in New York City, has been appointed professor of mining in Yale University to succeed Professor James F. McClelland who resigned in 1919.

AT the New York Post-Graduate Medical School and Hospital, the laboratory of pathological chemistry, formerly a division of the department of laboratories, has been made an independent department and the name changed to the department of biochemistry. The personnel consists of Victor C. Myers, Ph.D., professor and director; Cameron V. Bailey, M.D., and John A. Killian, Ph.D., assistant professors; Hilda M. Croll, M.A., associate and Herbert W. Schmitz, M.D., assistant.

DISCUSSION AND CORRESPONDENCE

THE FUTILITY OF THE HUMAN YOLK SAC

IN the current issue of the *Anatomical Record,* Professor Arey publishes a brief but very interesting contribution (No. 90) from the Anatomical Laboratory of Northwestern University. He describes a human chorion containing two embryos, of 11.5 and 12 mm. respectively, one of which has a yolk sac, and the other has none—that is, none was found, and sections of the umbilical cord showed no trace of a yolk stalk. Hence the broad conclusion is drawn that "the human yolk sac is a vestige unessential to growth or differentiation (including vasculogenesis)." It is stated that one of these embryos "received all, or essentially all, the cells destined to form a yolk sac" and that "the total absence of a yolk sac in one embryo, which is otherwise normal in every way, further demonstrates conclusively that this organ is not essential to the growth of an embryo or to the proper differentiation of its parts; indeed, the embryo in question is slightly larger than its twin."

Since from the days of Wolff the yolk sac has been regarded as the source of the intestinal tract, and in young human embryos is seen to be the organ from which the allantoic duct and the digestive tube proceed, the startling nature of this conclusion becomes apparent. But it is universally recognized that the yolk sac does its work in early stages, and though the sac usually persists as a functionless rudiment until birth, its duct normally becomes parted through atrophy in embryos younger than the one under consideration. Does Dr. Arey's case indicate anything more than the precocious obliteration of the stalk of an organ no less essential than the placenta, likewise cast off after its very vital functions have been performed?

If the question is raised, Where then is the yolk sac in Dr. Arey's case? his own studies furnish a plausible answer, since in another specimen he has described a single sac with two stalks, each leading to a separate embryo. Under such circumstances, the early obliteration of one of the stalks would give rise to the conditions observed in the second case, and this possibility must be eliminated before accepting the proposed conclusion. In reading the account of a human embryo without a yolk sac, we recall Bentham's incredulous comment, "I am very glad, my dear sir, that *you* saw that, for had I seen it myself, I wouldn't have believed it."

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DEFLECTION OF STREAMS BY EARTH ROTATION

THE recent note by Professor Jennings suggesting that the steeper valley sides on the right of the south-flowing streams on Long Island may be due in some manner to wind action instead of to the deflective effect of the earth's rotation is a welcome contribution to an old problem. In spite of Gilbert's apparent acceptance of the earth's rotation in explanation of the unsymmetrical cross-section of those valleys, the small size of their streams has always stood in the way of it, all the more since Bowman showed, on the basis of accurate maps of the lower Mississippi, that even that great river shifted its course to the east or left, apparently under the control of the wind, and not to the west or right, as it should if the earth's rotation were in control.[1]

[1] SCIENCE, XX, 1904, 273-277.