

Page 175 *supra*. I suspect from the description of *Ardea nobilis* that it is identical with the *A. Goliath*, Temm. Pl. Col. 474, from Abyssinia.

Page 176. *Ardea Caboga* belongs to the genus *Ardeola*, Boié, 1822 (*Buphus*, Boié, 1826). This bird is decorated with no less than *eleven* synonymous names, the earliest of which is *Ardea Bubulcus*, Savigny, and the following is, I believe, the chronological order of the remainder :—*A. lucida*, Rafinesque ; *A. æquinoctialis*, Mont. ; *A. coromandelensis*, Steph. ; *A. bicolor*, Vieill. ; *A. russata*, Temm. ; *A. affinis*, Horsf. ; *A. coromandelica*, Licht. ; *A. Veranii*, Roux ; *A. leucocephala*, Cuv. ; and *A. Caboga*, Franklin.

XXIX.—Notes on British species of the genus *Bruchus*, with Descriptions of two species not hitherto recorded as indigenous.

By JOHN WALTON, Esq. *

There are not in Walton's Coll. in B.M. (Circ. & Chryp.)

Section CURCULIONITES.

Fam. BRUCHIDÆ.

1. *Bruchus Pisi*, Linn. (Mus. Linn.), Germ., Schönh.

Oblong-ovate, black, densely clothed with cinereous and white pubescence : antennæ with the four basal joints rufo-testaceous : thorax transverse, *much broader than long*, and armed on each side with a *distinct* acute tooth : elytra *elongate* ; each elytron with a somewhat arched fascia near the apex, composed of white spots : pygidium with two *large* ovate black spots ; anterior femora *entirely black* ; the anterior tibiæ and tarsi ; the intermediate tibiæ at the apex and the tarsi rufo-testaceous ; the posterior femora armed with an *elongate spine* beneath, near the apex. Length $2\frac{1}{3}$ lines.

The two examples (one being pinned through the name) in the Linnæan cabinet with a white pea appended to each pin containing the insect, I have not the least doubt, are the genuine *B. Pisi* of Linnæus. In all the British cabinets that I have examined I could only detect one true example of this species, and that in the collection of Mr. Waterhouse. I consider it very doubtful whether the *Bruchus Pisi* of Linnæus should be regarded as a British species. It occurs in Germany and the southern parts of Europe, and likewise in North America.

* In my paper published in the last number of the 'Annals,' some errors in the punctuation have caused one of the paragraphs to be obscure : p. 88, line 5 of the last paragraph, insert a semicolon after the word "straight," and take out the stop after the next word : in line 12, for "rugose ; punctate anteriorly ; under both sides," read "rugose-punctate ; anteriorly under both sides," &c.

2. *B. rufimanus*, Schönh., Germ., Steph. Man.— *Pisi*, Fab., Mus. Banks.*— *granarius*, Marsh. (not Linn.*), Steph.— *Pisi*, Steph.— *Pisi*, Kirb. MSS. et Mus.— *granarius*, Kirb. MSS. et Mus.

This species resembles the preceding, with which it has been confounded, nevertheless it is essentially distinct: it is a *shorter* and a *smaller* insect than the *B. Pisi* of Linnæus, and differs moreover in having the thorax longer in proportion to the breadth; the teeth at the sides *smaller*, sometimes indistinct; the elytra *shorter*, and the white spots differently disposed; the oblong fuscous spots on the pygidium frequently obsolete; the anterior femora *rufo-testaceous*, and the posterior femora *subdentate*, or more or less distinctly dentate. (Length $1\frac{3}{4}$ —2 lines.)

The large varieties (which are probably the females) have the thorax proportionately longer and broader in front than the smaller varieties: the former are the *B. Pisi*, and the latter the *B. granarius* of the British cabinets, a fact which was first observed by myself. I sent examples of this species to Schönherr and Germar, and possess foreign specimens forwarded to me by these authors under the name of *B. rufimanus*.

In this country it is the most abundant species of the genus. I have taken numerous individuals of the perfect insect alive out of the interior of the large garden bean, the horse bean, and from several other varieties; the larva evidently completes its metamorphosis within these seeds, consuming a considerable portion of the interior; I have examined many varieties of the pea, which had been eaten, I think, by the larvæ of this species, but never found in the interior a perfect insect: Mr. Marshall observed in a barn in Kent a quantity of peas infested by this beetle which had destroyed nearly half the crop; in every pod that he opened he found an insect, and the exterior part of the peas was more or less consumed.

