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ALBINISM IN THE GENUS *ANCILLA* (GASTROPODA, OLIVIDAE)

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## ABSTRACT

In the shell of molluscs a great variability in colour forms can often be observed. Two forms have received special names: black is called melanism, white (= the lack of any colour) is called albinism. Partial albinism is also known. In the Cypraeidae melanism is known from a number of species. Albinism is rare, but seems scattered throughout all groups of the gastropods. However, albinism seems to occur more often in *Ancilla*. The genus *Ancilla* (fam. Olividae) contains about one hundred recent species; more than ten subgenera can be recognized. They are living in marine tropical and subtropical waters. The shell is mostly coloured yellow-orange-brown. From the collection of the Zoological Museum in Amsterdam and from the literature at least ten species are known to have (partial) albinistic forms. Some of these albinos were originally described as distinct species, like *Ancilla candida* (Lamarck) and *A. nivea* (Swainson).

## INTRODUCTION

Colour variation of molluscan shells has always attracted the attention of malacologists. In many species these colour forms received names. In older literature they were described as varieties, like var. *alba*, *aurea*, *nigra*, *rubra*, *viridis*, etc. In modern literature they are considered to be colour forms, forma *rubra*, etc.

General terms are being used for two colour forms: black colouration is called melanism, white is known as albinism. These 2 terms are not only used for shells, they are valid in all groups of animals. Within the gastropods melanism is known from several species of Cypraeidae (Cernohorsky, 1963). The reference list in Old (1964) comprises the literature on melanistic Cypraeidae. Black specimens of *Cypraea* are known in particular from New Caledonia, like *Cypraea arabica niger*, *C. stolidia crossei*, *C. caurica thema*, and *C. eglantina*. Some metals, found on New Caledonia and in the waters around this island, are thought to have caused these melanistic shells. It is therefore considered an ecological factor.

Albinism is the lack of any colour. It is known from most classes of the animal kingdom. When both parents are albino, their offspring is albinistic as well. Therefore albinism is hereditary, and caused by mutation. In "partial albinism" the animal is only partially white.

Not all white shells should be regarded as albinos. Sometimes the natural colour of the shell is white, as in many *Epitonium* species and in the Lucinidae. In collections the original colour of the shells may have faded through the influence of daylight. Shells found on the beach are often bleached by sunlight. Many fossil shells have become white in time.

Albinos are sometimes described as formae of the normal shell, usually with the indication *alba* (= white), *candida* (= shiny white), *nivea* (= snow white), or *virginea* (= virgin-like).

Albinism is rare; in gastropods it is known from a very limited number of species only. Mrs. Waverley H. Harmon of New York has a special interest in albino shells, and has collected them for about 15 years. Her albino collection now contains a little over 100 species, both gastropods and bivalves, from a number of families, including land, marine and freshwater molluscs. It is therefore obvious that albinism is rare, and scattered throughout all taxa of the gastropods. However, from literature and the collection of the Zoological Museum, Amsterdam (= ZMA), it appears that albinism occurs more often in shells of the genus *Ancilla*.



ALBINISM IN *ANCILLA*

The genus *Ancilla* Lamarck, 1799 (syn. *Ancillaria* Lamarck, 1811) belongs to the family Olividae of the Prosobranchia. About 100 Recent species are known, which are placed in ten subgenera. The species of *Ancilla* are living in (sub)tropical marine waters. Most of them are found in the Indopacific area, some subgenera having a limited distribution, such as *Sparella* from the Red Sea to the Persian Gulf, and *Anolacia* around Madagascar and Mauritius. The subgenus *Eburna* occurs from the southern Caribbean Sea to the coast of Brazil. Furthermore species of *Ancilla* are found around South Africa, South Australia, and New Zealand. Recent species of *Ancilla* are not known from the tropical eastern Pacific, nor from the Mediterranean Sea and West Africa. However, fossil *Ancilla* are known from Europe and North America.

The shell of *Ancilla* is elongate to fusiform, and solid; length 1-10 cm; the surface is smooth and glossy; spire high and conical; aperture rather wide, often with parietal callus, columella twisted and grooved; colour yellow, orange, brown, and white; operculum small.

Albinistic specimens are known from the following species.

Subgenus *Ancilla* s.s.

*Ancilla ampla* (Gmelin, 1791) from the Indian Ocean is yellow coloured (Fig. 1a). One albino shell from Ceylon (Fig. 1b) is present in the collection of ZMA. Evidently albinism is not rare within this species, as the albino form was described as *Ancillaria candida* Lamarck, 1811. Albinistic specimens were also figured by Sowerby II (1859, pl. 212, fig. 29) and Reeve (1864, pl. 8, fig. 27a).

