compound (phosphorhaltiges Eiweiss). The vegetable proteids have not yet received the attention which, in the reviewer's opinion, they deserve. The crystallized vegetable proteids are dismissed with a few words (p. 149) and without any adequate references to the methods of obtaining them, although their preparation has already assumed commercial proportions; the crystallization of egg- and serum-albumin, on the other hand, is carefully considered. It must be said to the credit of Professor Cohnheim that he has, in contrast to most continental writers, shown appreciation of the important work by American investigators in the domain of the vegetable proteids in the present edition.

The greatly enlarged chapter (II.) on cleavage products, beginning with a brief historical review, is excellent in every respect and ought to be warmly welcomed for its exhaustive reference list. The compounds obtained by the action of acids or digestive enzymes are very properly discussed in a separate group as fundamental (primäre Spaltungsprodukte); and the quantitative relations are compiled so far as known. The existence of diaminoacetic acid (Drechsel) is now rendered doubtful (p. 33). In principle the distinction between anti- and hemi-proteid derivatives is still maintained. The chapter on albumoses and peptones has been adapted to the modified system of analysis and nomenclature introduced by the Hofmeister school, the so-called peptids and plasteins also being added. A brief résumé of the behavior of proteids towards the aniline dyes (p. 114) will interest histologists.

The special part of the book, dealing with the individual proteids, is more encyclopædic in character and the innovations are naturally less conspicuous. One receives everywhere an impression of first-hand acquaintance with the literature and must admire the industry and good judgment of the author. Finally, even the most casual examination of this work of three hundred pages can not fail to impress the reader with the growing importance and interest which the study of the proteids is attaining in biology. LAFAYETTE B. MENDEL.

SHEFFIELD SCIENTIFIC SCHOOL,
YALE UNIVERSITY.

SCIENTIFIC JOURNALS AND ARTICLES.

The *American Journal of Science* for October contains the following articles:

'New Devonian Formation in Colorado': W. CROSS.

'Upper Devonian Fish Remains from Colorado': C. R. EASTMAN.

'Fossil Turtles belonging to the Marsh Collection in Yale University Museum': O. P. HAY.

'Air Radiation': C. C. HUTCHINS and J. C. PEARSON.

'Uintacrinus and Hemiaster in the Vancouver Cretaceous': J. F. WHITEAVES.

'Separation of the most Volatile Gases from the Air without Liquefaction': J. DEWAR.

'Absorption and Thermal Evolution of Gases occluded in Charcoal at Low Temperatures': J. DEWAR.

'Studies in the Cyperaceæ': T. HOLM.

The Popular Science Monthly for September contains articles on 'The Development of the Theory of Electrolytic Dissociation,' by Svante Arrhenius; the 'Conservation of Human Energy, Preservation of Beauty,' by J. Madison Taylor; 'Art in Industry,' by Frank T. Carlton; 'Some Plants which Entrap Insects,' by Forrest Shreve. This last is very fully illustrated, and calls attention to some of the insects that are adapted for life on or about some insectivorous plants. 'Hebrew, Magyar and Levantine Immigration' is discussed by Allan McLaughlin in an article which is not very encouraging for the United States, in general, and decidedly discouraging to dwellers in New York. Richard L. Sandwick makes a plea for 'More Men (as teachers) in Public Schools,' Charles R. Eastman presents 'A Second Century Criticism of Virgil's Etna' and Robert MacDougall considers 'The Evolution of the Human Hand.' The concluding article, by Simon Newcomb, tells of the International Congress of Arts and Science at St. Louis.

DISCUSSION AND CORRESPONDENCE.

A RECENT PALEONTOLOGICAL INDUCTION.

THE concept of arboreal 'horses' already thrice discussed in the current volume of SCIENCE, or even concepts of fabled Pegasi, are, from a philosophical standpoint, rational and legitimate products of human conscious-

ness. Nevertheless, the probability of such conceptions having had real counterparts in the material world is absolutely *nil*, so far as experience shows, and for like reason we can ascribe only a mythical existence in times past to warm-blooded reptiles, feathered reptiles, or reptiles possessing so eminently bird-like a characteristic as the *gizzard*.

It is, therefore, surprising to find a writer in SCIENCE (No. 501, p. 185) advancing the anomalous conception of reptiles with organs corresponding to the avian gizzard. The solitary fact upon which Mr. Barnum Brown bases his conclusion is the discovery, in a number of instances, of small-sized silicious pebbles in association with plesiosaur skeletons from the western Cretaceous. Certain corollary assumptions, apparently accepted as axiomatic by Mr. Brown, but nevertheless debatable, may be stated as follows:

(1) These 'stomach stones' were contained within the alimentary canal prior to the death of the creatures, and not accidentally deposited upon or with their remains. (2) The stones were intentionally swallowed, and not taken promiscuously with other fare, as might happen in bottom-feeding. (3) They served as a mechanical aid to digestion through the intervention of a supposititious gizzard-like organ. (4) Thin-shelled prey like cephalopods could not have been crushed upon one another without the admixture of a judicious quantity of 'stomach stones.' (5) The non-occurrence of such stones amongst European reptiles proves only that the latter 'had no stomach' for them, not that they were gizzardless. (6) The history of the gizzard (*horresco referens*) shows that it was developed first amongst cold-blooded vertebrates, then lost by them, and afterwards independently acquired by birds. Incidentally it appears that plesiosaurs possessed the most highly specialized digestive apparatus known amongst reptiles, ancient or modern.

For our part, begging pardon of Mr. Brown, we are willing to consign to birds the exclusive enjoyment of gizzards and feathers. A cogent reason for suspending judgment as to the function of 'stomach stones' is found in their limited distribution. Before asking us to believe that all plesiosaurs had 'gizzard-like arangements' (*sic*), let it be shown that all plesiosaurs and related reptiles had the habit of gorging themselves with foreign matter to the extent asserted of American species, and let no doubt remain that these pebbles are not of adventitious origin.

C. R. EASTMAN.

HARVARD UNIVERSITY.

TO THE EDITOR OF SCIENCE: In SCIENCE for August 5, 1904, at page 184, mention is made of the stones often found apparently in the stomachs of fossil plesiosaurs, with the suggestion that they may be connected with the food habits of the animals with whose remains they are associated. It is of interest to notice that, according to Mr. Hornaday, the stomachs of the west coast sea lions contain rounded pebbles an inch or two in diameter. As their food seems to be somewhat similar to that of the extinct plesiosaurs, a careful study of the sea lion's habits may be of importance to paleontology.

JULIUS HENDERSON.

SPECIAL ARTICLES.

DETERMINATION OF LONGITUDE.

THE recent determination of the difference of longitude between San Francisco and Manila by the use of the cables of the Commercial Pacific Cable Company, by the Coast and Geodetic Survey completed the longitude girdle of the earth, and the results will be published in detail in the 'Report of the Superintendent of the Coast and Geodetic Survey,' for 1904. In anticipation of that report the results are now made public by the authority from the superintendent.

The parties in charge of Assistants Edwin Smith and Freemont Morse started for the field in March, 1903, and finally completed the field work in May, 1904. The distance by cable from San Francisco to Manila (7,847 nautical miles) is covered by four cables extending from San Francisco to Honolulu, Honolulu to Midway Island, Midway Island to Guam Island and Guam Island to Manila. For the purpose of exchanging time signals, the Commercial Pacific Cable Company very generously gave the use of the cables to the survey free of charge and at all the stations extended to the