

Hummeln und Trigonen nehmen mit Ausnahme des ersten Segments alle übrigen Segmente an der Wachsabscheidung teil; die Drüsen des 2. Segments sind bei den Trigonen fast in gleichem Grade wie die an den übrigen Segmenten, bei den Hummeln weniger kräftig ausgebildet und kommen bei den Meliponen wohl nur noch wenig für die Wachsabscheidung in Betracht.

Bei Meliponen und Honigbienen sind endlich die Wachsdrüsen noch in zwei, durch gewöhnliche Hypodermiszellen getrennte Felder zerlegt, deren Abgrenzung bei den Bienen, unsern vollkommensten Wachs-fabrikanten, am schärfsten durchgeführt ist.

3. A New *Psolus* from Monterey Bay, California.

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(With 13 Figures.)

eingeg. 3. November 1905.

The animal described below was taken by a Chinese fisherman on a cod line, presumably from rocky bottom, at a depth that almost certainly did not exceed 120 metres. The fishing banks are off the south end of the bay, one at the mouth, the others somewhat farther out. The specimen was secured by Mr. M. H. Spaulding of the Zoology Department, and he has kindly placed it at my disposal for description. This type is deposited in the Zoological Museum of the University.

Psolus californicus, new species.

Diagnosis. — Tentacles 10, dendritic; dorsum covered with heavy, imbricated scales devoid of granules, the free edges being prominent; spaces between scales filled with numerous minute plates immersed in membrane; area between oral and anal protuberances occupied by about 8 plates in 2 rows. Anal and oral prolongations only slight. Pedicels, in 3 complete longitudinal series; those of the lateral ambulacra in about 5 or 6 rows; those of middle ambulacrum in 2 rows, becoming 3 at either end. Deposits — in ventral perisome are subcircular, elliptical, or slightly irregular perforated plates with relatively few knobby protuberances on the surfaces, and with more or less regularly incised edges, together with similar, often slightly larger, fenestrated plates with numerous rather irregular knobs and subcircular perforations; in pedicels, larger, perforated circular, terminal plates and small, perforated, elongate plates; in tentacles large and small, usually elongate, often curved, smooth, perforated, plates and rods; in perisome surrounding base of tentacles smaller irregular perforated plates and rods. Color in life, brick red; tentacles, bright vermilion.

Length 55 mm; width 21 mm; height midway between anal and apertures, about 20 mm.

Habitat. — Monterey Bay, California, probably at a depth of about 120 metres or less.

Description. — The general form of the animal is better appreciated from the accompanying figure than from description. Compared with most species of *Psolus* the scales are remarkably thick, and their surface is uneven, sometimes rough, but not covered with granules. The upper and free edge of each scale is very prominent and stands out a little distance from the next scale above, the interval being occupied by small granulelike plates immersed in membrane. These small plates vary from about 0,25 to 1 mm long, are usually roughly elliptical in general form, and are more conspicuous between the scales of the anal cone, and those of the medio-dorsal area than elsewhere. The larger plates or scales are too irregularly arranged to form definite tiers or series but they decrease in size toward the edge of the body where there are 2 or 3 series of very small plates identical with those just described. The anal protuberance is made up of about 5 not very regular concentric series of pointed scales, the innermost series comprising 5 small toothlike scales covering the aperture. Similarly, the tentacles and neck are surrounded by 2 alternating series of 5 triangular scales as shown in the figure. The scales of the inner series appear to be rather truncate with a median tooth, and the lateral parts of each scale are covered with vertical rows of little plates or granules identical with those occupying the interstices between the large scales of the body. The tentacles are not fully expanded and 1 appears to have been lost. They present no points of peculiarity. Around the edge of the sole the pedicels appear to be numerous. Although the former is considerably contracted, either lateral band of pedicels is wider than the naked space between the median and lateral bands. There is 1 row of pedicels on the very edge of the sole; then about 3 mm distant another series. The third series is adjacent to the second and occupies the center of the band. The remainder of the pedicels are very crowded and form possibly 3 very irregular series, but anteriorly and posteriorly they have no serial arrangement. On the midventral ambulacrum the pedicels form 2 series except at either end where the band joins those of the lateral ambulacra; here the middle band abruptly widens out, especially at the anterior end; much less noticeably at the posterior extremity.

The deposits in the sole (which is thick and leathery) consist of numerous, flat, subcircular, elliptical, or occasionally irregular perforated plates, bearing few to many knobs on the surface. When the knobs are numerous their irregular ends appear to join forming the characteristic

fenestrated plates (figs. 2, 5). The edges of the plates are more or less deeply scalloped or incised, the projections frequently assuming the form of teeth. A slight ridge proceeds inward from each tooth for a short distance so that the periphery of the plate appears to be of uneven thickness, the thinner portion, of course, being opposite each incision. The commoner forms of plates are shown in figures 2 to 7. These have the longest diameter ranging from 0,1 to 0,3 mm, the greater number being about 0,2 mm. In the pedicels near the terminal plate, which has a diameter of 0,95 mm, are elongated, perforated, very slightly knobbed

