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Problems of particular interest were chosen to obtain further information about the function of the salt gland in various marine birds. Attention was also given to the renal excretion of electrolytes.

The possible variation in the composition of the nasal secretion was studied in birds made acidotic or alkalotic. The shifts in the ionic composition of the secretion were assayed. Studies of bicarbonate secretion by the nasal gland were made in collaboration with Dr. T. H. Maren. The investigations of the ultra-structure of the gland, which were started in 1957 in collaboration with Dr. Doyle, were continued with special emphasis on establishing the presence and extent of intracellular canals (or infoldings) in the secretory cells.

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Fetal and Adult Thyroid Glands of the Dogfish, *Squalus acanthias*

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Study of the structure and activity of fetal and adult thyroids was continued with varying doses of I^{131} ; special attention was again given to the permeability of the "uterus" to maternally-injected I^{131} , and to the uptake of I^{131} by the free-swimming late fetus (pup). Digestive tract, internal yolk, skin, uterine fluid, etc., were also checked for radioactivity. Some fetal and adult hypophyses were frozen for bioassay (1-day-old cockerel and red eft techniques); others were fixed in modified Susa for staining with PAS and aldehyde-fuchsin methods.

The "uterus" is permeable to maternally-injected I^{131} , but radioactivity of uterine fluid is below that of maternal blood. Thyroids of intrauterine pups show little radioactivity even after large doses and long periods of time following maternal injection.

The fetal thyroid is shield-shaped, with a long, slender, cellular stalk attached posteriorly which may represent the location of the original thyroglossal duct. It weighs a fraction of a milligram. Primitive type follicles are minute, scattered among epithelial cords and plates, and are characterized by cuboidal to columnar cells with occasional traces of vacuolated colloid which stains orange or green with Mallory's trichrome.

Such glands, however, show radioactivity proportionately equal to or higher than that of the maternal thyroid (weighing several hundred milligrams) during a 24-hour period or longer when the fetuses are injected directly and kept in partially covered containers within running sea water aquaria (Gilbert's method).

Follicles of pregnant female thyroids are large, with abundant colloid and flattened epithelium; they show neither hyperfunction nor decreased activity, and resemble thyroids of male and nonpregnant females. Peak of uptake is similar in both fetal and adult glands, 16-24 hours.

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