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second interstice is in part also raised, and forms an oblong slightly raised hump near the base of the elytron; this hump being destitute of scales presents a black mark; again the fifth interstice is strongly convex, excepting for a short distance from the base of the elytron; the sixth interstice is convex,—strongly so at the base of the elytron, and projects in the form of a rounded angle at the shoulder, but posteriorly the convexity of this interspace decreases; on the hinder half of the elytron it is flat: the convex portions of both the fifth and sixth interstices are denuded of scales, and so is the lateral margin of the elytron; so that as regards the colouring, the elytron may be described as silvery green, with the suture, a small oblong mark at the base, a semi-lateral mark extending from the base nearly to the apex, and the lateral margin black, if we except a small portion of the latter at the base of the elytron. Numerous longish pale hairs are observable on the apical portion of the elytra.

VIII.—*Note upon Obisium orthodactylum (Leach).*

By ALFRED TULK, M.R.C.S., M.E.S.

So much yet remains to be learnt concerning the structure and habits of many of the inferior forms of Arachnida, that every observation tending to throw additional light upon them cannot but be regarded by the naturalist as deserving of record. Upon the internal edge of either claw of the chelicere, in the above-named species of Pseudo-scorpion, we perceive, under the microscope, an immoveable pectinated appendage, of a delicate white colour and transparent texture: that upon the external claw, to nearly the middle third of which it is attached by about half the extent of its back, is the most prominent, and consists of fourteen slightly curved and obtuse teeth, which gradually increase in length from behind forwards, the posterior one differing from the rest in its rounded form and greater breadth. The internal, from not being implanted so directly upon the edge of the claw as the preceding, but deeper down towards its base, is less distinct, its extremity alone projecting so as to render visible four or five of its teeth, the remainder of which are with difficulty counted, though a careful examination has at length convinced me that their total number is the same as upon the other comb. The plane of position of the two claws, when the chelicere are at rest, is obliquely downwards and outwards, so that the internal is placed most superiorly, and overlaps by its apex that of the external. The two combs preserve constantly this slanting direction towards each other. But, besides these organs, there arises from the front of a slightly elevated ridge upon the inferior surface of

the basal joint of the chelicerae, and near to the commencement of the claws, a tuft of long pinnate hairs, eight to nine in number, which converge together at their extremities to form a complete brush reaching almost to the middle of the claws.

I had often speculated upon the probable use of this peculiar contrivance, until upon more than one occasion, having placed the animal alive in a glass cell for examination beneath the microscope, I observed it very busily engaged in cleaning its long palpi, especially their didactyle forceps, by drawing them repeatedly between the claws of the chelicerae, the latter being freely rotated during the operation, so as to bring every part of these organs in contact with the combs and hairy tuft. The tarsi were cleaned also at the same time, by applying them against some scattered bristles which project inwards from the coxal joints. Before I had noticed the above facts, my attention had indeed been directed to these comb-shaped organs in *Obisium* by the very striking resemblance which they bore to the abdominal *pectines* of the scorpion; and now that we had conclusive evidence of their functions in the one, it became a question whether those of the latter might not perform some similar office. The uses which have been assigned hitherto to these parts in the scorpion by different writers, appear to me far from satisfactory. While their lamellated structure alone has induced some to regard them as external branchiae, their situation near to the generative opening in both sexes has led others to view them as claspers during the act of copulation, by their plates mutually interlacing with each other; they have been regarded even as aiding in locomotion. It may be objected to the view which I am here disposed to take of their acting as *cleansers* to the palpi, tarsi and elongated portion of the abdomen, that their position is widely different in the true as contrasted with the Pseudo-scorpion; but need we be more surprised at this than that the poison-sac, which in one group of Arachnida is placed within the chelicerae, should in another be transferred to the opposite extremity of the body? Admitting then that such has been the case in the present instance, it may be understood why the combs of the scorpion and each of their separate teeth should be moveably articulated to compensate for the immobility of that part of the abdomen to which they are attached, while such a provision would, for obvious reasons, be unnecessary in the little *Obisium*.

There is a remarkable agreement, however, in many other points of external structure between these two animals which must not be overlooked, as they tend to support still further the above analogy. Treviranus has noticed the striking resemblance between the palpi and maxillae of an allied genus *Chelifera* and those of the scorpion, and the comparison may be drawn more closely still between the

latter and *Obisium*. There is one point of importance which yet remains to be ascertained, and the more so from its having been taken as a primary character in the classification of the Arachnida,—the means by which the above animals respire. Treviranus has described two rows of puncta as occurring both upon the upper and under segments of the abdomen in *Chelifer*, which he regards as stigmata, but states also that he was unable to detect either tracheæ or pulmonary sacs in their situation. It is most probable therefore that they were merely impressed points, serving, as in others of the class, for the attachment of muscles. Be that as it may, I have been unable to discover any indications of such external openings in *Obisium*, or to arrive for the present at any satisfactory conclusion in regard to the existence of an internal respiratory apparatus; but I introduce these remarks here for the purpose of inquiring whether, if we knew the precise conditions under which the breathing of these animals was effected, it is then a function of sufficient value to be adopted in the arrangement of the Arachnida, since it has been already invalidated by the co-existence of pulmonary sacs and tracheæ in the genera *Segestria* and *Dysdera*; whether, in a word, until more is made out of the anatomy of *Obisium* to establish its further affinity to the *Scorpionida*, its present position among the Trachearia may not be regarded as a provisional one? As yet, I am strongly disposed to believe that subsequent facts will prove that the present and allied forms are the true dwindled acaudal representatives in this country of the gigantic and formidable species which infest the tropics.

1 Arthur Street, Gray's Inn Road.

IX.—Observations on *Fucus Labillardierii*, *Turner*. By the Rev. M. J. BERKELEY. *In a Letter to R. Taylor, Esq.*

MY DEAR SIR,

THE following extracts from a letter with which I have been favoured by Dr. Montagne relate to a subject of much interest as regards the physiology of Algæ, and are in themselves so excellent that they cannot fail to be acceptable to many of your readers. The plant to which they principally refer is *Fucus Labillardierii*, Turn., which was improperly referred by J. Agardh to *Sulria*, and has lately been raised to the rank of a genus, under the name of *Ctenodus*, by Kützinger, on characters taken almost entirely from the structure of the frond, without reference to any peculiarities in the fructification. The genus *Calocladia*, Grev., founded upon an Alga supposed to be identical with Turner's plant, though in reality very different, is, it appears, the same with *Delisea*, Lamouroux. Mr. Harvey had ascertained the real