Fig. 6. *Entomis variostriata*, Clarke. *a*, right valve, showing both sulcus and striæ to be modified, × 30 diam.; *b*, striæ and interstitial ornament, × 75 diam.

Fig. 7. *Entomis variostriata*, Clarke. Right valve of a young individual, × 30.

Fig. 8. *Entomis variostriata*, Clarke. *a*, right valve of a large specimen, with a central pit representing the sulcus; and the striæ modified, × 30 diam.; *b*, ventral profile of the same, × 30 diam.

Figs. 5–8 from Bicken, Westphalia.

XXXVIII.—*Notes made during the present Year on the Acceptance or Rejection of Insects by Birds.* By Arthur G. Butler, F.L.S., F.Z.S., &c.

As I consider that the question of the immunity from destruction of certain insects by birds is still far from being an ascertained fact, I have again made notes this year on the effect produced by offering various insects and their larvæ to the occupants of my aviaries. These are as follows:—

Indoor Aviaries.

1. Cockateels, Budgerigars, and Australian Zebra-Finches.
2. Pekin Nightingales alone.
3. Whydah-birds, Weavers, American Nonpareils, Saffron-Finches, St.-Helena Seed-eaters, Green Singing-Finches, Canary.
4. Mannikins, Waxbills, and Blue Robins.

Conservatory.

5. Cage containing White-eared Persian Bulbul.

Outdoor Aviaries.

1. Chaffinches, Hen Bullfinch, Great Tit, Blackbird; all in good-sized cages.
2. Chaffinches, Greenfinches, Redwings; all flying freely about.
3. Large cages containing Blackbird and Fieldfare.
4. Buntings, Bullfinches, Linnets, Goldfinch, Canaries, Siskins, Indigo-Finch, and Australian Zebra-Finches; all flying freely about.

Altogether thirty-six species, most of them flying about in

large aviaries fitted up with natural branches and growing shrubs and trees.

I made my first observation on the 27th April, when I turned full-grown females of the two spiders *Tegenaria domestica* and *Dysdera Cambridgei* into the aviary containing the Blue Robins, Waxbills, and Mannikins. Not one of the birds showed the least fear of them (the smallest birds, as a matter of fact, do not fear the largest British spiders), but the cock Blue Robin flew down at once and devoured each as soon as it began to run.

On the 1st of May I obtained a number of larvæ of the cockchafer (*Melolontha vulgaris*), and on the 1st, 2nd, and 3rd of the month I gave examples to the Fieldfare, Blackbirds, Redwings, Blue Robins, Pekin Nightingales (*Leiothrix luteus*), Bulbul, and Great Tit; the Blackbirds, Bulbul, and Great Tit ate theirs immediately, the Blue Robins killed but did not relish theirs, the other birds ignored the larvæ.

On May 4th and throughout the summer hundreds of the two white butterflies *Ganoris rapæ* and *brassicæ* have been eaten with great satisfaction by the Blue Robins, Yellow Hammer, Nonpareils, Indigo-Finch, and Chaffinches.

On the 1st and 19th June I turned larvæ of *Hyponomeuta padella* into my outside Finch aviary and into the Blue-Robin aviary; the Indigo-Finch ate one or two but did not relish them; the other birds ignored them *.

On June 9th and 10th I offered soldier-beetles (*Telephorus*) to the Blue Robins and Chaffinches, which appeared to eat them with pleasure; yet, after this date, although I repeatedly offered this beetle to them, both species refused to touch it.

On the 19th June I obtained the first specimens of *Eristalis tenax* and turned them into my three largest aviaries: the Blue Robins, Orange Weavers, and Nonpareils examined this fly, but would not eat it, although last year the Nonpareils ate a considerable number; the Indigo-Finch, however, at once flew down, seized and ate the flies with pleasure.

