DIVERTENT PATHWAYS IN SEXUAL DEVELOPMENT

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Among the outstanding achievements in biology during the past few years are those relating to the physiology of reproduction. Experimental studies on the identification, analysis, preparation and physiological effects of the so-called sex hormones in the various classes of vertebrates have been particularly noteworthy. It is well known that these internal secretions are responsible for the functional development and activation of the sex glands and their associated structures, for when they are properly administered, either by uniting two embryos together or otherwise, the sexual differentiation and sexual function of the developing individual can often be diverted in either the male or the female direction, as desired.1

1 Address of the retiring vice-president and chairman of the Section on Zoological Sciences, American Association for the Advancement of Science, Columbus, December 29, 1939.


The effects may be scarcely appreciable or decidedly profound, depending upon the species, the sex and the period of administration. In some of the amphibia complete functional sex reversal is possible. In birds and mammals the effects of treatment with hormones of the opposite sex have been thus far limited to alterations in the sex glands or to the accessory sex organs, or both, without achieving complete functional development. Apparently normal germ cells of the opposite sexual type have been experimentally obtained in the fowl, and the production of fertile sex-reversed individuals in the near future appears to be highly probable.

In certain species of amphibia the sex can be controlled merely by regulating the temperature, by delaying the fertilization of the egg or by other means, but I know of no satisfactory evidence that success