margin and ending about the middle of the inner margin, a much broken irregular band; beyond this from the apex to the anal angle a faint greyish line bent inwards on account of a rather large black spot inwardly bordered with orange between the two lower median nervules; a faint submarginal line and a narrow black marginal line inwardly bordered with pure white. The lobe black, with a few bluish scales and an orange patch above.

Head white between the eyes; thorax and abdomen blackish above, with blue scales. Abdomen creamy white below; legs black, with white spots. Antennæ black, annulated with white. Palpi white, with black tips.

Expanse 1–1¼ inch.

Hab. Sierra Leone. Mus. Druce.

Although the collection contains about forty specimens there are no females amongst them.

The spot between the nervules on underside of hind wing is frequently annulated with orange, and several specimens have a distinct white ringed spot in the cell of fore wing below, but on one wing only.

XXXIX.—*The History of a Long-forgotten British* Lithobius. By R. I. Pocock.

In many, if not most, zoological groups there is an unfortunately large category of species which are tacitly ignored by more modern authors and consigned to oblivion by their common consent. For this neglect there is generally ample excuse, the excuse being often traceable to absence of locality for the typical specimen, or more often to some errors or omissions committed by the writer who first described the species. To rescue such a species from its fate is always gratifying, and the task is rendered still more so when it incidentally adds fresh and interesting facts to the history of the species by shedding unexpected light upon its synonymy, distribution, or structural variability.

Such species are *Lithobius pilicornis* and *L. Sloanei* of Newport. The first-named was originally described on p. 96 vol. xiii. of this Magazine, but subsequently and more fully on p. 369 of vol. xix. of the Trans. Linn. Soc., this last description being repeated in the 'Catalogue of the Myriopoda in the British Museum.' Immediately following the first description of the species is the description of the second, *L.*

Sloanei. This description is also repeated and amplified in the Linnean 'Transactions' and in the 'Catalogue.' In the Linnean 'Transactions' Newport refers to the resemblance between these two species and points out the characters by which they may be separated. Curiously enough, however, he nowhere gives the number of antennal segments of *pilicornis*, whereas he asserts that *Sloanei* possesses forty. And since, in his comparison of the two species, there is no statement that any structural difference is found in these appendages, the obvious inference is that *pilicornis* also possesses forty segments. Add to this that *pilicornis* is said to be English, while there is no locality for *Sloanei*, and we have sufficient information, one would think, to lead to the identification of at least *pilicornis*. No mention, however, of either has been made for more than thirty years, and but for what may be termed a lucky chance both might for many a year have still remained amongst the category of long-forgotten species.

* * * * *

During a trip to Cornwall in the autumn of 1890 my friend Mr. Oldfield Thomas was fortunate enough to capture upon St. Michael's Mount a magnificent specimen of the genus *Lithobius*.

It is manifest at a glance that this specimen is markedly different from the common British members of the family; for it far exceeds in size the largest examples of *L. forficatus* and *L. variegatus*, the two species which have hitherto shared the distinction of being generally considered the giants of the race—so far at least as Britain is concerned. Moreover, a closer inspection shows that, apart from its size, this new comer may be distinguished by sundry well-marked structural features from all its near relatives that are commonly met with in England. From a systematic point of view, in fact, its specific characters are at least as important as those which distinguish *forficatus* from *variegatus* or *crassipes* from *microps*.

Taking this into account, and not at the time recollecting that any similar or even remotely allied species had been described on the continent from the countries of which the Myriopod fauna is known, I had reasonable grounds for expecting that this one would prove to be new to science, and that we should have the satisfaction of recording a second species of the genus as peculiar to the British Isles. Reference, however, to literature, accompanied by a careful reexamination of the specimens of this genus that are contained in

the British Museum, soon dispelled this illusion. For three points speedily came to light:—Firstly, that the specimen is specifically identical with the type of *L. pilicornis*; secondly, that *L. Sloanei* is synonymous with *L. pilicornis*; and thirdly, that the species has been redescribed by von Porath and has received the appropriate name *longipes* as a secondary title.

