

ZOOLOGY

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ABSTRACTS

A Distributional Summary of the Herpetofauna of Indiana and Illinois. SHERMAN A. MINTON, JR. and PHILIP W. SMITH, Indiana University Medical Center, Indianapolis and Illinois Natural History Survey, Urbana, Illinois.—The distribution of 75 species of reptiles and amphibians whose ranges terminate in Indiana and Illinois have been analyzed. The ranges of the eastern and western species usually terminate within or near the zone of prairie-forest transition. Some western species are largely restricted to sand prairie. Northern and southern components of the herpetofauna are most strongly limited by the southern limit of the Wisconsin glaciation and by the northern limit of the austroriparian biotic province. Features exerting minor influence upon distribution of the herpetofauna are the southern boundary of Illinoisian glaciation, the borders of the Wabash lowland, and the southern boundary of the Great Lakes Plains. In general, aquatic species are influenced to a lesser degree than are terrestrial species.

Range edge patterns of most eastern and about half of the southern species suggest a fauna advancing with the last stage of forest succession. The northern, western, and a number of the southern species show a strong tendency toward fragmentation of range in our area. We interpret this as indication of withdrawal from formerly more extensive continuous ranges. Apparently some of these species are remnants of an early post-Wisconsin herpetofauna, others are relicts of a subsequent warm period, and others of an interval during which a grassland fauna dispersed eastward.

***Eugymnanthea*, the Hybrid That Lives in a Clam.** SEARS CROWELL, Indiana University.—*Eugymnanthea* is a solitary calyptoblastic hydroid first described by Palombi in 1935. It is known from only four locations: Naples and Taranto, Italy; Boqueron, Puerto Rico, and the vicinity of the Onomichi Marine Biological Station, Japan. At each location it has been described as occurring in a single but different pelecypod host. Recent observations by the author at Naples show, however, that it lives in several different clams: it is not as host specific as had been presumed.

This hydroid is interesting because of the large number of ways in which it differs from typical hydroids. These differences may be attributed to its commensal habit and to the difficulty of maintaining a foothold in the mantle cavity of its host. The polyp has a large basal

disk. This not only holds fast to ciliated epithelia but by slow changes of shape enables the polyp to creep.

A sexual reproduction is accomplished by the development of a simple bud at the junction of the body of a polyp and its basal disk. After the bud becomes a small polyp the basal disk is pulled apart so that parent and offspring each obtain part of it.

The Puerto Rican species produces a typical leptomedusa, the medusa of the Italian species is mature at liberation and not well developed, the medusa of the Japanese form is unknown. Although the anatomy of the medusa relates *Eugymnanthea* to calyptoblastic hydroids the polyps are completely devoid of perisarc.

The embryology and the method of entrance to new hosts has not been studied.

Birds and Grasslands in Western Mexico. J. DAN WEBSTER, Hanover College.—The temperate grasslands of the Republic of Mexico constitute 22% of the country's area. Of these, the pure short grass plains along the eastern slopes of the Sierra Madre Occidental resemble the Great Plains of the United States in their biota. The birds of these and other kinds of Mexican grasslands are listed and discussed.

The Effect of Sex Steroids on the Gonadotrophic Content of Pullet Pituitary Glands. FRANK J. ZELLER and WILLIAM R. BRENEMAN, Indiana University.—There are two theories concerning the relationship of the anterior pituitary and the ovary. The "target-organ" theory states that it is the ovary which metabolizes the gonadotrophic hormones and this then is responsible for maintaining the titer level of these hormones in the blood stream. The "teeter-totter" idea is that as the concentrations of ovarian hormones increases in the blood stream they inhibit the production and release of the gonadotrophic hormones from the anterior pituitary gland.

In this experiment, greater than physiological doses of stilbesterol, testosterone and progesterone were injected into ninety-five day old pullets for ten days. The pituitary glands were then removed, weighed and assayed in newly-hatched cockerels to determine their gonadotrophic content. The different gonadal hormones failed to cause any appreciable change in pituitary weights as compared to control birds receiving just the hormone carrier, sesame oil.

The assay results showed that the pituitary glands from the stilbesterol (2500 ugm.) treated pullets contained the highest concentration of gonadotrophic hormones, causing an increase in gonad weight of the cockerels 156% above that of the control pituitary glands. The testosterone (500 ugm.) treated birds had one-half this amount, while the pituitary glands from the progesterone (600 ugm.) treated birds were no different in effect than the control birds.

This would seem to indicate that even large doses of stilbesterol, and possibly testosterone can stimulate the production of pituitary gonadotrophins while progesterone at this level has neither a stimulatory or inhibitory effect.

The Effect of Inhibitors on the Membrane Potential of Muscle Fibers of the Crab, *Carcinides maenas*.¹ WILLIAM K. STEPHENSON, Earlham College.—Muscle fibers of the shore crab, *Carcinides maenas*, maintain membrane potentials of 70 to 75 mV. for 3 to 7 hours after isolation to sea water. This electrical potential is maintained even though the fibers are losing potassium and gaining sodium. Addition of KCl to the sea water medium does not cause the reduction in potential expected for a potassium diffusion potential. The addition of 0.005 M. NaCN to the medium has no immediate effect on the potential. 0.001 M. dinitrophenol causes a 5 to 10 mV. reduction of potential over 2 to 3 hours. 0.005 M. iodoacetate brings about an immediate decline of potential of ca. 15 mV./hr. These results are consistent with the hypothesis that membrane potential is supported by energy derived from the anaerobic phase of metabolism.

A Purine and Pyrimidine Requirement for *Paramecium multimicronucleatum*. Charles A. Miller and Willis H. Johnson, Wabash College.—A medium has been developed for the axenic culture of *Paramecium multimicronucleatum* which is chemically defined except for one constituent—a nondialyzable fraction (NDF) of an exhaustively dialyzed yeast extract. Excellent growth was obtained by adding 1 mg. NDF per ml. to a basal medium of inorganic salts, sodium acetate, sodium pyruvate, stigmasterol, six B-vitamins and 17 amino acids. Several of these compounds have been shown to be essential for continued growth.

Recent studies confirmed an earlier finding by Johnson (1952) for the need of guanylic and cytidylic acids for this organism. Upon digestion of the NDF with crystalline ribonuclease and deoxyribonuclease, followed by redialysis of the digest, it was found that both the impermeable solution and the dialyzate were required for continued growth. Dry weights of these fractions indicate that the NDF contained as much as 25% nucleic acid with high amounts of deoxyribonucleic acid. The dialyzate fractions could be completely replaced with a mixture of purines and pyrimidines. A purine requirement could be satisfied by either guanylic acid, deoxyguanylic acid, guanosine or deoxyguanosine, but not by any of the adenine derivatives. Adenylic acid appears, however, to spare guanylic acid. Cytidylic acid, deoxycytidylic acid, cytidine, deoxycytidine, uridylic acid or uridine would satisfy the requirement for a pyrimidine, while thymidine and thymine would not. The free bases guanine, cytosine and uracil would not replace their respective pentoside derivatives. These purines and pyrimidines were tested at a concentration of 50 mg/ml.

Similar fractionation of the NDF with trypsin and chymotrypsin has shown that it was contributing additional protein nitrogen which apparently can be replaced with greater exogenous amino acid supplements.

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