VARIATIONS AMONG ATYPICAL SPERMATOZOA IN VALVATA TRICARINATA

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ABSTRACT

Among the gastropod molluscs the Prosobranchs present a variety of conditions of sexuality. The Prosobranchs, in fact, are, in a majority of instances gonochoristic, but, other members of the group are generally hermaphroditic. In certain other cases some members pass through phases in which the animals are first gonochoristic, then hermaphroditic, only to become, later on during the life cycle, gonochoristic or unisexual.

It appears significant, especially, in the light of recent investigations in sex differentiation that a series of variations should occur in the process of spermatogenesis in this hermaphrodite snail. In *Valvata tricarinata* the early gonial stages pass through separate strata during the period of sexual segregation, and later, spermatogenesis and ovogenesis occur at the same relative time. Always the male cells mature a short time before the ovocytes. It seems probable that the presence of a tendency toward increasing abnormality in the apyrene group may be the result of the interaction of the male and female systems which are so close together in the hermaphrodite gland.

Altogether three species of Valvata, one American and two European species have been studied to-date and each species has presented a widely differing set of conditions of spermatogenesis. *Valvata piscinalis*, which was first studied by von Kemnitz (1914), occupies a position in many respects similar to the unisexual gastropods. Von Kemnitz has established that only a single typical spermatogenesis occurs in *Valvata piscinalis*. Later, Artom and Cavallini (1931) in a careful study reported on both *Valvata piscinalis* and *Valvata cristata*. Their conclusions tend to confirm the work of von Kemnitz in showing again the total absence of an aberrant spermatogenesis in *Valvata piscinalis* and a definite tendency toward a typical spermatogenesis in *Valvata cristata*.

It is certain from a study of the conditions of sexuality in the three species of *Valvata* mentioned above that a series of increasing tendency toward aberrant spermatogenesis occurs in this genus with *V. piscinalis*, *V. cristata*, and *V. tricarinata* forming a series of increasing tendency toward a typical sperm formation.