Subgenus *Ancillus* Montfort, 1810

*Ancilla muscae* Pilsbry, 1926. This is a new name for *Ancillaria elongata* Gray, 1847, non Deshayes, 1830. The species is living in Australia, the shell is white. Normally the upper part of the spire is covered with a brown periostracum (Fig. 2a). When the periostracum is removed, a white shell (Fig. 2b) remains, giving the impression of an albino. This is an example of pseudo-albinism. Sowerby II (1859, pl. 213, figs. 52-53) also figured a white specimen next to one with the brown periostracum.

Subgenus *Sparella* Gray, 1857

*Ancilla fulva* (Swainson, 1825) from the Red Sea is cream to light brown (Fig. 3a). One albino (Fig. 3b) is in the collection of ZMA. Sowerby II (1859, pl. 214, fig. 75) also figured an albino.

*Ancilla cinnamomea* Lamarck, 1801, is from the Red Sea and Persian Gulf area. The shell is brown, the spire has brown and white bands (Fig. 4a). The ZMA collection contains some partial albino shells (Fig. 4b), which have the spire banded, but the last whorl is completely white. *Ancilla tronsoni* (Sowerby II, 1859) is considered a synonym of *A. cinnamomea* by Burch & Burch (1960). As *A. tronsoni* is pure white (Sowerby II, 1859: 58, pl. 212, figs. 20-21) it must be the albino form of *cinnamomea*.

*Ancilla castanea* (Sowerby I, 1830) is a chestnut coloured species from the Red Sea. An albino is figured by Sowerby II (1859, pl. 214, fig. 76).

Subgenus *Anolacia* Gray, 1857

*Ancilla mauritiana* (Sowerby I, 1830), syn. *A. torosa* (Sowerby II, 1859), is found around Madagascar and Mauritius. It is the only species in this subgenus. Next to the brown coloured shells (Fig. 5a) albinos are often seen in collections (Fig. 5b). The albinistic form is also known in literature (Sowerby II, 1859, pl. 212, fig. 31). The coloured juveniles of this species were named *Ancilla aperta* (Sowerby I, 1825), and juvenile albinos were described and figured by Sowerby II (1859: 58, pl. 212, figs. 37-38) as *Ancillaria scaphella*.

Subgenus *Eburna* Lamarck, 1801

*Ancilla glabrata* (Linné, 1758) has a very limited range in the southern Caribbean. The island of Aruba seems to be the centre of its distribution. It is one of the largest species of the genus *Ancilla*; the ZMA collection contains a specimen of 75 mm length. The shell is yellow (Fig. 6a).



