

tical mine shaft with the sun above the horizon. Venus can often be seen in midday and at such times could be seen in these latitudes from inclined mine shafts pointing exactly the proper direction. Occasionally Mars and Jupiter might be so seen in the early morning or late afternoon hours. In tropical countries Venus, Mars and Jupiter all pass overhead at certain times and might on those occasions be seen from wells, large chimneys and shallow vertical mine shafts.

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TWINNING IN A MOLLUSC, SERPULOIDES VERMICULARIS

IN view of a statement by Newman¹ it seems worth while to mention a possible case of twinning observed in embryos of *Serpuloides vermicularis*. Newman writes:

I have never seen a reference to a case of twins or double monstrosity in Mollusca . . . characterized by *determinate cleavage* in its highest form. . . . It is no wonder then that in groups with strictly determinate cleavage we find no example of twinning, for twinning requires a totipotency of blastomeres or regions of the blastoderm.

Serpuloides is a sessile tubiculous mollusc living on the under sides of rocks in shallow water along the Pacific coast. Ovoviviparity is the rule. The young individuals are "born" with a simple coiled shell resembling that of an ordinary snail. The young *Serpuloides* soon become attached to the substratum and begin to grow in length. As they grow, they keep adding material at the mouth of the shell, gradually increasing its size so that a long irregularly coiled tube, resembling that of some of the polychetes, is produced eventually. The material in question, collected on the Pacific coast during the summer of 1923, consists of three pairs of "twins." In each case, two apparently normal young individuals, each with a larval shell fully formed but below the average in size, are contained in a single intact egg "shell," or membrane. These embryos were studied in the living condition and then fixed and preserved in alcohol for future examination. During life their movements were similar to those of other embryos at corresponding stages of development. Other preserved material on hand is being examined for possible earlier stages of such a phenomenon. This communication is presented as a suggestion that twinning is not impossible in the Mollusca, in spite of the determinate cleavage so characteristic of the group.

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¹ "The Physiology of Twinning," 1923.

SCIENTIFIC BOOKS

Laboratory Manual of the Foetal Pig. By W. J. BAUMGARTNER. New York: The Macmillan Company, 1924.

THIS is a laboratory manual that merits the consideration of every teacher of comparative vertebrate anatomy. It contains excellent directions for the dissection and study of a form hitherto largely overlooked, which presents certain obvious advantages over the dog, cat or other mammal more frequently the object of such study. Among these advantages the author calls attention to the following:

(1) The unlimited number of specimens which may be obtained at any good-sized packing plant with a minimum expenditure of time and labor.

(2) The convenient size of the specimens together with their ease of preservation.

(3) The absence of any objectionable odor or other quality that would make them objects of disgust to the most "finicky" student.

(4) The impossibility of any sentimental restrictions on their use arising from humane societies or antivivisection societies. Related to this is the fact that the student has no tender associations to be outraged as is sometimes the case where "pet" animals are used.

(5) The softness of the muscular and skeletal systems in the fetal pig make easier the dissection of the nervous and circulatory systems. And finally,

(6) The student gets a very good idea of the course of the fetal circulation in mammals.

The disadvantages in the use of this type of material are few and easily remedied. Some who have attempted it in the past have complained that the pigs become soft and "mushy." This is due to improper fixation and is readily overcome by following strictly the procedure described in this manual, which is the result of twelve years' experience. The imperfectly developed skeletal system can be readily supplemented with prepared skeletons, and the very immaturity of the pig gives the student an idea of bone development which he can not obtain from a study of mature animals only. There is left only the muscular system as a real difficulty and this can be remedied by the use of a few mature animals for the demonstration of the muscles, their arrangement and functions. This disadvantage is after all such a minor one that it is far outweighed by the greater usefulness of the pig in all other respects.

Typographically this book is up to the usual Macmillan standard. Only a very few errors have been noted, the most serious being the constant use of "foeti" as the plural form of "fetus." Not only does the correct Latin plural of this word end in "-us," as in the singular, but attention may also be called to the fact that the "oe" in the first syllable is likewise