ZOOLOGY

Chairman: CARL H. KREKELER, Valparaiso University

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ABSTRACTS

The Distribution of Cavernicolous Beetles in Indiana. CARL H. KREKELER, Valparaiso University.—Eight distinct species groups of the genus Pseudanophthalmus are now known from Indiana. Groups *leonae* and *powelli* are each known from only one cave. Group *barri* is known from possibly interconnected caves lying in a relatively restricted area. The remaining five groups have relatively extensive distributions. Forms of the *tenuis, eremita,* and *youngi* groups occur in caves of the Blue River, Lost River, and East Fork of the White River drainages. It is suggested that dispersal has occurred across the low divide that separates these drainages. In the case of the *shilohensis* group certain forms are found in caves separated from others by strata in which underground channels are not likely to be found; hence dispersal has probably been at or near the surface. Dispersal may well have been favored by the moist and cool climate obtaining during Pleistocene glaciation. In some cases at least dispersal occurred late in the Pleistocene, for Indiana forms of group *horni* are found in caves lying within the area of Illinoisan glaciation. The great variety of forms of Pseudanophthalmus in Indiana may be related to the fact that it is the major cave area of eastern North America lying adjacent to the terminus of a glacial ice sheet. Here conditions may have been optimal for dispersal and diversification of ancestral forms which subsequently found refuge in caves.

A Critique of Nuclear Fractionation Schemes. JAY BARTON II, Saint Joseph's College.—The elements which various schemes of fractionation have in common were examined. The following observations were discussed and supporting evidence submitted. (1) Preliminary sequestering of divalent ions is necessary for extraction of nucleoprotein complexes. (2) Sequestering is also necessary to obtain the "nuclear ribosomes" and the so-called soluble phase. (3) Lateral cross-linking of nucleoprotein complexes is much more easily ruptured than is end-to-end linking. (4) Heterogeneity in the preparations is a reflection of the variation of nuclear composition with the activity and stage of the cell. (5) Residual protein is normally bound with DNA as well as histone and RNA. The structure and role of the residual or metabolic fraction were examined.

Preliminary Studies on the Growth Rate of *Natrix sipedon*. PHILIP BAKER, JOHN R. HENDRIX, and WILLIAM B. HOPP, Indiana State Teachers College.—Sixteen young water snakes *(Natrix sipedon)* five to six weeks old were chosen from two litters and divided into four groups of four specimens each. One group had food available at all times, another group was fed once a week, another fed every two weeks, and the fourth fed at irregular intervals. After six months, the group receiving food once a week recorded the greatest increase in weight, closely followed by those

with food available at all times. On the basis of this limited sampling, it would seem that there is no advantage in feeding more frequently than once a week.

Experimental Production of Gill-lessness in Newts and Axolotls.[1] L. E. DELANNEY and R. R. NEAL, JR., Wabash College.—In inquiring into the reciprocal relationship of the blood-vascular system and gills we questioned the survival value of gills *per se* and elected to test this via the technique of Harrison (1921). Early embryonic flank ectoderm transplanted to the gill-forming area of the West Coast newt, *Taricha torosa*, in 15 cases not only permitted survival of totally gill-less animals beyond the 26 days reported by Harrison but 6 survived in excess of 42 days and at present one survives for over 5 months. For a 2 month period, at 20°C., there is only doubtful size variation between experimentals and controls; by 3 months the experimentals lag dramatically and are only about half the trunk and total length of the controls and thus below half the volume. At 4 months the larva persists with mid-larval pigment characteristics but the controls have metamorphosed. Axolotls, *Siredon mexicanum*, similarly treated, now survive in excess of one month. Since these axolotls retain gills when sexually mature, comparative studies of possible surface-volume ratios between the two kinds of salamanders will be pursued; also, the possible role of gill-lessness on the pituitary-thyroid physiological axis is discussed and will be explored.

Preliminary Observations on Homograft Reactions in Axolotls and Their Possible Genetic Implications.[1] L. E. DELANNEY, E. R. JOHNSON and G. WOODHAM, Wabash College.—Homograft rejections, only recently established for fish and anurans, with one report for newts, are supported by homograftings reported here for the axolotl, *Siredon mexicanum*. Six sets of reciprocal homografts are involved. Exchanges between black and white axolotls, 1 per week for six weeks (first set through sixth set) demonstrate vigorous hemostasis, hemorrhage, and epidermal rejection followed by dermal replacement with a range, in white homografts to black hosts, of first set degenerative changes in 5 weeks and final repair with host pigmentation in 13 weeks to only 3 weeks and 8 weeks respectively for sixth set. Black homografts on white hosts are rejected just as surely but with less dramatic hemorrhage or epidermal erosion. Two cases, 1 white, 1 black, to date have accepted contrasting skin with no alteration of the graft for over 3 months. No white axolotl receiving white skin has shown signs of rejection, suggesting isogenicity in this respect. All experiments have been with males to date since males are identified with ZZ sex chromosomes and controversy exists over the relationship of histocompatibility genes to sex chromosomes in amphibia; further experiments along these lines are in progress.

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