3. *B. flavimanus* (Megerle in Litt.), Schönh.?— *Pisi*, Fab., Mus. Banks.

Oblong-ovate, black, densely clothed with a yellowish brown pubescence, and variegated with whitish spots: the antennæ with the four basal joints rufo-testaceous: thorax subtransverse or rather broader than long, the lateral margins, behind the middle, deeply sinuated, and before the sinus armed on each side with a distinct acute tooth, above moderately convex, closely and

* I have many times carefully examined the species of the genus *Bruchus* contained in the Linnæan and the Banksian cabinets, and intend to publish in a separate paper some observations upon them.

minutely punctured, with larger interspersed impressions, and having a cuneiform white spot at the middle of the base: elytra elongate, with the sides nearly straight, finely punctate-striate, the interstices minutely punctured, about the middle with a transverse fascia composed of eight whitish spots on the alternate interstices, and between the middle and the apex with another transverse fascia which is flexuous: pygidium with two obscure fuscous spots: anterior legs rufo-testaceous; posterior femora subdentate, or armed with a short tooth which is more or less distinct. Length $2\frac{1}{3}$ lines.

This species very closely resembles the large varieties of the preceding, and is rather difficult to distinguish without a close examination. I have no doubt, however, it is perfectly distinct; it is of equal magnitude with No. 1, and invariably larger and longer than the *B. rufimanus*; it also differs from the last-named insect in having the thorax at the apex rounder and fuller, the teeth at the sides more distinct, the sinus deeper, and the elytra longer; it differs moreover in having the sculpture on the thorax and elytra distinctly finer, and this is very evident when the pubescence is scraped off. I received four examples of this species with the collection of the late Mr. Millard of Bristol, but without any of the preceding. I can vouch for the integrity of this collection being faithfully a British one; and as it is an European species, I have ventured to introduce it. Dr. Germar, to whom I sent specimens, regards it as a new species, yet I have a strong impression that it is the same which Schönherr has described under the name of *B. flavimanus*.

4. *B. seminarius*, Linn., Mus. Linn.

— *seminarius*, Fab., Mus. Banks.

— *granarius*, Payk., Gyll., Germ., Schönh., not Linn.

— (var.) *seminarius*? Marsh., Steph.

— *affinis*, Steph.

— *Vicia*, Kirb. MSS. et Mus.

— *immaculatus*, Kirb. MSS. et Mus.

This species has the four basal joints of the antennæ (rarely three) rufo-testaceous, the remainder black: the thorax in the middle armed on each side with a minute tooth frequently concealed by the pubescence—distinct in the males, but obsolete in the females; the anterior legs rufo-testaceous, with the femora more or less black, sometimes entirely black; the anterior tarsi generally pale, but piceous in some individuals; the intermediate tibiæ near the apex within, armed in the males with a small but distinct tooth placed at right angles with the tibiæ; the posterior femora before the apex, beneath, deeply emarginated; the acute angle before the sinus in some examples is not produced, in others

it is more or less developed into a small tooth, modified in the sexes.

The type of the *B. seminarius* of Marsham is mutilated and difficult to determine; it has the thorax and the posterior femora subdentate, and the elytra variegated with white spots—characters which lead me to regard it as a variety, with pale intermediate legs, of No. 4, to which Marsham has referred it. *B. immaculatus* is a worn and rubbed specimen, but it is specifically the same as the present species. Mr. Kirby in his MS. has the following note to this insect: “an alt. sex *B. seminarius*.”

According to M. Schönherr and Dr. Germar, to whom I sent specimens, the present species is certainly the *B. granarius* of Paykull, Gyllenhal, Germar and Schönherr, but it is truly the *B. seminarius* of Linnæus and Fabricius; I have therefore no hesitation in adopting the latter name for this insect. *B. seminarius* is plentiful in Sweden. I have frequently met with it in Yorkshire, but only now and then in the south: Mr. Kirby in his MS. gives the habitat “in *Vica sepium*,” and I have taken, in the first week of August, several larvæ in the pods of this plant.

5. *B. luteicornis*, Illiger, Schönh.

