

associated with it is highly desirable before it can be stated that nectar at present 'goes to waste.'

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DURHAM, N. H.,

December 6, 1904.

#### ANENT GIZZARDS.

PROFESSOR EASTMAN\* expresses his willingness 'to consign to birds the exclusive enjoyment of gizzards and feathers'; but this seems hardly fair to certain fishes. According to Günther† in the well-known gray mullets (*Mugil*) "the second portion of the stomach reminds one of the stomach of birds; it \* \* \* is globular, and surrounded by an exceedingly strong muscle. This muscle is not divided into two as in birds, but [is] of great thickness in the whole circumference of the stomach, all the muscular fasciculi being circularly arranged. The internal cavity of this stomach is rather small, and coated with a tough epithelium \* \* \*. A low circular valve forms a pylorus." Certainly one can not carp at Drs. Jordan and Evermann‡ for referring to this apparatus as 'gizzard-like,' with which adjective Mr. Barnum Brown contented himself when writing of the plesiosaurs.

The food of the mullets is said§ to consist 'chiefly of the organic substances mixed with mud or sand,' of which they 'take in a quantity.' However, it must also be set down that 'in order to prevent larger bodies from passing into the stomach \* \* \* these fishes have the organs of the pharynx modified into a filtering apparatus' so that 'stomach stones' if present, can never be large. At all events (to state the obvious conclusion) if two such widely separated vertebrates as *Gallus* and *Mugil* have independently evolved gizzard-like modifications of the stomach, why should a similar possibility be denied *à priori* to all reptiles? But whether plesiosaurs were

'lithophagi' or lotus eaters Herodotus saith not.

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#### NOTE ON THREE VERY LARGE BEAKED WHALES FROM THE NORTH PACIFIC.

TO THE EDITOR OF SCIENCE: Early in November last, I received a letter from President D. S. Jordan, of the Leland Stanford, Jr., University, enclosing a communication from Mr. J. H. Ring, of Ferndale, Humboldt County, California, relative to the stranding of a whale about forty-one feet long near that place. Mr. Ring's letter was accompanied by photographs which made it evident that the animal was one of the ziphioid or beaked whales, of extraordinary size and not in a very good state of preservation. I have recently received additional information from Mr. Ring which makes it certain that the whale belongs to the genus *Berardius*. This genus was first recognized as belonging to the fauna of the North Pacific by Dr. Stejneger, who found a skull on Bering Island in 1882, and, believing it to represent a new species, gave it the name of *Berardius bairdii*. Whether the Ferndale specimen is of that species can not be determined until the skull has been examined.

The specimen is notable as being, so far as I am aware, the first of the genus reported from the Pacific coast of the United States, and further as being the largest beaked whale of which there is any record. In Mr. Ring's second letter, he informed me that he had re-measured the whale and found it to be 43½ feet long. The largest *Berardius* previously known was the type of *B. arnuxii* of New Zealand, which was 32 feet long.

Two large beaked whales were found on the coast of St. George Island, Pribilof Group, Alaska, in June, 1903, by Mr. James Judge, the resident treasury agent. One of these, a female, was reported by Mr. Judge as being 40 feet 2 inches long, and hence only a little smaller than the Ferndale whale. The other specimen, a male, was 25 feet 5 inches long. It is not certain that these Pribilof whales are of the genus *Berardius*, though the in-

\* SCIENCE, N. S., Vol. XX., October 7, 1904, p. 466.

† 'An Introduction to the Study of Fishes,' p. 503.

‡ 'The Fishes of North and Middle America,' Part I., p. 809.

§ Günther, *op. cit.*, p. 502.

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-FRAGMENTS OF CEREBRATULUS.\*

MANY cytologists have accepted the view that the centriole (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 centriole. 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 nucleus. It is evidently highly improbable 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.