 8, 1905.

THE OCCURRENCE OF ICHTHYOSAUR-LIKE REMAINS IN THE UPPER CRETACEOUS OF WYOMING.

Through the kindness of Professor S. W. Williston, I have recently received two fragmentary vertebræ found by Mr. W. H. Reed in the Benton Cretaceous near the north end of Medicine Bow Mountains. Although very fragmentary, these vertebræ appear to represent a genus allied to *Ichthyosaurus*. As this reptilian group has not been known in North America in beds as late as the Benton, the discovery is of considerable interest.

The larger fragment consists of the upper three fourths of a deeply biconcave vertebral centrum apparently from the cervical or anterior dorsal region. The centrum is very thin antero-posteriorly, and in this respect somewhat resembles the corresponding centra in *Baptanodon discus*. The sides are considerably damaged, so that it is not possible to make a definite statement concerning the rib articulation, but it seems to have been double, as in *Baptanodon*. A foramen close to the upper end of the diapophyses is larger than any I have seen in this position in the typical Ichthyosaurs, and adds somewhat to the difficulty of making a definite determination of the relationships of this form.

When more material is available it will be interesting to learn whether this form really represents a true *Ichthyosaurus* or possibly a more highly specialized form of *Baptanodon*