

larva of *Echinaster Sarsii*, which is preserved in the museum of M. Christie in Bergen, anything more than what has been described and figured by M. Sars.

At the time when these larvæ have developed the star-fish of the *Asterias*, the arms of the larvæ still being present, their greatest diameter is two-thirds of a line. Two pairs of tentacles are developed in each of the five rows of tentacles. But no trace of aperture can be recognised in the centre of the ventral side of the star-fish. If the oral aperture of the larva, as I suppose, exists between the four arms of the larva, the mouth of the *Asterias* is formed independently of the supposed mouth of the larva. The most central and lowest tubercle, situated between the four other bulbous warts, has a slightly rounded and somewhat basin-shaped aspect. Although these larvæ are absolutely larger than the larvæ of the *Ophiuræ* and *Echini*, nevertheless they appear to contain little or no skeleton within them. From their perfect opacity and uniform red colour, I endeavoured to render their skeleton visible by dissolving the animal parts in caustic potash, but this proceeding did not bring into view any portions of a skeleton.

The supposition of Sars, that the warty appendages of the larva of the *Asterias*, by means of which it adheres to the marsupial cavity of the mother, are subsequently transformed into the madre-pore-plates, does not appear to me probable. These appendages are evidently the same as the four symmetrical supports of the body of the larva of the *Echini* and the appendages of *Pluteus*; in both they disappear entirely, without being transformed into any other organ, and the young *Echinus* loses them before the madre-pore-plates can be distinguished. Moreover the Echinoid larvæ which I last described possess so many arms on their body and on so many spots which are partly opposite, that a conversion of them into the subsequent madre-pore-plates is impossible, on account of the situation which these arms occupy on the anterior, posterior and lateral part of the larva.

XLVI.—Notes on the genus of Insects *Otiorhynchus*, with descriptions of new species. By JOHN WALTON, F.L.S.

[With a Plate.]

Fam. CURCULIONIDÆ.

GENUS OTIORHYNCHUS, Germ., Schönh., Steph., Curt.

§ A. Femora dentate.

1. *Otiorhynchus Ligustici*, Linn., Mus. Linn., Marsh., Gyll., Steph., Schönh.

Rare, or very local; Mr. Smith found three specimens on Hawley-flat, near Blackwater, Hampshire, in June. Frequently

taken by the late Rev. G. T. Rudd on the walls of his garden, at Kimpton, near Andover. "On sandy banks, near Ventnor, Isle of Wight."—Mr. J. F. Dawson.

2. *Otiorhynchus sulcatus*, Fab., Marsh., Gyll., Steph., Schönh.

Very abundant in many localities.

3. *O. picipes*, Fab., Gyll., Germ., Schönh.

— *vastator*, et *asper*, Marsh., Kirb. MSS.

— *squamiger*, Marsh., Steph. Illustr., Kirb. MSS.

— *notatus*, et *singularis*, Steph.

— *septentrionis*, Steph. Manual.

— *Marquardtii*, Schönh.

— *Chevrolati*, Schönh. var. minor.

The Fabrician name of *Ot. (Curc.) picipes* is now very generally adopted for this insect by the principal entomologists of Europe.

I have four British insects returned from Schönherr, two of them named '*picipes*' of Fab. (length 3 lines), and two '*Marquardtii*' of Falderm. (length 4 lines), but I cannot discover any difference between them except that of size. I possess forty British specimens, also returned by Germar, who has put on record the following opinion:—" *Ot. picipes* of Schönh. differs somewhat in its form and clothing, and amongst the varieties (to which there is every kind of transition) are to be found *Curc. squamiger* and *asper* of Marsh., *Marquardtii* of Falderman*."

I have examined the insects in the collection of Mr. Kirby and Mr. Stephens, under the names of *vastator*, *asper*, and *squamiger* of Marsham, but I am unable to detect a specific difference.

I have now before me a multitude of specimens, collected in the course of several years in various localities in the north and south of England, and have many from Mr. R. N. Greville, who found them in Scotland. I have been induced very closely to examine this numerous series, in consequence of their having been divided into several species, but I must confess my inability to detect a single character on which to found a specific difference; and according to my experience, there is less variation of form and sculpture in these than in any other long series of insects that I have had an opportunity of examining; they vary in length from $2\frac{1}{2}$ to 4 lines, and in breadth from $1\frac{1}{4}$ to $1\frac{5}{4}$ line, and the numerous sizes which intervene between merge insensibly into each other. With reference to the distinguishing characters of *Ot. Marquardtii*, as given by Falderman†, it may be observed, that the largest specimens have the rostrum, antennæ and elytra longer and more robust when compared with the smallest.

