

ferred from the life habits of a form which encysts during periods of drought. For the ability to undergo suspended animation necessitates such specialization that it is improbable that evolution operated through such an encysting form (which is absolutely helpless and inactive until it is set free into the water), in bringing about a vertebrate which breathed air the year around.

Reference was also made to the breeding habits of *Polypterus*, and an accessory copulatory organ in the male—a modified anal fin—was described. The breeding season follows the inundation of the Nile.

The general collections, some of which were exhibited, brought back by the Senff zoological expedition, are intended for general distribution to qualified investigators, who can work up the material within a reasonably short time. Aside from a large collection of Nile fishes, there is material preserved for researches in embryology, electric organs, pseudo-electric organs, neurology and Plankton.

The Coronary Vessels in the Hearts of Fishes.

G. H. PARKER and F. K. DAVIS.

THE muscular substance of the heart in mammals receives its blood from a pair of coronary arteries which connect with coronary veins opening into the right auricle. The inner surfaces of the four chambers of the mammalian heart have upon them openings which lead into vessels connecting with the coronary capillaries, and especially with the veins. These vessels are the veins of *Thebesius*. Is there a similar system of vessels in fishes? Coronary arteries were identified in the common skate, the sand shark and the mudfish (*Amia*). In the skate they may come from various combinations of the efferent branchial arteries of the second to the fifth gill cleft; in the sand shark, from combinations reaching from the first to the fifth

clefts; in the mudfish, from the second branchial arch. In these three species coronary veins occur, all of which open into the venous sinus. On inflating these, bubbling was observed from the natural inner surfaces of the auricles and sometimes from those of the ventricles. These fishes, therefore, have veins of *Thebesius*.

Longitudinal Fission in Metridium marginatum. G. H. PARKER.

TEN animals with double mouths were studied. Two had each two mouths on one oral disc, and the pedal ends of their oesophageal tubes were united. Eight had each completely separate oral discs and oesophageal tubes. In six the mouths were monoglyphic; in three one mouth was monoglyphic and one diglyphic, and in one one mouth was monoglyphic and one aglyphic. There were about twice as many pairs of complete mesenteries as in single-mouthed individuals. Double specimens are not the result of fusion, for the two partial individuals are strikingly similar in color, etc., a condition unlikely of occurrence in chance combinations of so variable a species. They may be monstrosities or dividing animals. One specimen nearly divided was kept under observation two months, but showed no advance in the process. In good collecting localities isolated pairs agreeing in color, marking and sex may be found. This evidence favors the view that *M. marginatum* reproduces, by longitudinal fission, a process slowly accomplished, but it does not exclude the possibility of some double specimens being monstrosities.

Additional Characters of Diplodocus. HENRY F. OSBORN.

THIS is one of the three types of herbivorous Sauropoda or Cetiosauria, represented by a very considerable portion of the skeleton of one individual found by Barnum Brown and the writer in 1897. The scapula, ilium, ischium and femur are associated with