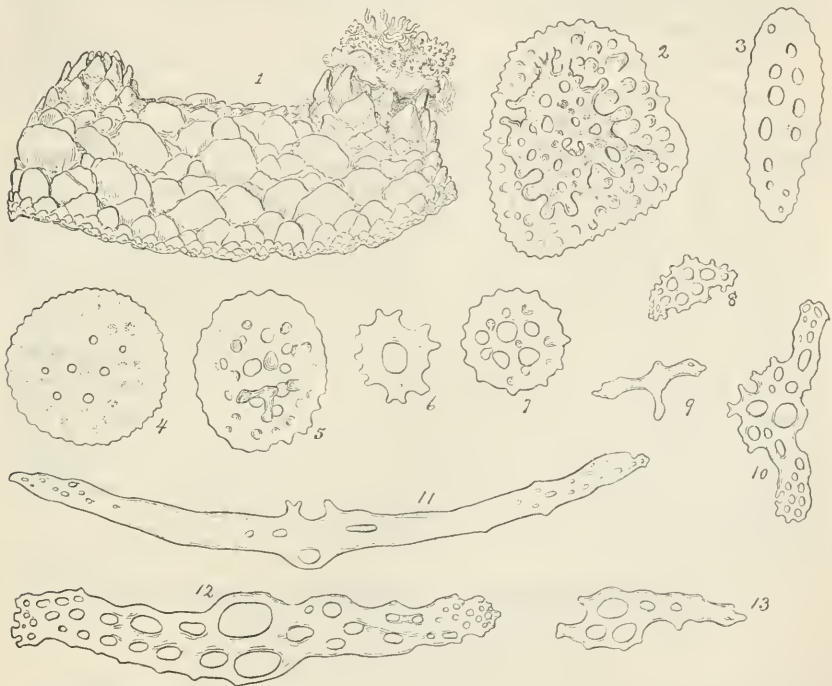


Fig. 1. *Psolus californicus* from side $\times 1$. Figs. 2-7, deposits from sole $\times 100$. Figs. 8, 10, 11, 12, deposits from tentacles, $\times 100$. Figs. 9, 13, deposits from membrane at base of tentacles, $\times 100$.

plates. These pass insensibly into the ordinary circular or subelliptical knobbed plates of the general perisome. In fact the elongated plates are only slightly different from the elliptical ones being more irregular in outline with more prominent marginal teeth. The tentacles abound in small perforated plates (figs. 8 and 10), and larger perforated rods and rod-like plates (figs. 11 and 12). There are also many small and large more or less branched rods (fig. 9). The perforated plates are usually slightly curved and vary from about 0,08 to 0,3 mm, longest de-

mension, while the long plates, which are exceedingly variable in form measure about 0,2 to 0,8 mm. Some of the rods are fairly regular with a few perforations in the middle and many smaller ones at the extremities (11). In the oral disk, and in the membrane between the oral scales and base of tentacles are many very irregular perforated rod-like plates, and branched rods, the latter usually without perforations. No two of these rods and plates are alike, so that a description is futile (figs. 9, 13).

Some of the viscera has been ejected through the mouth, even displacing the calcereous ring. A description of the internal anatomy therefore cannot be given.

Remarks. — This species is characterized by the possession of 3 complete longitudinal series of pedicels on the sole, by the heavy dorsal scales, and absence of regular anal and oral valves, as well as by the forms of the deposits herewith figured. In Théel's key to the genus, *californicus* would be ranked along with *phantapus*, *complanatus*, and *pandanensis*, from which it differs not only in the form of the body, but in details of deposits. *Psolus digitatus* Ludwig has peculiar digitate tentacles, while *Psolus fimbriatus* Sluiter is a near relative of it and hence is not directly comparable, although both species have 3 series of pedicels on the sole. *Psolus parmatius* Sluiter differs in general form, and in having less numerous pedicels, as well as in other details of structure, including the deposits which depart widely from those of *californicus*, *Psolus pauper* Ludwig and *Psolus japonicus* Östergren are comparable with *fabricii*, and *Psolus propinquus* Sluiter with *squamatus*. Consequently they are very different from the present form.

4. Zwei neue beschuppte Copeognathen aus dem Bernstein.

Von Dr. Günther Enderlein. Berlin.

Mit 6 Figuren.)

eingeg. 4. November 1905.

Der gütigen Erlaubnis des Herrn Geheimrat Prof. Dr. Branco und der freundlichen Unterstützung des Herrn Dr. Stremme verdanke ich die Möglichkeit, 13 der Stücke von *Amphientomum paradoxum* Pict. Hag. 1856 untersuchen zu können, die Hagen bei seiner ausführlicheren Beschreibung (1882) vorlagen. Bei Untersuchung dieser Exemplare, die aus der Künowschen Sammlung stammen und jetzt im Besitze des paläontologischen Instituts des Kgl. Museums für Naturkunde in Berlin sind, ergab sich, daß zwei der Stücke (Nr. 91 und 94 der Künowschen Sammlung) durch die Form der Flügelschuppen von allen übrigen Stücken abweichen. Durch eine vergleichende monographische Durch-

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