* Germ. Stettin Ent. Zeit. 1842, p. 104.

† Schönh. Syn. Ins. vii. p. 358.

Of *Ot. septentrionis* of Herbst I possess several examples from Germar and Chevrolat, but I have not hitherto observed a native specimen in any collection.

Widely distributed throughout Great Britain, occurring almost everywhere from May to October in thick white-thorn hedges, especially in those which have been cut and clipped.

4. *Otiorhynchus rugifrons*, Gyll., Steph., Schönh.

— *scaber*, Steph. sec. ej. Mus.

— *Dillwynii*, Steph. Illustr., Kirb. MSS.

— *rugicollis*, Steph.

This is the true *Ot. (Curc.) rugifrons* of Gyll. identified by foreign specimens in the collection of Kirby, from Gyllenhal himself.

The sculpture greatly varies; in some specimens the thorax has the dorsal channel very distinct, in others more or less abbreviated, or entirely wanting.

I am of opinion that *Ot. rugicollis* of Steph. (which is represented in his cabinet by one insect) is but a variety of *Ot. rugifrons*, having the thorax channeled, the elytra indistinctly striated, and the anterior femora obscurely denticulated.

Found in the south of England, and in Scotland, but I believe very sparingly; specimens taken on the coast near Little Hampton, Sussex, in August, by Mr. S. Stevens.

5. *O. ovatus*, Linn., Mus. Linn., Fab., Marsh., Gyll., Steph., Schönh.

— *vorticosus* (Chevr.), Schönh., Steph. Manual.

I possess a specimen from Chevrolat of *Ot. vorticosus* of Schönh., which is decidedly a large variety of this insect.

Very common in hedges about Hampstead in June.

6. *O. pabulinus*, Panz., Germ., Steph. Illustr.

— *confinis*, Kirb. MSS.

Mr. Kirby separated this insect from the preceding under the name of '*confinis*,' appending the note, '*sine sulcis*;' it is also separated in many cabinets on account of a striking peculiarity in its general habit. Mr. Stephens, after describing it in his 'Illustrations,' adds, "Probably an immature variety of *Ot. ovatus*, but its form and sculpture are slightly dissimilar." He has however sunk it in his 'Manual;' yet I think it has a strong claim entitling it to rank as a distinct species. By far the greatest number differ from *Ot. ovatus* in being piceous, never black, and clothed with brownish pubescence, and by having the thorax shorter in proportion to the breadth, less narrowed posteriorly, less distended at the sides, and thickly tuberculated, not sulcated on the back; the legs shorter, the clava of the femora less robust, with the bifid teeth evidently much shorter and smaller.

I sent specimens to Germar, who remarked in a note to me, "that it also occurs in Germany, and seems to be a good species."

I have found it plentifully among herbage, on a hedge-bank, in a lane behind the Bull Inn, Birch-wood, in June ; but not in company with *Ot. ovatus*.

§ B. *Femora edentate*.

7. *Otiorhynchus caudatus*, Rossi, 1792, Schönh.

— *Lima*, Marsh. 1802, Steph. Illustr.

— *bisulcatus*, Steph. Manual, non Fab.

First introduced into our fauna by the late Mr. Marsham, from whose collection Mr. Stephens obtained one specimen. Of its history and locality nothing appears to be known : it is a native of Italy and Greece, and specifically identical with a specimen sent to me by Chevrolat as *Ot. caudatus*.

8. *O. niger*, Fab., Clairv., Germ., Steph. Manual. secund. ejus descr.

— *ater*, Herbst.

— *villosopunctatus*, Schönh. (♀)

It is sufficiently proved, by the elaborate observations on this and the following species by Professor Germar and M. Schmidt of Stettin, that this is the true "*Curc. niger* of Fab. and Clairv. (*ater* of Herbst), and that it is entirely different from *Ot. niger* of Schönh. (*ater* of Gyll.)*." I possess six insects sent by Germar as the true *Ot. (Curc.) niger* of Fab., and also a specimen of *Ot. villosopunctatus* (♀) from Schönherr himself, which are beyond all doubt specifically identical.

The only specimen I have seen which is reputed to be indigenous, and which agrees with my foreign specimens, is in the British Museum unnamed ; its locality is unknown ; probably found by Dr. Leach on Dartmoor, in Devonshire. According to Germar and Schmidt, it is a native of the mountainous districts of Germany, and found upon *bilberries* and *willows*, and does not occur in Sweden.

9. *O. tenebricosus*, Herbst, Gyll. (♀), Steph., Schönh.

