

closely allied to that genus, in which the anthers are borne on long filaments. By the sessile anthers *Blepharidium* is easily distinguished from all the genera of the Cinchoneae with imbricate corolla lobes.

ZOOLOGY.—*A key to the Philippine subspecies of Obba marginata with notes on their distribution.*¹ PAUL BARTSCH, U. S. National Museum.

The preparation of a report on the Philippine Island land shells reveals so many distributional gaps in the material available for study that it seems wise to publish a series of synopses in the form of keys to the various groups as the work progresses, together with a brief account of the zoogeographic facts presented by the data at hand

It is hoped that these sketches may serve to stimulate collectors to bestow their efforts upon localities from which material is sadly needed to render the monographic reports complete.

OBBA MARGINATA Müller

In this species the shell varies from broadly conic (*Obba marginata mearnsi*), to almost lenticular (*Obba marginata samarensis*). The range in size is also great. *Obba marginata saranganica* attains a greater diameter of 35 mm., while in *Obba marginata mearnsi* it does not exceed 19 mm. All the races have a narrow acute peripheral keel to which the summit of the succeeding turn is appressed. The ground color varies from pale buff (*Obba marginata griseola* and *Obba marginata mearnsi*), to pale brownish (*Obba marginata marginata*). In all the subspecies known, the peripheral keel and the extreme summit are edged by a very narrow white or whitish zone, while the rest of the upper surface of the turns is marked by three bands of brown of which one adjoins the peripheral white zone while another bounds the white line at the summit and the third occupies a space almost midway between them. The width of these brown bands varies in the different races. In some they equal the light areas that separate them (*Obba marginata batutensis*), while in others some of them are represented by mere hair lines. The intensity of the color may be the same or may vary in the different bands on the same whorl, the band at the summit being usually much paler than the rest. Two bands are present on the basal sides of all the members of this species, one adjoin-

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ing the light peripheral zone and another situated at about one-third of the distance between the periphery and the umbilicus anterior to the periphery. Here, as in the banding of the upper surface, we find a considerable variation both as to intensity of coloration and width of the band. In some the zone at the periphery is merely indicated (*Obba marginata lanaona* and *Obba marginata mearnsi*), while in others they are very dark and broad (*Obba marginata marginata* and *Obba marginata balutensis*). In all the forms the basal lip is toothless. Under the microscope we find that the first half turn is smooth; the turn and a half following this are marked by slender oblique, retractive curved, axial threads, best seen near the summit and at the periphery; while the succeeding turns have in addition to these threads, very fine, closely spaced, impressed lines which cross each other more or less at right angles and the lines of growth at an angle of about 45° and give the surface a fine cloth-like texture.

The various subspecies of *Obba marginata* can readily be divided into two groups, one in which the dark coloration predominates over the light zones and another in which the reverse is true. To the first of these, the dark group, belong the subspecies *saranganica*, *balutensis*, *marginata*, *worcesteri*, and *boholensis*. In the light group we find characters that readily enable one to further subdivide it. In two forms (*mearnsi* and *palmasensis*) the shell is broadly conic. In the rest the shell is lenticular. This last complex is again divisible. One part (subspecies *griseola*, *samarensis*, *pallescens*, and *nana*) has the basal peripheral band well developed. In the other (subspecies *zamboanga*, *lanaona*, and *joloensis*) the basal peripheral band is obsolete.

The distribution, as known to date, extends from the central islands of Samar, Leyte, Bohol, and Cebu, southward over Mindanao to Jolo on the west and Sarangani and Palmas islands on the east in the Philippines, and still farther south beyond our range at least to Celebes. A plotting of the known distribution points strongly to the fact that many additional subspecies may be expected when more careful and extensive collecting shall have been done. The species should occur on the islands between Samar, Leyte, and Mindanao. In Mindanao itself we know it only from the northern coastal strip and Zamboanga and it scarcely stands to reason that there should be a gap in the distribution between the north coast and the little islands of Sarangani, Balut, Olanivan, and Palmas off the southeast coast where it is well represented.

The distribution of the groups outlined above is rather interesting. The subspecies in which the dark coloration predominates are known from Bohol, Camiguin, north of Mindanao and the islands of Olanivan, Sarangani, and Balut off southeastern Mindanao. None of the dark forms so far are known from the large island of Mindanao itself. The broadly conic light-colored *Obba marginata mearnsi* and *Obba marginata palmasensis* come from Sarangani and Palmas, respectively, both off southeastern Mindanao. The light colored lenticular forms having the basal peripheral color band well developed are so far known from Samar, Leyte, Cebu, and northeastern Mindanao, and I strongly suspect that the form recorded from Siquijor and that from Talisayan, Mindanao, will prove to belong here. The light-colored lenticular forms in which the basal peripheral band is obsolete are known from western Mindanao and the island of Jolo.

The following key may be of help in determining the known subspecies¹:

Dark bands predominating over the light zones.

Greater diameter more than 30 mm.

Lines of growth strongly developed (Sarangani Island).
saranganica Hidalgo.

Lines of growth not strongly developed (Balut Island).
balutensis new.

Greater diameter less than 30 mm.

Basal bands very dark brown.

Greater diameter more than 25 mm. (Camiguin Island).
marginata Müller.

Greater diameter less than 22 mm. (Olanivan Island).
worcesteri Bartsch.

Basal bands light brown (Bohol Island) **boholensis** new.

Dark bands not predominating over the light zones.

Light zones much greater than the dark.

Shell broadly conic.

Peripheral basal color band moderately strong (Palmas Island) **palmasensis** new.

Peripheral basal color band obsolete (Sarangani Island).
mearnsi new.

Shell not broadly conic, lenticular.

Peripheral basal brown band obsolete.

Median band above and below reddish (Zamboanga, Mindanao) **zamboanga** new.

¹ The types of the new subspecies are registered in the U. S. National Museum under the following numbers: *balutensis*, no. 256548; *boholensis*, no. 116914; *palmasensis*, no. 256420; *mearnsi*, no. 256423; *lanaona*, no. 256495; *joloensis*, no. 256549; *samarensis*, no. 256549.

Median band above and below not reddish, all bands brown.

Base very strongly convex (Lanao Province, Mindanao).....**lanaona** new.

Base very slightly convex (Jolo Island).

joloensis new.

Peripheral basal brown band not obsolete.

Greater diameter more than 23 mm.

Band near the summit and at the periphery more or less interrupted (Cebu Island).

griseola Möllendorff.

Band at the summit and near the periphery not interrupted (Samar Island).

samarensis new.

Greater diameter less than 21 mm.

Peripheral basal band strong (Leyte Island).

pallescens Möllendorff.

Peripheral basal band not strong (Northeast Mindanao).....**nana** Möllendorff.