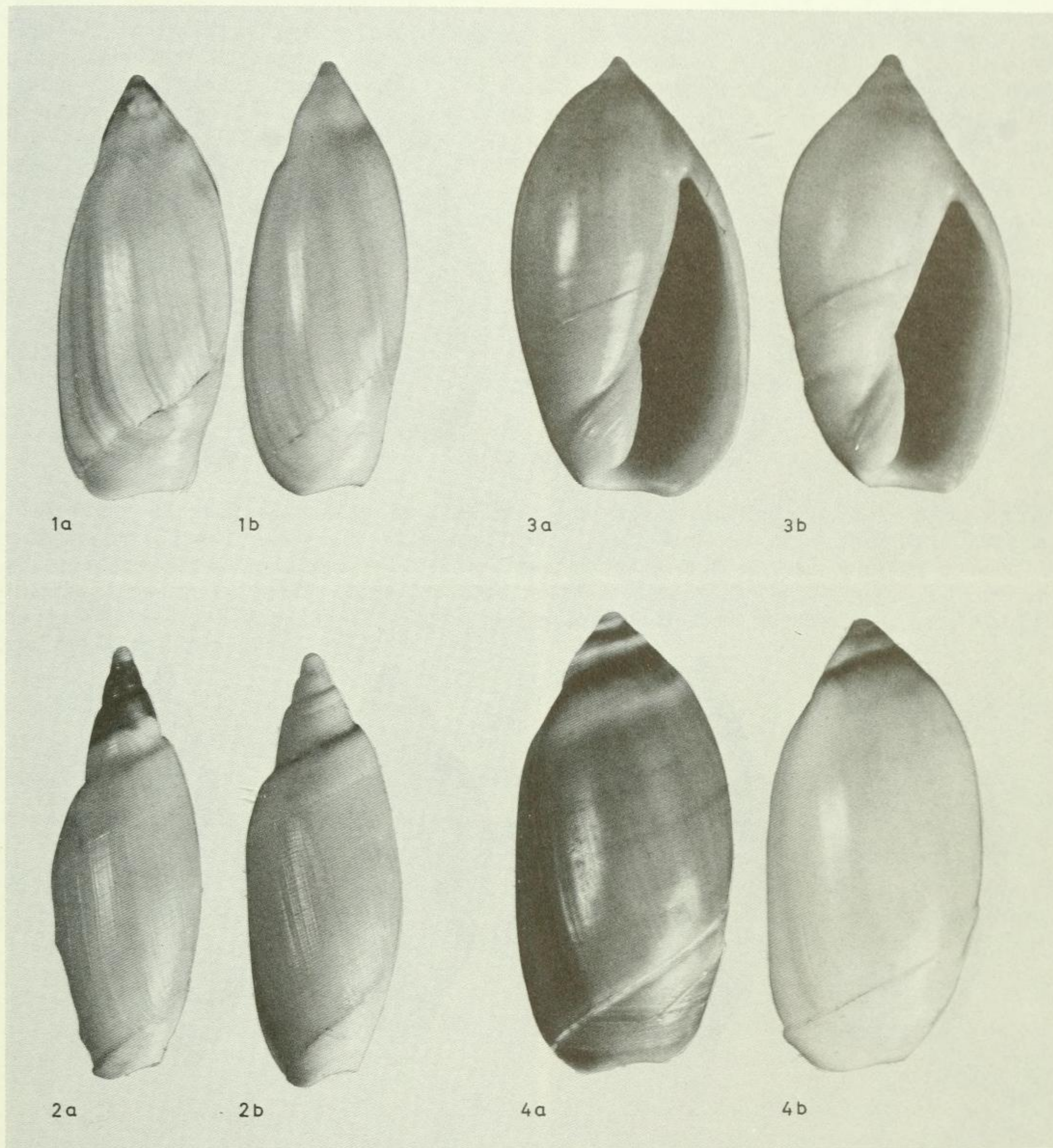


FIG. 1. *Ancilla (Ancilla) ampla* (Gmelin). a. Yellow, length 23.1 mm, Ceylon. b. Albino = *A. candida* (Lamarck), length 29.4 mm, Ceylon.

FIG. 2. *Ancilla (Ancillus) muscae* Pilsbry. a. White with brown spire, length 43.5 mm, W. Australia, Exmouth Gulf. b. Pseudo-albino, length 36.7 mm, Australia, Torres Strait.

FIG. 3. *Ancilla (Sparella) fulva* (Swainson). a. Cream coloured, length 31.6 mm, Red Sea. b. Albino, length 29.8 mm, Saudi Arabia, Jubail.

FIG. 4. *Ancilla (Sparella) cinnamomea* Lamarck. a. Brown, length 26.1, mm Persian Gulf. b. Partial albino, white with brown band around the suture, length 27.4 mm, Persian Gulf.

(Specimens in collection Zoological Museum, Amsterdam, photographs by L. A. van der Laan).