— *morio*, Payk. (♀)

— *niger*, Payk. (♂), Marsh., Schönh., Kirb. MSS.

— *ater*, Gyll. (♂)

— *scrobiculatus*, Schönh. (♂)

In June 1841 I distinctly identified the sexes of this and the following species, by confining living specimens in boxes covered with glass, and I then observed a remarkable sexual dissimilarity in the form and sculpture of the elytra, and in the sculpture of

* Germ. Stettin Ent. Zeit. 1842, p. 103. Schmidt, id. p. 110.

the ultimate segment of the abdomen, which I communicated to Germar and to Chevrolat in February 1842; previously to this, entomological authors (not being aware of the sexual disparities) had either considered the male as a variety, or had separated it as a distinct species.

The male differs by having the elytra narrower, punctate-striate, the punctures distinct or indistinct, the interstices narrow, transversely rugose, and the ultimate segment of the abdomen delicately striated; the female differs by having the elytra broader, transversely rugulose, very obsoletely striated near the suture, and more or less distinctly near the apex, and the ultimate segment of the abdomen punctulated: immature varieties occur with the elytra rufo-piceous, and the colour of the legs varies from testaceous to piceous; the knee-joints and the tarsi are generally of a deeper shade of colour than the other parts, and are occasionally black.

Scarcely any doubt can exist but that Gyllenhal has described the female under the name of *Curc. tenebricosus*, and the male under that of *Curc. ater*, and the words of the description, "segmento anali tenuissime substriato*," as a character peculiar to the male, appear to me conclusive.

I sent fifteen specimens (♂ ♀) of this insect as *Ot. tenebricosus* to Germar, who remarks,—"*Ot. niger* of Schönh. (*ater* of Gyll.) I consider merely as a variety of *Ot. tenebricosus*, from which indeed it apparently differs by its smaller size, and more distinct striæ of the elytra, but it is reunited to it by the most uninterrupted transitions†."

Under the name of *Ot. niger* of Fab. (*ater* of Gyll.) Schönherr has synonymized and characterized the male of this insect as *Ot. scrobiculatus*‡, of which I have specimens from Germar, and which is decidedly a large male variety of *Ot. tenebricosus*.

I may refer to Mr. Curtis's 'British Entomology' for an interesting account of the devastation committed in gardens and nursery-grounds by the larvæ of this and of other species of the genus.

This and the following insect being night-feeders, are found very abundantly in June, after twilight in thick hedges, about Mickleham in Surrey, and in many other counties in the south of England, but it appears to be very rare in the north.

10. *Otiorhynchus fuscipes*, Oliv., Schönh.

— *Fagi*, Chevr. (♀) Schönh.

— *hypolaus et Sacer*, Kirb. MSS.

Oblong-ovate, black, very sparingly pubescent. Head rather

* Gyll. Ins. Suec. iii. p. 292. † Germ. Stettin Ent. Zeit. 1842, p. 103.

‡ Syn. Ins. Suppl. vii. p. 265 (1843).

convex and finely punctured; eyes brown and prominent; rostrum a little longer than the head, porrect, incrassated at the apex, angulated, thickly punctulated above, carinated in the middle, and bifurcate at the apex. Antennæ half as long as the body, black, pilose and pubescent. Thorax narrow, a little longer than broad, somewhat constricted at the base, the margin slightly elevated, moderately dilated, and rounded at the sides before the middle, convex, and minutely punctured and wrinkled above, and distinctly granulated at the sides. Elytra anteriorly not broader than the base of the thorax, the sides gradually dilated to the middle, and from thence attenuated to the apex, convex above, distinctly punctate-striate, the interstices transversely rugose, very nearly glabrous, and the ultimate segment of the abdomen delicately striated. Legs rather long, robust, rufo-feruginous or rufo-piceous, pubescent; the femora clavate, with the apex piceous or black; the tarsi also piceous or black.—Male. Length $4\frac{1}{2}$ to $5\frac{1}{2}$ lines.

The female differs by having the thorax with the sides dilated and rounded at the middle; the elytra broader, dilated at the sides a little before the middle, and narrowed to the apex; the ultimate segment of the abdomen punctulated. Varieties of the female sometimes occur, although rarely, with the striæ on the elytra indistinct, especially on the disc of each elytron: the colour of the elytra and the legs in both sexes varies as in the preceding species.