Ovate, black, sparingly clothed and variegated with a fine griseous and white pile: head finely rugose-punctate, with a white pubescent spot behind the eyes; mouth rufo-testaceous; antennæ, in the males, entirely rufo-testaceous except the terminal joints, which are a little dusky at their apices: thorax transverse, anteriorly a little narrowed; on each side, about the middle, armed with a distinct tooth; behind deeply emarginated; above with large deep scattered punctures, the spaces between minutely punctured, the lobe at the base white: elytra irregularly variegated with white pubescent spots at the base, rather broader than the thorax, the humeral angles rounded; behind, at the middle, a little dilated; above punctate-striate, with the interstices flat and coriaceous, the suture at the base white: pygidium covered with white pubescence, immaculate; the breast laterally, and the segments of the abdomen on each side densely covered with white pile: the *four anterior legs* rufo-testaceous; the intermediate tibiæ of the males at the apex, within, armed with two minute teeth, diverging and placed nearly at right angles with the apex; the females are without these appendages, and differ also from the males in having the intermediate joints of the antennæ (6th—10th) black, the apical joint rufo-testaceous; the posterior legs black, with the femora more or less acutely dentate. (Length $1\frac{1}{2}$ line.)

This insect resembles *B. seminarius*, but is readily distinguished from that species by the very distinct difference in the form of

the *thorax*, the *colour* of the joints of the *antennæ*, and the *pale* intermediate *legs*.

I am indebted to Dr. Germar for two foreign male specimens of this species, and these, upon comparison, I find agree (with the exception of a slight difference of size) with certain British specimens, viz. a male and female, captured on Cove Common, Hampshire, in the middle of July last, a specimen in the cabinet of Mr. Samuel Stevens, and one in my own collection; that belonging to Mr. Stevens was found at Coombe Wood.

6. *B. Lathyri* (Kirb. MSS. et Mus.), Steph.

— *Loti*? Payk., Gyll., Steph., Schönh.

Thorax transverse, at the sides slightly but visibly sinuated, and behind the middle, on each side before the sinus, with a very minute tooth or tubercle, which in some examples is scarcely observable without a powerful lens; elytra *immaculate*; posterior femora acutely dentate. This species varies considerably in bulk, the largest being nearly twice the size of the smallest. (Length $1-1\frac{1}{3}$ line.)

I have very little doubt that *B. Loti* of Paykull and Gyllenhal is identical with this insect: this opinion is based upon the description given in Schönherr's 'Syn. Ins.' v. p. 88, compared with my specimens; but as I have not at present any means of proving this, by the examination of a Swedish type, a note of interrogation is put to the name. Dr. Germar observes upon the specimens sent to him: "*Br. Lathyri*, a peculiar species, new to my collection." Of this species I have in my cabinet a fine series of eight specimens, seven of which I found on the *Lathyrus pratensis* in the first week of August last, near Cowes in the Isle of Wight; they agree with the two examples now in the collection of Mr. Kirby, taken by him according to his MS. from the same plant.

7. *B. (♂) pectinicornis*, Linn. (Mus. Linn.), Fab.

— (♀) *Theobromatis*, Linn.?

— (♂ ♀) *scutellaris*, Schönh.

— (♀) *scutellaris*, Fab., Steph. Man.

— (♀) *analisis*, Fab., Mus. Banks.

Mr. Stephens, by inserting this species in his 'Manual of British Coleoptera,' appears to consider it as indigenous to England; he states, "On *Heracleum Sphondylium* (fl.): Penge Wood." Mr. Waterhouse took it at Old Brompton crawling upon a gate; but I believe it has been introduced with its food. *B. pectinicornis* has a very extraordinary wide geographical range, being found, according to authors, in China, Barbary, East and West Indies, Cape of Good Hope, Japan, Brazil and Mexico, and by

Mr. Doubleday in East Florida. The male has the antennæ pectinated, and the female serrated. I have between sixty and seventy examples, with many varieties, of this truly protæan insect, taken out of the interior of the common chickpea (*Cicer arietinum*, so named from its striking resemblance to a ram's head), which I obtained from the East India and China ships, lying in the London and St. Katherine's Docks; it is called 'Gram' by the sailors: there is a fine series of the *B. pectinicornis* in the foreign cabinet of the British Museum and likewise in that of Mr. Kirby, who found them in the same kind of seeds*.

8. *B. villosus*†, Fab. (1792), Mus. King of Denmark.

— *Cisti*, Payk. (1792), Gyll., Steph., Schönh., Curt. not Fab.

— *ater*, Marsh. Syst. Cat., Steph.

