time to complete the experiment. Attempts were first made to keep spermatozoa alive in the fluid expressed from the haematocoelic cavity, but these proved unsuccessful, as the fluid was small in quantity, exceedingly viscous and evaporated to a dry, brittle coagulum with great rapidity. When liberated into distilled or tap water, either combined with crushed-fly extract or alone, the sperm became inactive within a few minutes.

On turning to previous literature, it was found that this difficulty in keeping sperm alive had been noted by Nonidez in 1920.[2] He prefaced his discussion of the internal phenomena of reproduction in Drosophila as follows:

> An obstacle in the study of the experimental fertilization in Drosophila is the high sensitiveness of the spermatozoa to the action of fluids foreign to the body; they are easily injured and killed when placed in mixtures which do not exert noxious effects on the sperm of other animals, unless the spermatozoa are kept in such fluids for a long time. Although I tried repeatedly to eliminate this obstacle by the use of several so-called "indifferent" fluids, it was impossible to keep the spermatozoa active beyond a few minutes.

The fluids used by Nonidez were tap and distilled water, normal saline (0.5 per cent.), Ringer's solution (cold-blooded), 1 per cent. solution of potassium citrate, and a 1 per thousand solution of sodium hydroxide.

It occurred to the author that, since sea water is similar both in its salt constituents and salt balance to many of the body fluids in animals, it might serve as a satisfactory medium for Drosophila spermatozoa. The following series of experiments was, therefore, performed. The testes, vasa efferentia, vas deferens and paragonia of a four-day unmated *D. melanogaster* were dissected out in sea water diluted to various concentrations with distilled water. The vasa efferentia, distended with spermatozoa, were then ruptured with fine dissecting needles and the sperm mass drawn out. In a solution of 33 per cent. sea water, the sperm lying along the free surfaces of the sperm mass immediately exhibited extremely active undulatory motions. This activity continued with undiminished vigor for the first hour, gradually became less during the second and third hours, and, except for sporadic cases, had ceased at the end of six hours. The vas deferens pulsated rhythmically, and the paragonia also underwent muscular contractions. No spermatozoa were seen to detach themselves from the sperm mass and swim off alone. The entire "tangle" clung together as if held in some slightly adhesive matrix. If manipulated too roughly with microneedles, the sperm soon became motionless. Sperm immersed in 50 per cent. sea water showed greatly decreased activity in one to one and a half hours. In 75 per cent. and in 25 per cent. sea water sperm activity lessened in about thirty minutes.

[2] J. F. Nonidez, *Biol. Bull.*, 39: 207–230, 1920.

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RIVER DEFLECTION: A CORRECTION

IN the article on "Earth Rotation and River Erosion," in SCIENCE for November 11, a correction is necessary; and apology is due to Dr. Isaiah Bowman and Professor Mark Jefferson.

On page 424, second column, Mr. G. K. Gilbert was credited with the only critical analysis, in American literature, of the problem of river deflection. Instead of "only" the word "first" or "earliest" should have been used. In Volume 20 of this journal (1904, pages 273–277), Isaiah Bowman summarized his quantitative study of Mississippi River erosion, geographic work done while a student at Harvard under Professor W. M. Davis thirty years ago. Using thirteen sheets of the Mississippi River Commission covering a stretch of the river from Rosedale, Arkansas, to Bayou Goula Bend, Louisiana, he was able to measure the lateral shifting of the river in its erosional work during the years 1883–1896. Precise measurements of several elements in the changing curvatures of the stream are tabulated in the article. He recognized prevailing winds as an important dynamic factor in river cutting. Greater right-bank cutting was observed in meanders on the right (west) side where wind effects in the lee of the bank would be least and maxima of selective influences greatest on velocities developed under centrifugal force. He found left-handed cutting most pronounced in bends and reaches, "as if the winds here overcame the effect of the earth's rotation."

Bowman also reported his examination of the streams on Long Island, stating that he did not find that most of them showed clear evidence of the greater right (west) bank erosion, which had been reported by previous observers.

Professor Jefferson, collaborating with Bowman, made refined measurements in bluff cutting along several rivers in eastern and one in southwestern Michigan. His preliminary paper is in this journal (Volume 19, 1904, pages 150–151), and his detailed evidence and conclusions in the *Bulletin* of the Geological Society of America (Volume 18, 1907, pages 333–350). The greater erosion that was found along the *southern* bluffs was thought to be attributable to the effect of regional tilting in postglacial time.

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