clearly 'one of the books which no [scientific] gentleman's library should be without.'

The theory of evolution being now, as Professor Townsend informs us, 'discredited and abandoned by the best scholarship of the world,' it is high time that the 'American university professors' who still continue to deceive the people on this important question, should be called to account. "Were these professors clergymen, would it be discourteous to characterize such an exhibition as a piece of superb ignorance or insolence?" 'We are a little behind the times on these questions in this country as compared with England, France and Germany, though ahead in almost everything else'; and 'the most thorough scholars, the world's ablest philosophers and scientists, with few exceptions, are not supporters, but assailants of evolution,' so that American men of science will do well to heed this clarion call from Boston University. "If these facts as to the attitude of leading scientists, and if this revolution of opinion in Germany are known, and certainly they ought to be, then can the silence of our American evolutionists be looked upon as honest or manly?"

The trouble with us over here in the wilds of North America is that we have been making fine-spun distinction where there is no real unlikeness. "What essential or fundamental difference is there between Darwinism and any scheme of evolution that may be or can be proposed?" Professor Townsend repudiates with scorn the suggestion that he confuses evolution and Darwinism. They are the same thing; and every naturalist who questions the all-sufficiency of selection becomes *ipso facto* an advocate of special creation. De Vries, among others, has his name called right out in meeting on the strength of that eminent scientific authority, the *Literary Digest*.

A muddle-headed chap the evolutionist—or the Darwinian—is at best: see how he gets fooled by the Tertiary horse! "While there is some resemblance between these four-toed animals and the modern horse, as there are some resemblances between a cow and a crow, a man and a mouse, each having a head with its eyes, nose and ears, and each having feet with which to walk, yet these resemblances furnish no more evidence of organic connections and transmutations in the one case than in the other—that is no evidence at all." But then what is to be expected of persons who employ "such terms as 'bathiosm,' 'cosmic ether,' 'cosmic emotion,' 'germplasm,' 'pangenesis,' 'protoplasm,' 'growth force,' 'vital fluid' and the like. * * * It should be said, however, that not for five or ten years have these terms, once potent on the lips of scientists and philosophers, been employed seriously by any reputable writer on these subjects."

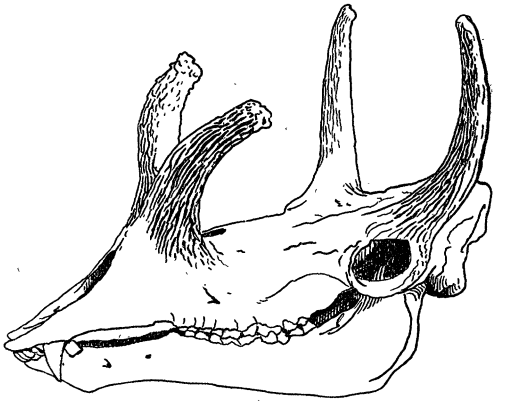
After this warning, if any reader of SCIENCE is caught saying 'protoplasm,' it will be his own fault!

E. T. BREWSTER.

SPECIAL ARTICLES.

A NEW MIOCENE ARTIODACTYL.

AMONG several discoveries made in the Daimonelix beds (Loup Fork) of Sioux County, Nebraska, the most striking one of the season seems to be that of a new four-horned ancestral antelope, *Syndyoceras cooki*, the skull of which is herein figured and briefly described. The discovery was made by Mr.



Syndyoceras cooki, Barbour, 1905.

Harold G. Cook, a former Lincoln student and a member of the Morrill geological expedition of 1905.

The specimen, which gives promise of being complete, was found on the west bank of the Niobrara River in the bluffs bordering the extensive ranch of Mr. James Cook, Agate,

Nebr. The skeletal parts known at present are the skull and mandible; the vertebral series, complete as far as exposed, and articulated; the pelvis and sacrum and the hind limbs complete and likewise articulated; several ribs attached to the vertebræ above and to the sternum below, and a portion of one scapula. The fore limbs are not yet in evidence, but will doubtless be found either in the material collected or else in the quarry, which still showed numerous bones when work was suspended.

The most striking characteristic of the skull is the four prominent horns, of which the frontal pair rises upward and curves inward, while the maxillary pair curves in the opposite direction. The maxillary horns, uniting as they do at the base to form a common trunk, divide the anterior nares into two portions, the posterior of which may or may not have been functional. However this may have been, the margin of the opening seems to have been roughened as though for ligamentous attachment. The dentition is complete, though, consequent to age, the teeth are worn. The premaxillæ are edentulous. The upper canines, which are strong and defensive, curve noticeably outward. The lower canines have migrated and assumed an incisiform function, while the first premolars have in a like manner become caniniform. Dentition:

$$\text{I.}\ \tfrac{0}{3},\ \text{C.}\ \tfrac{1}{1},\ \text{P.}\ \tfrac{3}{4},\ \text{M.}\ \tfrac{3}{3}.$$

Measurements of the skull: Length of skull, $12\frac{3}{4}$ inches (325 mm.); distance between the orbits across the frontals, 5 inches (128 mm.); height of anterior horn cores above plane of molars $6\frac{1}{2}$ inches (166 mm.); spread of same at summits $8\frac{1}{4}$ inches (210 mm.); height of posterior horn cores above plane of molars $7\frac{3}{4}$ inches (197 mm.); spread of same at widest point 10 inches (254 mm.); width of palate between molars $1\frac{1}{4}$ inches (32 mm.).

No attempt should be made at this juncture to fully define the genus. As to its affinities, *Syndyoceras* seems to be remotely related on the one hand to *Protoceras* of the Oligocene, and on the other hand to the modern antelopes. *Syndyoceras* may be placed for the present with the Protoceratidæ, but it is doubtless entitled to a place in a new family.

Erwin Hinckley Barbour.
The University of Nebraska, Lincoln,
October 1, 1905.

NOTE ON THE FUNCTIONS OF THE FINS OF FISHES.

The exact determination of the function of each kind of fin in fishes does not appear to have been treated in a practical manner up to the present time, and these organs are in general regarded as of little importance for swimming. It occurred to me that a few experiments might elucidate the question. Unfortunately, I had and can have, at my disposal, only fishes with fins but little developed and in small number, so that the facts which I am going to set forth have only a relative bearing, and only naturalists having sufficient material at their disposal will be able to establish general rules.

I had in the aquarium of the state college three or four small specimens of *Goodea atripennis* (a cyprinodont) four or five centimeters long, taken in a pond in the state of Guanajuato. One of these individuals attracted my attention by the entire absence of its dorsal fin; whether it had disappeared by accident or whether it had never existed was not evident. Since the creature swam exactly like those which were perfect, I thought of investigating the function of this fin and also of the others, both paired and single.

No. 1. Individual without dorsal fin. My preparator cut off the anal fin close to the body. No difference whatever was observed in the creature's movements. I conclude that, in *Goodea* at least, this organ exerts no influence in swimming or on the equilibrium.

No. 2. I took another fish and had the pectorals and the ventrals amputated, that is to say, the four members. At first the creature appeared somewhat astonished and hesitating; but at the end of an hour it finished by moving deliberately and swimming as usual. The pairs of fins appear, therefore, to have very little if any bearing on locomotion.

No. 3. A third *Goodea* served for the study of the caudal fin. That alone was cut off.