located, and the territory worthy of exploration is quite large. F. W. Woll, Secretary.

DISCUSSION AND CORRESPONDENCE.

STOMACH STONES.

THOSE who have been interested in two recent papers concerning pebbles found with the remains of ancient reptiles, may like to read the following: About fifty years ago, some dozen or more hogs were enclosed in a pen which extended into a mill race. The hogs were fed entirely with ground feed in variety -meal, bran, corn and oats or sweepings-but no clover, grass or vegetables, so-called. When slaughtered, there were found in the stomachs of several of the animals, pebbles enough in each to fill the two hands of a man, as well as smaller quantities in some instances. In these cases, this habit was attributed largely to the peculiar diet of the pigs.

W. J. BEAL.

To THE EDITOR OF SCIENCE: A number of instances are claimed of the retention at the present time of habits acquired in former geologic epochs in adaptation to conditions then existent but now changed, rendering the archaic habits to-day useless or even injurious. Such, for example, is the habit of certain migratory birds, in crossing the Mediterranean Sea, of following a line of 'extinct islands'; also the habit of the lemmings of Scandinavia of periodically seeking the 'lost island of Atlantis.'

Is it not *perfectly evident* that in the habit shown by seals and sea-lions of ingesting pebbles we have a retention of an ancient custom dating from the days when seals had gizzards? MAYNARD M. METCALF.

THE METRIC SYSTEM.

To THE EDITOR OF SCIENCE: In the issue of SCIENCE of October 21, page 539, is a table of the height of African pygmies. This table is in British measures, and at the close of the article in which the table occurs is this statement: "In the writer's first description of these people in 1897 there occurs a mistake made in the conversion of the metric system to English measure."

Now I am not strictly an anthropologist, but I am interested in some features of the study, and when I take up the more substantial books on the subject, I find the measures given are metric. As physical culture is one of the points that interest me, it would be a great advantage to me if Mr. Verner had published his figures in metric terms. There would then have been no mistakes, and comparisons would have been much easier for those who approach the subject from the cosmopolitan standpoint.

Is it not about time that a paper like SCIENCE, which professes to represent the science of this country, should show a preference for the measures employed by almost all scientific workers—to the extent, at least, of printing all quantities in both systems as the medical papers often do? The matter is becoming more and more important every day. See, for example, the embarrassment caused by the two systems of measure in preparing a map of the world, *National Geographic Magazine*, October, page 407.

WM. H. SEAMAN.

SPECIAL ARTICLES.

GOVERNMENT SUPERVISION OF HISTORIC AND PRE-HISTORIC RUINS.

THE traffic in prehistoric wares from the southwest that has arisen during the past few years, with the attendant destruction of prehistoric remains, has become a matter of great concern to archeologists, who appreciate the gravity of this loss to anthropological science. Even though much of this material gathered by parties who are only commercially interested in it, eventually finds its way into public museums, its value to science is greatly reduced because of the absence of authentic records. Fortunately, a growing popular and educational interest in historic and prehistoric landmarks has arisen to assist in the preservation of these objects.

As a citizen of New Mexico who has watched with deep concern the loss of many of the incomparable archeological treasures of the southwest, I have recently taken up in a formation thus far received points strongly to that conclusion.

The skeletons of these three whales have been secured for the National Museum, and it is my purpose to publish something more in detail regarding them at a later date.

F. W. TRUE.

U. S. NATIONAL MUSEUM, December 8, 1904.

THE VASCULAR BUNDLES IN AN APPLE.

It is probably a matter of little significance or importance as to just how many vascular bundles may be found about the core of an apple or how they are distributed. I have seen quite a number of cuts in books and bulletins, but I have never seen one that was right. Any person can soon decide this matter to his own satisfaction, by cutting transverse sections of several varieties of apples and allowing them to begin drying for a few days, when the bundles may be seen sticking out prominently. W. J. BEAL.

A GEOGRAPHIC DICTIONARY.

IN SCIENCE, November 11, 1904, p. 649, Mr. Cleveland Abbe, Jr., states that he is compiling a dictionary of topographic terms. It may, therefore, be well to draw the attention of him and your other readers to a 'Glossary of geographical and topographical terms and of words of frequent occurrence in the composition of such terms and of place-names, by Alexander Knox, B.A., F.R.G.S., * * * London: Edward Stanford, 12, 13 and 14 Long Acre, W. C., 1904,' price 12s 6d (\$3), being a supplementary volume to 'Stanford's Compendium of Geography and Travel.' This work appears richer in ordinary geographic terms and components of place-names than in technical physiographic terms, and no references are given to literature.

F. A. BATHER.

SPECIAL ARTICLES. ASTER FORMATION IN ENUCLEATED EGG-FRAG-

MENTS OF CEREBRATULUS.*

MANY cytologists have accepted the view that the centrile (or centrosome) is a per-

* Abstract of a paper read before the meeting of the National Academy of Science, November manent and autonomous organ of the cell, but the direct proof or disproof of this hypothesis is very difficult, owing to the extreme minuteness of the centricle. The attempt to obtain decisive experimental evidence was first made (1901) by E. B. Wilson by shaking unfertilized eggs to pieces and subjecting the fragments to a salt solution. Asters capable of division, containing centrioles, appeared in a large number of the egg-fragments, including both those with and those without a It is evidently highly improbable nucleus. that all these centrioles can be considered as the offspring of preexisting ones, since it is an essential part of the centrosome hypothesis that the organ is primarily single, save when precociously divided into two. Wilson, therefore, came to the conclusion that some, at least, of the centrioles that appeared in such fragments must have been formed de novo. This conclusion has since been accepted by some writers, but attacked by others, partly on critical grounds, partly as a result of subsequent experiments in the same direction. A source of error in the experiment undoubtedly existed in the shaking of the eggs to pieces at random. Professor Wilson, therefore, suggested to me nearly two years ago to perform the crucial experiments of cutting the living eggs into two singly and treating the fragments individually. For this purpose the egg of Cerebratulus is particularly favorable, since before fertilization the first maturation mitotic figure lies at one pole, where it is seen very definitely in the living object as a clear space. By cutting off this part of the egg, one may be certain that the remaining portion contains no centrioles and, if centrioles appear in this portion of the egg, they must have been formed de novo.

I tried this experiment during the summers of 1903 and 1904, with results which are, I believe, decisive. The mode of operation was as follows: all the instruments and the female worm, from which the eggs were taken, were first thoroughly sterilized with fresh water so 15, 1904. In this communication the term 'centriole' is used as equivalent to 'centrosome' in the original sense, *i. e.*, as the dividing and frequently persistent body at the center of the aster.