ABSORPTION AND EXCRETION OF WATER AND SALTS BY THE ELASMOBRANCH FISHES. IV. THE SECRETION OF EXOGENOUS CREATININE BY THE DOGFISH, SQUALUS ACANTHIAS

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The excretion of creatinine has been studied in the dogfish, Squalus acanthias, in relation to plasma concentration. The clearance of injected creatinine normally exceeds the xylose or sucrose clearance by a variable amount, dependent upon the concentration of creatinine in the plasma. At plasma levels below 7 mg. per cent the creatinine clearance appears to reach a maximum, varying from 4.2 to 7.2, and averaging 5.8 times the xylose or sucrose clearance. As the plasma level is raised to higher values the creatinine clearance falls, approaching the xylose or sucrose clearance falls, approaching the xylose or sucrose clearance asymptotically.

It is pointed out that the above facts are not incompatible with the assumption that the secretory work of the renal tubules relative to preformed creatinine is constant, and that the creatinine clearance approaches a maximum as the removal of creatinine from the plasma approaches completeness.

Phlorizin markedly depresses the secretion of creatinine at both high and low plasma levels.

(A complete report of this work will appear in the Journal of Cellular and Comparative Physiology, February, 1934.)

THE DEVELOPMENT OF BATIS MARITIMA

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Work on living and preserved plants of this monotypic, neotropical, salt marsh, dicotyledon from Louisiana and Jamaica has shown the following points. Stipules, said to be absent by all earlier workers, are constantly present on all younger leaves and floral bracts, where they seem to secrete a mucilage-like substance, which is perhaps protective to young leaves and flowers. The fleshy tissues of leaf, bract and carpel include palisade layers and numerous parenchyma layers. Among the outer layers of the latter are found many crystalliferous cells, groups of thick-walled pitted, stone-cell-like elements and numerous branchlets of the fibro-vascular system. Many of the latter end just beneath the palisade in a group of short, wide, thick-walled, strikingly pitted water tracheids. These water tracheids with the rich network of vascular bundles probably play an important part in equalizing the distribution of the stored water in these fleshy tissues. The development of the stamens and microsporangia of the male flower are rather normal. The sac-like perianth of the male flower finally becomes quite closed. At the opening of the flower the stamens and staminodia push out through a newly-formed rift in the adaxial lobe of the perianth. The petal-like "staminodia" have no trace of vascular structure, which might indicate their derivation from

stamens or petals, but do have much thickened, cutinized walls on the surface cells of the outer side of the blade. No trace was found in the male flower of the rudimentary carpels mentioned by Dammer. The very short internodes of the female spike, with the thickening up of the decussate pairs of ovaries, results in a fleshy, green, compound fruit looking a bit like that of an Opuntia or like the tuber of a potato. There is a transverse layer of cambium-like tissue in the style to which its elongation is evidently due. Some details of the development of the embryo-sac and seed have been reported elsewhere. At germination the soft pericarp decays while the highly differentiated tissue of the endocarp is burst by the swelling embryo. The latter, since its radicle points toward the axis of the spike, has also to push through the tough fruits of the opposite side of the spike. Seedlings have been raised to 3 years of age in the greenhouse in Baltimore without showing any signs of flowering. The presence and characters of the structures described should help greatly in determining the relationship of this monotypic Order, which, for a century, has been tossed from branch to branch of the phylogenetic tree.

THE STUDY OF ALGAE AT MOUNT DESERT ISLAND, 1933

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The work done in the summer of 1933, under the direction of Doctor Duncan S. Johnson, was for the purpose of studying the marine algae at Mount Desert Island. Much time was spent in collecting and preserving material for the study of the life history of various species of both red and brown algae. Especial attention was paid to the development of Chorda filum. The results obtained are preliminary and will be reported after further studies are completed.

A STUDY OF THE LIFE HISTORY OF AGARUM TURNERI, THE SEA COLANDER

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The gametophytes of Agarum Turneri have not heretofore been described.

This plant occurring only in the lowest tidepools was collected from Sea Wall, Seal Cove, Otter Cliffs, Schoodic Point and in the channel off Long Porcupine. In the great tidepools on Schoodic Point attached plants were discovered growing in abundance, but the finest stands of this kelp—to judge from dredging—were found in 20-50 feet of water on the shelving ledges that lie along the north shore of Long Porcupine.

Although believed to fruit only in the fall and winter months, little difficulty was experienced in collecting fruiting material. The sporangia in association with paraphyses comprise the sori which form irregular patches over the surface of the perforate blade.

In the laboratory discharge of the sporangia was induced and cultures were made in order to study the germination of the zoospores. Gametophytes thus obtained were followed in the course of their