— *ater*, Kirb. MSS. et Mus.

This insect, which varies much in size, differs from the following in having the antennæ with the *four* basal joints *small*, and of a *dull red* or *piceous colour within*; the thorax *transverse*, &c. I possess foreign specimens sent to me by Schönherr; and I have carefully examined the four examples in the collection of Mr. Kirby, which are all of this species; Mr. Kirby gives them in his MS. as the *B. ater* of Marsham. On the 14th of October last, at Shirley Common, near Croydon, I beat sixteen specimens of this insect decidedly from the broom (*Spartium scoparium*).

9. *B. Cisti* Fab. (1781), Mus. Banks.‡

— *canus*? Germ., Schönh., Steph. Man.

— *ater*, Curt. not Marsh.

This species was separated by Mr. Curtis from the preceding, with which it had been confounded in this country; it differs in having the *three* basal joints only of the antennæ *small*, and *entirely black*; the thorax *subconical*, &c. It varies considerably in size, like its congener *B. villosus*. (Length 1—1½ line.)

"Habitat in floribus Cisti Helianthemi. Mus. Dom. Banks."—
Fab. Ent. Syst. i. p. 372.

* See Introd. to Ent. by Kirby and Spence, i. p. 177.

† I am aware of the inconvenience of changing the specific name of a species that has been very generally used for fifty years; but it must be observed that Fabricius first employed the name *Cisti* for an insect differing from the *Cisti* of Paykull, and consequently the latter name must sink into a synonym. The *B. villosus* of Fabricius, according to his Museum, is identical with the *Cisti* of Paykull.—See Schönherr's Syn. Ins. v. p. 109.

‡ Of this remarkable and very distinct species there are now two examples preserved in the Banksian cabinet, pinned through the name: short as the description is ("ater immaculatus; femoribus muticis"), by Fabricius, it agrees with these insects, and not at all with any other of the six species in the cabinet: therefore they cannot have been transposed, and are undoubtedly the authentic types of the species referred to in the 'Ent. Syst.'

Taken at Birch Wood from the *Cistus Helianthemum* by Mr. S. Stevens, Mr. Smith and myself, from the middle of June to the middle of July ; also at Mickleham and Dorking off the same plant.

The *Bruchus tibiellus*, and the *B. debilis* of Schönherr and Stephens's 'Manual,' I have not been able to obtain sight of ; the cabinet of the first author appears to be without them ; from the descriptions I take them to be small varieties of the true *B. Cisti* of Fabricius.

BIBLIOGRAPHICAL NOTICES.

Anatomical Manipulation ; or, the Methods of pursuing Practical Investigations in Comparative Anatomy and Physiology. By Alfred Tulk, M.R.C.S., M.E.S., and Arthur Henfrey, A.L.S., M.Mic.S. Van Voorst. 8vo. pp. 414.

A SCIENTIFIC system of taxidermy and a guide for the zoologist in his anatomical inquiries have long been wanted by the British naturalist. We have hitherto had no work, professing to supply the requisite information, of any authority. Our anatomists who have written on those subjects have not been naturalists, and our naturalists, who, conscious of the necessity of such a guide as the volume before us, have assayed the task, have too often been ignorant of the very foundation of their science, the knowledge of structure.

The 'Anatomical Manipulation' of Messrs. Tulk and Henfrey is exactly the work required. It is based in part on the admirable treatise of Straus-Durckheim, than which a better groundwork could not have been selected. The original portion of the volume is equally excellent, and evidently executed with the greatest care and a thorough practical knowledge of the subject. The treatise on the microscope is full and clear, and in these days, when that instrument has become indispensable to the zoologist, this portion of the work is most welcome. The dissection and preservation of animal structures is entered into in the minutest manner, each system being treated of separately, and with respect to the several classes of animals. Much that relates to the invertebrate tribes is new, and evidently the result of original inquiries. The style of the whole is highly perspicuous, sufficiently full, and never prolix.

We rejoice to see such a work as this appearing among British naturalists, for other reasons besides its evident utility. We hail it as one of the symptoms which have appeared of late of a better state of things in the natural-history sciences in Britain. When the naturalist takes to anatomical manipulation he is in the right path. The discovery of the laws of structure, function and distribution, of affinity and of analogy, are the great ends of natural history, and to get at them we must pursue our researches anatomically and physiologically. The habits of animals and plants may be narrated but cannot be understood without reference to those laws. The "Peter



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