2) Of the fishes studied the dogfish and the skate possess the only pituitaries that are separable into lobes for experimental work. The small granular content of the ventral lobe in the skate and the disintegrated and inconstant occurring ventral lobe in the dogfish suggest that this division has little function. Apparently the pars neuralis undergoes little differentiation in the dogfish, as the elongated and radially arranged cells about the infundibular lumen retain much of the character of the ependymal layer of the embryo, while in the bony fish the neural component proportionally is large, well differentiated, and resembles the condition found in the higher adult vertebrates. The complicated folding and highly granular content of the pars intermedia and pars distalis of the skate and the dogfish indicate that they are quite active. There is no evidence that the staining properties of the cells change, once they are determined.

THE MELANOPHORE HORMONE OF THE HYPOPHYSIS CEREBRI OF CERTAIN SELACHIANS

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For the purpose of determining the presence and location of a melanophore expanding hormone in the hypophysis cerebri of selachians, extracts of the different hypophyseal lobes of the dogfish and the skate were tested on sun-bleached frogs.

The lobes (pars distalis, medialis, intermediate, and ventralis, as well as the saccus vasculosus) were carefully separated, placed in individual mortars, and ground together with one to two c.c. of 0.25 per cent acetic acid. The resulting suspension was then boiled for a few seconds and centrifugalized, and the clear supernatant fluid was used for the tests.

In most of the experiments the extract from one lobe of one fish was used for injection into one frog, but in a few the corresponding lobes from two or even from as many as five fish were used in the preparation of an extract. The extracts were used within a short time (5-15 minutes) after they were prepared. One fourth to one half a cubic centimeter of the extract was injected into the peritoneal cavity of a sunbleached frog. The experiments were repeated a number of times during the month of July and early part of August.

In every instance the extract of a single pars intermedia brought about a rapid (within 5 to 10 minutes) blackening of the bleached frog into which it was injected. The darkening lasted several hours. The injection of the extract of a single pars distalis (about a fifth the size of the pars intermedia) also was followed by a blackening of the bleached frog, although in a few experiments the phenomenon did not take place quite as rapidly nor last as long as in the frogs injected with extract of the pars intermedia. Extracts of the pars

ventralis, pars medialis, and the saccus vasculosus did not cause any darkening of the injected frogs. The pars neuralis was not tested separately from the pars intermedia, to which it is attached as a thin membrane because at the time of these experiments the exact location of this tissue was not known.

A striking picture was obtained when the hypophysis was removed, under surgical conditions, from live dogfish. When returned to the sea water these fish rapidly became a silvery white, while the sun-bleached frogs injected with the extracts of the glands removed from them became black. (Bard, 1931, by the removal of the hypophysis, brought about a contraction of the melanophores of the skin of dogfish resulting in pallor. The removal of the pars intermedia, leaving intact the remainder of the gland including the pars distalis, resulted in a less complete bleaching of the operated fish.)

The results of these experiments seem to indicate than in the selachians two lobes of the hypophysis cerebri (pars distalis and pars intermedia) contain a melanophore expanding substance. These two lobes are quite different in structure and lie some distance apart. Interposed between them is the pars medialis, which does not contain a melanophore expanding hormone. In the hypophyses of higher forms, Dr. Geiling has found that where the pars intermedia is present the melanophore hormone is confined to that lobe; when the intermediate lobe is absent, however, as it is in fowls and whales, the melanophore hormone is located in the anterior lobe.

THE PRESSOR ANTIDIURETIC AND OXYTOCIC HORMONES OF THE HYPOPHYSIS CEREBRI OF CERTAIN SELACHIANS AND TELEOSTS

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Studies on the hypophysis cerebri of two types of cartilaginous fish (dogfish and skate) and one type of bony fish (sculpin) were undertaken in order to determine whether the pressor, oxytocic and antidiuretic hormones commonly present in the hypophyseal gland of vertebrate animals were present in the gland of these fish and, if so, in which lobe the active principle was located.

The acetone desiccated portions of the hypophysis cerebri of the dogfish and the skate were made into powders from which 0.25 per cent acetic acid extracts were made.

The results obtained with the extracts prepared from the different portions of the gland (posterior lobe, saccus vasculosus, ventral lobe, and anterior lobe) are indefinite. In some experiments there was evidence of pressor activity from all parts, and in other experiments the results were uniformly negative. It is thus difficult to draw any definite conclusion. One may say there is a suggestion of slight pressor activity in the posterior lobe and saccus vasculosus.