About the middle of the month my hen Blue Robin went to nest and the cock became most attentive to her, carrying every insect to her until her eggs were hatched, when he transferred his attentions to the young. On the 27th June, however, previous to the hatching of the eggs, I found a large gravid female of the gooseberry-moth (*Abraxas grossulariata*), which, when thrown into the aviary with the Indigo-Finch and Buntings, feigned death and so escaped notice: I there-

* It will be remembered that this larva was much enjoyed by a specimen of *Carpodacus* formerly in my possession.

fore took it out and threw it into the Blue-Robin aviary ; the cock bird immediately flew down, seized it, and was so much pleased with its flavour that, although the hen begged for it, he would not give it up, but devoured it himself. The young birds were hatched during the first week of July, but only one was eventually reared; this nestling was almost entirely fed upon flies, spiders, large and small (including numerous full-grown females of *Tegenaria atrica*, one of the most repulsive-looking of our British species), white butterflies, numerous examples of *Pterostichus madidus*, moths (including *Agrotis saucia* and *Zeuzera æsculi*), mealworms and small earthworms : the only moth I was doubtful about was the wood-leopard (*Zeuzera æsculi*) ; the old birds ate several specimens, but I did not see them disgorge them for the benefit of the young.

On the 16th August I obtained a full-grown caterpillar of *Cerura vinula*, a specimen of which, it will be remembered, was greedily eaten some years ago by my Nightingales. I turned it into the Blue-Robin aviary, and the hen flew down, seized it in the middle, and carried it to the ground, then started back suddenly as if stung (possibly the larva had ejected acid into her mouth or eyes) ; she then examined it curiously, pecked at it cautiously, springing back after each peck, and finally flew away. The cock and young bird now flew down and examined it, the former pecking it and jumping back several times, evidently half afraid of it ; then both flew away, and I took it out. It was quite uninjured, so I turned it into the next aviary, when the Weavers and Nonpareils flew down and formed a circle round it ; they walked round and round with outstretched necks for two or three minutes, the hen Nonpareil alone venturing to peck it once ; then all flew away simultaneously. The caterpillar never once put itself into what is supposed to be a "terrifying attitude," but crawled like a great gaudily-coloured slug along the ground. I now turned it in with the *Leiothrix*, and they jumped round and pecked at it, but found it too tough a morsel ; I do not think they were a bit afraid of it. I next offered it to one of my Blackbirds, but he sidled away along his perch and looked in a contrary direction. Lastly I put the caterpillar into the cage containing a Great Tit, and he flew down at once, seized and tore it to pieces, eating it with relish.

At first sight it would appear that, judging by these experiments, the caterpillar of *Cerura vinula* enjoyed almost perfect immunity from destruction ; but when we consider that the birds which rejected it were, with the exception of the Blackbird, only those which would never come in contact

with it in a state of nature, and that the bird of all others which would be most likely to come across it was the very one which showed no fear of it, but devoured it with avidity, the protective character of the caterpillar, consisting chiefly in its violent contrasts of colour (for the one experimented with never exserted its tentacles, even when violently pecked), ceases to be of any very great advantage to it.

On the 25th August I obtained larvæ of *Spilarctia lubricepeda*, which one of my Blackbirds ate directly they were thrown into his cage*.

My experiments this year have convinced me that the tastes of birds not only differ in individuals of the same species, but that the same individuals in consecutive years vary as to their likes and dislikes; in the second place they have confirmed the opinion, based upon previous experiments, which I expressed in my last paper, viz. that no insectivorous bird has the least fear of the largest British spider (doubtless if one offered a *Mygale* to a Waxbill or Goldcrest the bird would be alarmed); thirdly that, as already shown, the imago of *Abraxas grossulariata* is far from being distasteful, although the larva is distinctly so to many, if not to all, insect-eaters; lastly, that caterpillars and birds do not share with human beings the notion that the line of beauty is terrifying when seen in a large moth-larva. If a caterpillar gets a dig in the back from the beak of a bird it doubles up just as a human being would from a blow on the opposite side of his body; it does not do it to terrify the bird, but simply because it is in pain.

XXXIX.—*Revision of British Mollusca.* By the Rev. Canon A. M. Norman, M.A., D.C.L., F.R.S., F.L.S., &c.

[Continued from p. 91.]

Order IV. PULMONATA.

It is only in a few cases that I have thought it necessary to make observations on the species of Land and Freshwater Mollusca, nor have I, with few exceptions, given the varieties. These will be found in 'British Conchology;' and very much has been written since on the subject in the 'Journal of Conchology,' to which journal it is only requisite to refer those who are interested in the subject.

* This larva has since been eaten with satisfaction by a Chaffinch.