The types of *longipes* were from the Azores, and the species was established in 1870. Two years later Dr. Meinert obtained a *Lithobius* from Madeira which he questionably identified as *longipes*. But to afford others an opportunity of testing the correctness of his conclusion, he recharacterized the species from the Madeiran example. If this description be compared with that given by von Porath certain differences between the two may be noticed—differences which, although slight in themselves, are perhaps in the aggregate of sufficient importance to justify the caution Dr. Meinert displayed in qualifying his synonymy with a mark of interrogation. I confess, however, to having come to the conclusion that these differences might easily be accounted for on the grounds of individual variation. I was consequently somewhat surprised to find upon consulting Dr. Meinert's last work on the Chilopoda that he subsequently comes to an opinion exactly the opposite of my own. For in this instance he identifies a specimen from Marocco as *longipes* of Porath, and, deciding that it is specifically distinct from his previously described Madeiran specimen, he assigns to this last the new name *galatheæ*. Fortunately, however, by drawing up a diagnosis of the Moorish example he again furnishes us with a means of keeping a check upon his determination and of testing the validity of his views. But here again it is hard quite to agree with Dr. Meinert. It seems to me that this third description by no means serves to emphasize the distinction between the so-called *galatheæ* and *longipes*. On the contrary, it confirms me in the belief that the Madeiran and Azorean specimens are co-specific; and there is no doubt whatever that Dr. Meinert has correctly identified the specimen from Marocco. Hence the three descriptions have been drawn up from specimens which are specifically identical. Clearly, however, such an expression of personal conviction will carry but little weight if unsupported by facts; and it is desirable to be somewhat more explicit, since this view is opposed to that of Dr. Meinert, whose opinion on such a point is worthy of most careful consideration—and this quite apart from the circumstance that his conclusion is so much the more valuable inasmuch as it was formed from a comparison of specimens.

In the first place, if we compare the description of the Azorean with that of the Madeiran specimen, we find that they resemble each other in colour, number of antennal segments, hairiness of sternites, number and shape of coxal pores, armature of anal legs and of the female generative appendage, while they differ a little in the number of ocelli and of teeth on the maxillary sternite and in that the Madeiran specimen is said to be posteriorly granular. Again, the example from Marocco agrees with both in colour, in the number of its antennal segments, in the shape of its coxal pores, and in the armature of its anal legs and of the generative appendage. But while it resembles the specimens from the Azores and differs from that from Madeira in the number of its maxillary teeth, it resembles that from Madeira and differs from those from the Azores in the number of its ocelli and in being posteriorly roughened. It further differs from the Madeiran specimen in the spine-armature of the first pair of legs; and it differs from both in the number of its coxal pores. Thus we see that Dr. Meinert's *galatheæ* differs from his *longipes*, which is doubtless too the *longipes* of Porath, in the number of its maxillary teeth and of its coxal pores, and in the spine-armature of its first pair of legs. But what is the value of these characters? Are they of specific importance? Clearly in the absence of series of examples these questions can only be answered by analogy, that is by seeing what value they have in other species of the genus. If now we turn to Dr. Latzel's description of *L. forficatus*, we find that the number of maxillary teeth varies from 10 to 14, that the coxal pores are either transversal, oval, or more or less round, and vary from 6, 6, 6, 5 to 12, 11, 11, 10, and that the spine-armature of the first pair of legs is not constant. Thus it is clear that the differential characters of *galatheæ* as described are of very little value. It is clear, moreover, if other characters of *forficatus* be examined, that the Moorish, Madeiran, and Azorean specimens differ far less from each other than do individuals of *forficatus*. But when a number of specimens agree precisely in most of their characters, and differ only in characters which are known to be still more variable in an allied species of the genus, it is surely illogical to consider such differences as worthy of specific consideration. To put it more clearly, suppose A, B, C, and D be four specimens, of which A and B are beyond all question members of the same species. If, then, it be found that A resembles and differs from B precisely as C resembles and differs from D, surely there are no grounds for concluding that C is a different species from D? The conclusion is rendered still more untenable if the differences

between A and B are greater than the differences between C and D. Thus by analogy we may fairly safely argue that *galatheæ* is synonymous with *longipes*. The same line of argument has convinced me, moreover, that the specimen from St. Michael's Mount is specifically identical with the type of *pilicornis*, and that *Sloanei* and *longipes* are synonyms of *pilicornis*.

It is not hard to find reasons why Porath and Meinert failed to identify *pilicornis*. The fact of the type being British * furnished strong grounds for the belief that Azorean and North-African specimens would be distinct from it. Moreover it will be remembered that Dr. Newport inadvertently implied that the specimen has forty antennal segments. As a matter of fact it has thirty-two and thirty-three; and why Newport should have assigned forty to the type of *Sloanei* is unintelligible, since the only entire antenna which the specimen possesses has but thirty-four. But for this error the species might have been identified; under the circumstances, however, no one can be blamed for failing to do so.

Again, the differences which Newport has pointed out for distinguishing *pilicornis* from *Sloanei* will not stand the test of criticism. Thus in counting the labial teeth of *pilicornis* Newport again fell into error; for he asserts that there are ten, whereas in reality there are the same number as in *Sloanei*, namely eight. The difference in the shape of the head in *pilicornis* is due to the fact that the sides of the sclerite have become curled downwards during the process of drying; and the greater apparent hairiness of *pilicornis* is no doubt to be attributed partly to the removal of the hairs in the type of *Sloanei* and partly to the fact that they have become matted to the various parts of the body; for this specimen, Newport informs us, was taken from a bottle forming part of the original collection of Sir Hans Sloane.