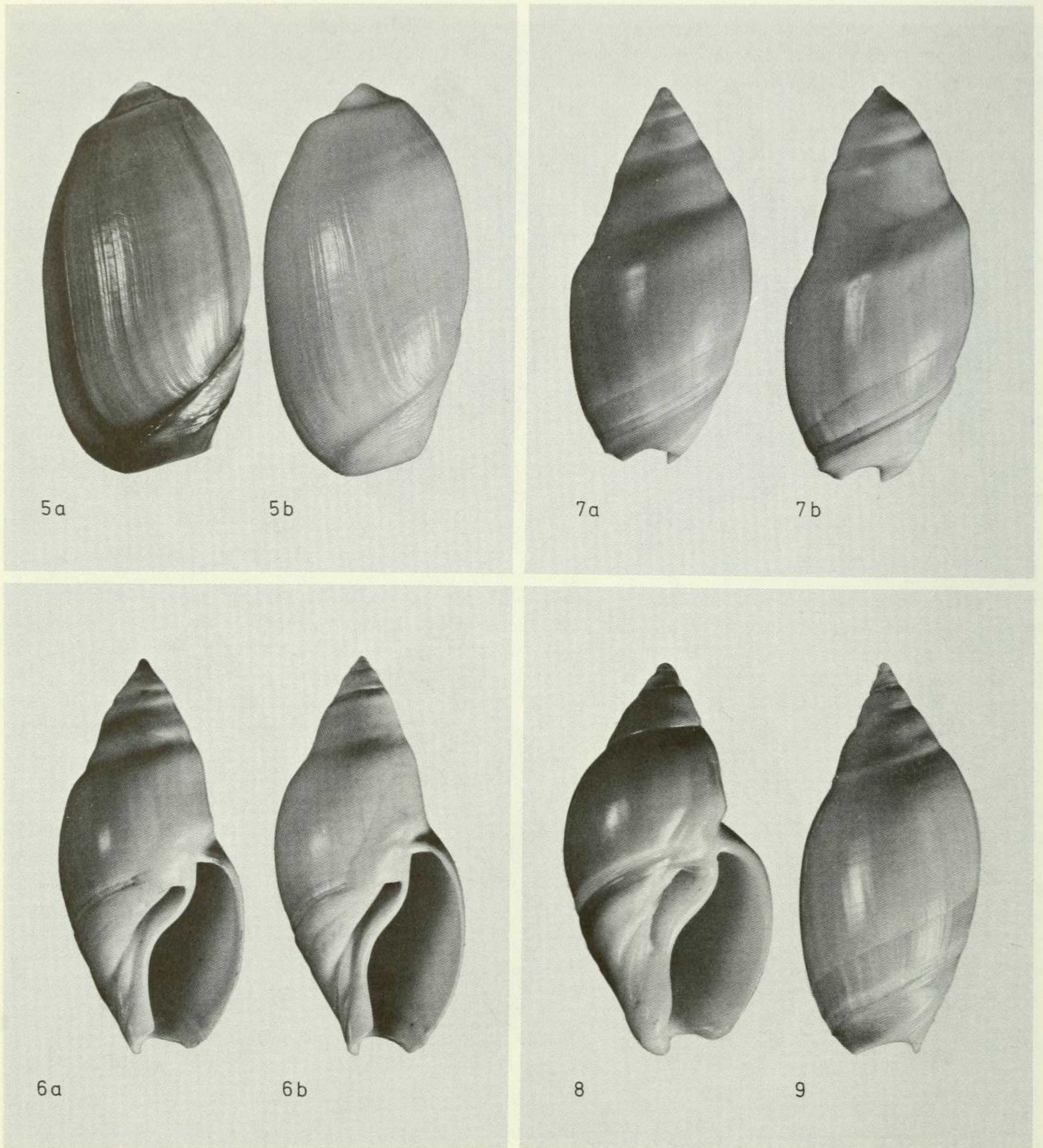


FIG. 5. *Ancilla (Anolacia) mauritiana* (Sowerby I) a. Brown, length 41.7 mm, Madagascar. b. Albino, length 41.8 mm, Madagascar.

FIG. 6. *Ancilla (Eburna) glabrata* (Linné). a. Yellow, length 71.8 mm, Aruba. b. Albino, length 71.9 mm, Aruba.

FIG. 7. *Ancilla (Eburna) balteata* (Swainson). a. Yellow, length 39.5 mm, West Indies. b. Albino = *A. nivea* (Swainson), length 50.3 mm, Antilles.

FIG. 8. *Ancilla (Eburna) lienardi* (Bernardi). Yellowish-brown, length 31.2 mm, Brazil, Acaraù, Ceará.

FIG. 9. *Ancilla (Eburna) tankervillei* (Swainson). Yellow, length 56.5 mm. Venezuela, Isl. Margarita.

(Specimens in collection Zoological Museum, Amsterdam, photographs by L. A. van der Laan).



The figured albino (Fig. 6b) is very large too. Albino specimens are also known from the literature (Sowerby II, 1859, pl. 213, fig. 63).

*Ancilla balteata* (Swainson, 1825) is known from the same area as the former species. However, in literature and in old collections it is mentioned from Ceylon. This species is closely related to *A. glabrata*, but smaller and with a shouldered shell (Fig. 7a). The colour is orange-yellow. Albino specimens (Fig. 7b) were described as *Ancillaria nivea* Swainson, 1825. Sowerby II (1859: 66) considered *A. balteata* and *A. nivea* to be distinct species, both from "Ceylon." Reeve (1864, spec. 49) already recognized the synonymy, he mentioned the relation with *A. glabrata*, and gave *A. balteata* a West Indian distribution, i.e. "probably Gulf of Mexico."

*Ancilla lienardi* (Bernardi, 1858) from the coast of Brazil has a yellowish-brown to reddish-orange shell (Fig. 8). We have not seen any albino of this species; however, Reeve (1864, spec. 50) figured an albino (pl. 12, figs. 50c-d) next to a coloured specimen (figs. 50a-b).

*Ancilla tankervillei* (Swainson, 1825) is known from Venezuela (Isl. Margarita) and the north coast of Brazil. The shell is coloured yellow (Fig. 9). The collection of ZMA does not have any albino, but a white specimen is figured by Sowerby II (1859, pl. 211, fig. 5).

## DISCUSSION

Although albinism is very rare in the Gastropoda, it is remarkable that in the genus *Ancilla*, with about 100 species, albinos are known from at least 9 species. In most of these 9 species, albino specimens are not rare at all, so we may conclude that albinism is rather common in *Ancilla*. Albinism in *Ancilla* occurs in a number of subgenera, and is not connected with any zoogeographical province. Albino *Ancilla* species are known from the Indian Ocean, Red Sea, and the West Indies.

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