There is undoubtedly a very close affinity between this and the preceding insect; nevertheless I am of opinion it is sufficiently distinct, and that there is by far too great a difference between them to admit of their being united into one species; this is a shorter insect, and very generally smaller and less pubescent; but it chiefly differs by having the antennæ in both sexes, with all its articulations, distinctly shorter and stouter; the elytra of the female evidently shorter in proportion to the breadth, and more or less distinctly punctate-striate; the knee-joints in both species are more or less strongly coloured, but too inconstantly to be of any value as a specific difference.

I have applied the name '*fuscipes* of Oliv.' to this insect on the authority of Schönherr, having sent specimens for his examination. I have no doubt that *Ot. Fagi*, of which I possess a specimen from Chevrolat, and with which the description of Schönherr agrees, is but a female variety of this insect, having a smoother surface, and the elytra indistinctly striated.

I forwarded many specimens (♂ ♀) as *Ot. fuscipes* of Oliv. and Schönh. to Germar, who referred them to *Ot. tenebricosus* as varieties.

Most commonly found in company with the foregoing, and in

the same localities; but I once met with it very plentifully in June in the Isle of Portland beneath stones, where there were no hedges, and without finding a single specimen of *Ot. tenebricosus*.

The species figured 9 ♂ ♀, in Pl. XV. and 10 ♂ ♀, exhibit the difference of size and form between the two species comparatively, and between the sexes of each; and also the difference of sculpture of the elytra of the females; the antennæ ♂ ♀ of each species, which are considerably magnified, exhibit their diversity of structure.

11. *Otiorhynchus atroapterus*, De Geer, Gyll., Schönh., Steph. Manual.

— *ater*, Steph. Illustr.

— *niger*, Steph. Manual secund. ejus Mus., non Fab.

— *arenarius*, Kirb. MSS.

My foreign specimens sent by Germar as *Ot. atroapterus* of Gyll. agree with this insect.

Extremely variable in size. Length $3\frac{1}{2}$ to 5 lines. Common in many places on the sandy coasts of Great Britain in June.

12. *O. Monticola* (Dej. Cat.), Germ., Schönh., Steph. Manual.

— *laevigatus*, Gyll., Steph. Illustr.

This insect is identified as *Curc. laevigatus* by specimens in the collection of Kirby from Gyllenhal.

The striæ of the elytra in some individuals are very distinct, in others indistinct.

Found in Scotland by the Rev. W. Little, Mr. R. N. Greville, and Mr. Weaver.

13. *O. scabrosus*, Marsh., Steph., Schönh., Kirb. MSS.

Pachygaster crispatus, Dej. Catal.

Rather local, and not very abundant. I once found a number of specimens in a thick white-thorn hedge near Ryde, Isle of Wight, the beginning of August.

14. *O. ligneus*, Oliv., Schönh., Steph. Manual.

— *scabridus*, Steph. Illustr., Schönh., Kirb. MSS.

I have a specimen from Chevrolat of *Ot. ligneus* of Oliv., which is unquestionably identical with *Ot. scabridus* of Kirb.; Schönherr however has described the latter in his Supplement as a distinct species.

Frequently taken in sandy and gravelly localities, but not very common.

15. *O. maurus*, Gyll., Steph., Curt., Schönh.

Chiefly found in the north of England and in Scotland, but I believe never in any quantity; specimens taken on the sides of Skiddaw, Cumberland, by Mr. Marshall, and likewise in Scotland by the Rev. W. Little and Mr. R. N. Greville.

16. *Otiorhynchus raucus*, Fab., Gyll., Marsh., Steph., Schönh.

Rather uncommon and local. I never took but one specimen, and that on a sandy bank under a hedge near Gravesend; in meadows near Hammersmith, and Hampstead, Mr. S. Stevens.

17. *O.* (? *Trachyphlæus*) *fissirostris* (Schönh. in litt.), Walt.

