ABSTRACTS

1965 #1

A PHYSIOLOGICAL AND HISTOCHEMICAL STUDY OF REGENERATION IN THE NASAL (SALT) GLANDS OF HERRING GULLS

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Following the surgical removal of the nasal glands, herring gulls were placed on either salt or fresh water. Birds from both groups were sacrificed postoperatively at 3-day intervals; the regenerating salt glands were removed, weighed, and histochemical tests were applied to tissue sections. In the birds maintained on salt water, regeneration proceeded rapidly and by 40 days all the birds had salt glands that were more than half the weight of those that had been removed. Regeneration of salt glands in the birds maintained on fresh water was much slower, and by 40 days no more than one-fourth of the normal weight had been regained. Oxidative enzymes and phosphorylase activity was restricted primarily to the small peripheral cells in the fresh water gulls; in the birds raised on salt water these enzymes were distributed evenly throughout the secretory lobule. The distribution of other enzymes varied only slightly between the two groups. Nerves, blood vessels reactive for ATPase, and the intralobular connective tissues were all restored as in the normal gland. Regeneration proceeds from the ducts and the central canals; secretory tubules bud and grow radially from the canals forming new lobules. These observations indicate that the rate of regeneration of the avian salt gland is affected by its "physiological load" and that tissue regeneration of the salt gland proceeds in the same manner as its embryonic development.

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STUDIES WITH SULFOBROMOPHTHALEIN IN Squalus acanthias

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Sulfobromophthalein sodium (BSP) was infused into the portal vein of adult male dogfish at a rate calculated to exceed the estimated hepatic maximum transfer rate of BSP from blood to bile. Serial samples of plasma, bile, and liver were obtained for estimation of BSP concentration, characterization of BSP conjugates, and subsequent electrophoresis on polyacrylamide gel. As of this date, four experiments have been performed in which BSP was infused in dogfish Ringer's solution, and four experiments in which BSP was infused bound to salt-poor human albumin. The results indicate that BSP is normally transferred rapidly from plasma into the liver, and to a lesser extent into other tissues. Addition of human albumin significantly reduces transfer of infused BSP into liver and other tissues. The hepatic uptake is reduced by approximately 60% compared with uptake observed in experiments which do not employ human albumin as a protein carrier for BSP.