over the gills from time to time during the 5-10 minutes required for the operation.

Dogfish pituitaries were separated into their four component parts: rostrol, central, neurointermedial and ventral lobes, and frozen for bioassay These will be bioassayed with the hypophysectomized red eft (red-colored land stage of the newt, Diemictylus viridescens) and weaver finch (Witschi) techniques for prolactin and luteinzing hormones respectively. A few preliminary tests with the hypophysectomized red eft encouraged the expectation that prolactin is present in the rostrol lobe, but no trace of it has so far been found in the other lobes.

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Ecology and Behavior of the Hermit Crab, Pagurus acadianus

William C. Grant, Jr.
Williams College

A field survey was conducted on *Pargurus acadianus* in an area roughly 300 meters square along the west shore of the laboratory cove at intervals from July 10 to August 25. During this period 191 animals were captured, marked and released. The mean number of crabs occupying the area on any one day was estimated at 14 individuals During the period of the study only 10 recaptures of marked animals were recorded, and this data plus a study of the dispersal rate of the crabs indicates that the population was a highly mobile one lacking territorial patterns of behavior. Over 60% of the population inhabited the shells of *Buccinum undatum* while the remainder, consisting mostly of small individuals, were found in the shells of *Thais lapillus*.

Behavioral studies indicate that *P. acadianus* has a strong preference for its home shell. Crabs removed from their shells and given a choice situation involving the original shell and other shells varying according to size, color and species were able to select their home shells for re-entrance in 91% of the trials within the limits set by the particular testing procedure. The identification of the home shell is not visual. Shell selection in nature probably depends on the size of the crab and a shell weight/shell volume index. Automatic operations recording of crab activity in the laboratory failed to show any definite pattern involving circadian rhythms. All data obtained from the above studies are currently being subjected to statistical analysis.

Studies on the Endocrinoloy of the Skate Pituitary

William C. Grant, Jr.
Williams College

The present studies were directed towards extending the limited information available relative to the functional characteristics of the

transitional type of plagiostome hypophysis. Brei obtained from whole pituitaries, rostral lobes and neuro-intermediate lobes of the skate *Raja erinacea* was assayed for the presence of prolactin (prolactin-like fraction) by the use of the red eft test, which is based upon the fact that lactogenic hormone initiates water migration in the terrestrial stage of the newt, *Diemyctylus viridescens*. No response was elicited in hypophysectomized test animals receiving doses of brei containing from 0.5 to 6 pituitaries or lobes, but a few efts receiving a dose of 8 rostral lobes did give a positive reaction. These results agree with those from *Squalus* where a prolactin-like substance is localized in the rostral lobe, but the prolactin content of the skate, estimated from the above studies at 0.004 I.U. per lobe, is of a much lower order. Hypophyses of the hagfish, *Myxine glutinosa*, were also assayed but with negative results.

The results of preliminary studies concerned with the thyroid-pituitary axis of the skate must await histological analysis of pituitaries from thyroidectomized test animals, *R. erinacea* and *R. ocellata*.

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Lipoprotein Lipase Activity in the Marine Dogfish (Squalus acanthias)

H. O. Heinemann, M.D., S. Zsoldos, M.D.
and A. P. Fishman, M.D.
Columbia University

Fish and aquatic mammals use various tissues, such as skeletal muscle (eel), bone cavities (dolphin) and the mesentery (sturgeon) for the storage of fat. Sharks and codfish use the liver as a fat depot. The liver of the dogfish (squalus acanthias) may, depending on the food supply, contain as much as 30 percent fat by weight. In terrestial mammals, which store fat predominantly in adipose tissue, the release of free fatty acids (FFA) for the energy supply elsewhere, is, at least in part, dependant upon a lipoprotein lipase. An enzyme with similar characteristics has been identified in various mammalian tissues, including heart and skeletal muscle, lung and plasma The activity of this enzyme is in mammals affected by various influences, such as the previous carbohydrate intake, fasting and the administration of heparin and epinephrine If the liver of the dogfish plays a role in the storage of fat, which is comparable to the role played by adipose tissue in mammals, one would expect the dogfish liver to contain a lipoprotein lipase. To examine this possibility homogenates of liver and various other tissues of the dogfish were assayed for lipolytic activity. Lipolytic activity was determined by incubating one gram of tissue homogenate for one hour at 37°C in a medium containing coconut oil emulsion (Ediol), albumen, buffer and dogfish "Ringer" solution and measuring the change in free fatty acid content. The net release of free