Oblong-ovate, piceous-black, densely clothed with fuscous, and variegated with cinereous recumbent scales, and rather sparingly with short, erect, fuscous scales. Head black, somewhat long, depressed, subconical, longitudinally ridged and striated all round behind the eyes, the front very deeply furrowed to the middle of the rostrum; eyes small, round, and very prominent; rostrum distinctly shorter and narrower than the head, the apex incrassated, angulated, triangularly emarginated above, deeply excavated between the antennæ, and the lateral margins greatly elevated. Antennæ rather long, testaceous; the scape robust, gradually thickened towards the apex, slightly bent, nearly as long as the flagellum, and squamulose; the funiculus setose, the two basal joints rather long, the second being thinner and a little longer than the first, 3 to 7 obconic, rounded; the club ovate, acute. Thorax black, rather longer than broad in the middle, more narrowed in front than behind, obliquely truncated at the base, impressed on each side anteriorly, moderately dilated at the sides posteriorly, rather convex above, thickly rugose or rugose-punctate, with a dorsal carina more or less abbreviated, and a fovea on each side towards the middle sometimes indistinct; densely clothed with fuscous scales, which are cinereous at the sides. Scutellum scarcely perceptible. Elytra ample, oblong-ovate, piceous-black, anteriorly broader than the base of the thorax, the shoulders rounded, not elevated, moderately expanded at the sides, the apex rounded, a little convex above, regularly punctate-striate, the interstices narrow, alternately elevated; densely clothed with round fuscous scales, which in recent specimens are beautifully variegated with cinereous behind the middle and towards the sides, and rather thickly clothed with short erect fuscous scales. Legs with the femora and tibiæ very stout, rather short and piceous, the former clavate, edentate; densely clothed with fuscous and cinereous scales, and the tarsi short, slender and testaceous. Length $2\frac{1}{2}$ to 3 lines. Immature varieties occur of a ferruginous colour.

The specimen of this insect which I sent to Schönherr for his opinion was returned with the name "*Otiorhynchus* (?) *fissirostris*, n. sp. indscripta." In general habit it resembles my foreign specimens of *Ot. septentrionis*; I have therefore placed it in this genus with an indication of doubt, after the celebrated author of the 'Synonymia Insectorum;' yet it assimilates very closely in

many of its characters to *Trachyphlæus Waltoni*, especially in the clothing, the form and sculpture of the head and rostrum, the robust scape of the antennæ, the short and stout tibiæ, and the short and slender tarsi; and although it chiefly differs in being a larger and longer insect, yet there is a much greater dissimilarity amongst the insects in the genus *Otiorthynchus*, and therefore I think it should be located in that of *Trachyphlæus*.

I obtained specimens from the collection of the late Mr. Millard of Bristol; subsequently found in a gravel-pit on Plumstead Common in June and July by Mr. S. Stevens and Mr. Smith.

PROCEEDINGS OF LEARNED SOCIETIES.

LINNÆAN SOCIETY.

February 2, 1847.—E. Forster, Esq., V.P., in the Chair.

Read an "Account of *Gamoplexis*, an undescribed genus of Orchideous Plants." By Hugh Falconer, M.D., F.R.S., F.L.S. &c. &c.

Trib. GASTRODIEÆ, R. Br.

Gen. GAMOPLEXIS, Falc.

Perianthium monophyllum, tubulosum, basi ventricosum; limbi breviter 6-lobi segmenta rotundata, antrorsum (torsione) subsecunda, exteriora æqualia, interiorum posticum (labellum) pedicelli torsione anticum lateralibus paulò majus, cæteroquin consimile. *Columna* elongata, erecta, semiteres, marginato-dilatata, apice tridentata cava, basi anticè incrassata stigmatifera. *Anthera* terminalis, mobilis, decidua, carnosa, bilocularis; loculis parallelis contiguis. *Massæ pollinis* in quovis loculo solitariae, e lobulis majusculis granulatis laxè cohærentibus conflatae. *Glandula* aut *caudicula* nulla.—Herba *parasitica* (?) *aphylla*, *vaginata*, *rufescens*, *habitu* Orobanchen *quamdam omninò referens*. *Rhizoma* *hypogæum*, *tuberosum*, *annulatum*, *spongiosum*. *Racemus* *elongatus*, *multiflorus*, *primò nutans*, *demùm erectus*. *Flores* *mediocres*, *erecti*, *pallidè stramineo-virides vel ochroleuci*.

GAMOPLEXIS OROBANCHOIDES, Falc. MSS. cit. in Royle, *Illustr.* p. 364, et in Lindl. *Gen. & Spec. Orchid. Pl.* p. 384, *absque caractere aut definitione*.

Hab. in umbrosis humidis inter Montes Emodenses ad alt. circiter ped. 7000; Dhunoultee, Tyne-Teeba, Simla, &c. Floret Julio et Augusto.

After a detailed description of the plant, Dr. Falconer proceeds to point out its affinity both in habit and structure to *Gastrodia*, R. Br., and to *Epiphanes Javanica*, Bl., from both which, however, it is sufficiently distinct in the cohesion of the labellar segment with the tube of the perianthium. It is the only example, so far as Dr. Falconer is aware, hitherto ascertained in the order, of the union of all the divisions of both whorls of the floral envelope into a monophyllous perianthium. Its parasitism is of a peculiar kind; the tuberous rhizoma emits no root-fibres by which to attach itself to other plants, but is itself matted over by their slender rootlets which ramify upon it in every direction slightly imbedded in its surface, to



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