THE CYTOLOGY OF SALINATOR SOLIDA (VON MARTENS), MOLLUSCA, AMPHIBOLIDAE

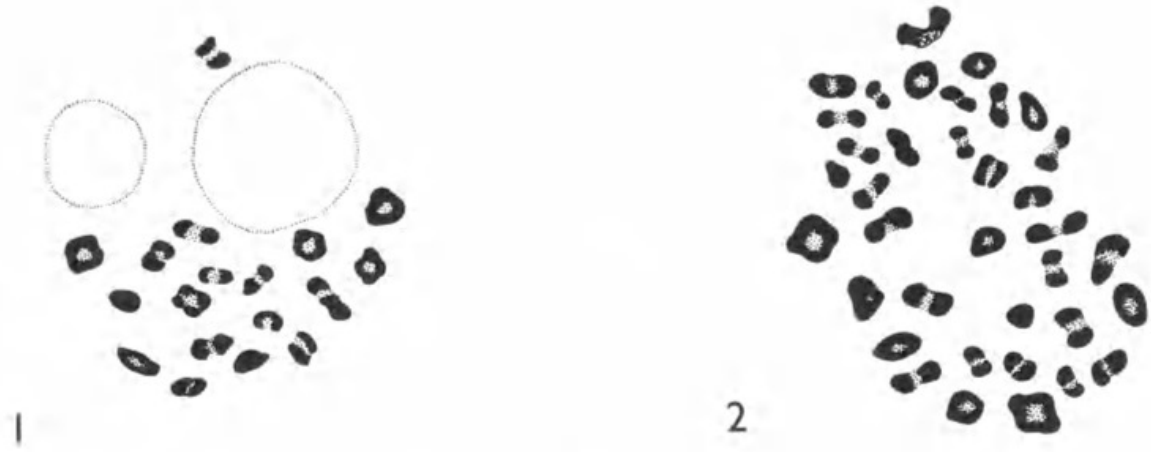
By HELENE M. LAWS, Curator of Marine Invertebrates, South Australian Museum

Salinator (Family Amphibolidae) belongs to the group of primitive basommatophoran pulmonates termed "Archaeopulmonata" by Morton (1955) and also including the Ellobiidae, Otinidae, Chilinidae, Latiidae, Gadiniidae and Siphonariidae. So few chromosome observations have as yet been made for members of "archaeopulmonate" families (see table I) that any additional records are of value. The majority of cytological observations for the Basommatophora have been made within Morton's second series which includes the remaining higher limnic families. Within these higher groups $x = 18$ is most common, occurring with a few exceptions in cytologically known members of the Physidae, Lymnaeidae (except *Radix* where n usually = 17), Planorbidae and Acroloxidae, although in the Ancylidae $n = 15$, 30, 60, 17, and 18 are known (Burch, 1962).

Salinator solida (von Martens) is common in mangrove and estuarine situations in Queensland, New South Wales, Victoria and South Australia. A collection of this species was made by D. E. Pomeroy from a brackish creek at Buckland Park, about 30 miles north of Adelaide in August, 1963. The snails were kept in shallow water in an aquarium for a number of weeks and individuals were taken from time to time for cytological study. Gonad samples were squashed in aceto-orcein, and voucher specimens are in the South Australian Museum collections D.14891.

Eighteen bivalents were present at meiosis of spermatogenesis (fig. 1). In most specimens there were, in the gonad, a few meiotic cells in which $n = 36$ (fig. 2), but this was never found to be the rule for any individual and it must be assumed that if any diploid sperm did arise, it was very unlikely to result in a viable snail.

The chromosome complement of $n = 18$ found in *Salinator solida* is the same as that observed by Inaba (1953) for the Japanese species *S. takii*, the only other member of the Amphibolidae which has been studied cytologically. The same chromosome number is found in other "Archaeopulmonate" species with the exception of *Siphonaria* in which $n = 16$, and two members of the Ellobiidae. The ellobiids are without doubt the most primitive existing pulmonates and it is noteworthy that although $n = 18$ predominates in the family (see table I),



Figs. 1 and 2. Camera lucida diagrams of meiotic figures.
Fig. 1. Meiotic chromosomes of *Salinator solida* in a normal diploid cell; n = 18.
Fig. 2. Meiosis in a tetraploid cell; n = 36.

Pythia and *Cassidula* which are in the most primitive section of the Ellobiidae have n = 17. They share this number with all cytologically known members of the more primitive opisthobranch groups, lending support to Morton's view that there is close affinity between primitive opisthobranch and basommatophoran groups and that the subclauses Opisthobranchia and Pulmonata diverged after a common origin from some unknown prosobranch ancestor.

TABLE 1
CHROMOSOME NUMBERS OF ARCHAEOPULMONATA
(Adapted from Burch, 1965)

Family.	Haploid chromosome number.	Number of species.
Siphonariidae	16	1
Amphibolidae	18	1
Ellobiidae	17	2
	18	4
Chilinidae	18	1
Latiidae	18	1

REFERENCES

Burch, J. B., 1965: Chromosome numbers and systematics in euthyneuran snails. Proc. First Europ. malac. Congr. 1962: 215-241.

Inaba, A., 1953: Cytological studies in molluscs. I. Chromosomes in basommatophoric Pulmonata. J. Sci. Hiroshima Univ., ser. B, div. 1, 14: 221-228.

Morton, J. E., 1955: The Evolution of the Ellobiidae with a discussion on the origin of the Pulmonata. Proc. zool. Soc. Lond., 125: 127-168.

Woolacott, L., 1945: The establishment of *Salinator fragilis* Lamarck and *Salinator solida* von Martens as two distinct species in Australia. Proc. R. zool. Soc. N.S.W. 1945: 35-38.