At the present time this type is a bleached and shrivelled example, bearing a ticket numbered 4167, which is presumably a copy of an original number affixed by Sir Hans Sloane; for a reference to the MS. catalogue of the Sloane collection shows that this number refers to "a middling good-sized brown *Scolopendra*."

To show still further the variability of this species and to follow Dr. Meinert's excellent example of furnishing others with a check upon the synonymy here given, I publish the

* Apart from Dr. Newport's statement to that effect there is no evidence that the specimen is British, there being no ticket affixed to it with the information.

following description of the specimen from St. Michael's Mount:—

Lithobius pilicornis, Newport.

Lithobius pilicornis, Newport, Ann. & Mag. Nat. Hist. xiii. p. 96. no. 5 (1844); Trans. Linn. Soc. xix. p. 369. no. 13 (1845); Cat. Myriopoda Mus. Brit. p. 20 (1856).
Lithobius Sloanei, Newport, Ann. & Mag. Nat. Hist. xiii. p. 96. no. 6 (1844); Trans. Linn. Soc. xix. p. 369. no. 12 (1845); Cat. Myriopoda Mus. Brit. p. 19 (1856).
Lithobius longipes, von Porath, Œf. Vet.-Akad. Förh. xxvii. p. 816 (1870); Meinert, Nat. Tidsskr. (3) viii. p. 323 (1872); id. Vid. Medd. Foren. 1884–86, p. 109.
Lithobius galatheæ, id. ibid.

Colour (in alcohol *) deep castaneous above and below, the arthrodial membranes greyish blue; shining.

Head-plate pentagonal, sparsely punctured and hairy.

Antennæ hirsute, composed of thirty-two or thirty-three long cylindrical segments, of which the second is the longest; apical segment only very slightly longer than the penultimate.

Eyes composed of about twenty-six ocelli, arranged in five or six rows.

Maxillary sternite sparsely punctured and hairy; prosternal plates well developed, separated by a deep excavation, each armed with five long sharp teeth, of which (counting from the inside) the first, second, and third are close-set, while the fourth is separated from the third, and the fifth from the fourth by a wider space.

Tergites mostly smooth, those at the posterior end of the body being, however, roughened and granular; most of them with rounded angles; the eleventh, however, has its angles slightly produced and the thirteenth has them more strongly produced.

Sternites sparsely punctured and hairy; longitudinally depressed in the middle and lightly depressed at the sides.

Legs long and hairy, the tarso-metatarsus being especially hirsute; the posterior four coxæ furnished with 8, 9, 9, 7 long slit-like pores; *anal legs* long, coxæ armed with one lateral and one inferior spine, the other segments armed beneath as follows:—1, 3, 2, 1, 0; claw unarmed.

Generative forceps in female furnished with two spurs on each side; the claw obsoletely trifid.

* Mr. Thomas informs me that when living the specimen was of a deep dull green tint. This green has changed to a deep red from the action of the methylated spirit.

Measurements.—Total length of body 35 millim., of antennæ 15 millim., of anal leg 16·5 millim.

This specimen is the largest known example of the species. Porath gives 24 millim. as the greatest length of his typical examples and Dr. Meinert assigns 21 millim. to his specimen from Madeira and 18 to the one from Marocco. In addition to the individual just described and the types of *Sloanei* and *pilicornis*, the British Museum possesses a fourth from Madeira, which was sent by Mr. J. Y. Johnstone. This measures 26 millim. The type of *Sloanei* has the body very much shrunken; but, judging from the size of the head and from the length of the anal leg, it was at least as large as this example from St. Michael's Mount.

The types of *pilicornis* and *Sloanei*, as above stated, possess eight maxillary teeth; the specimen from St. Michael's Mount has ten, whereas the example from Madeira has but seven, the external tooth on the left side being absent. All of them agree in presenting 2, 2, 1 spines on the under surface of the first pair of legs.

The coxal pores vary a little in number, being either 8, 10, 10, 8 or 8, 9, 9, 7. The shape varies also. In the type of *Sloanei* and in the example from St. Michael's Mount, the two largest of the specimens, they are considerably more elongate than in the others.

The antennal segments vary in number from thirty-two to thirty-four*.

Distribution.—As may be inferred from what has been said above, the only definitely known localities for this species are Marocco, Madeira, the Azores, and St. Michael's Mount, off the south-west coast of Cornwall. But we may safely con-

* Since sending the above to press I have discovered other specimens of this species in the Museum collection. One of these was collected by Mr. Oldfield Thomas at Falmouth, and had been mistaken for *forficatus* until critically examined; the others, four in number, were obtained by the officers of H.M.S. 'Challenger' at Teneriffe, and, being badly preserved and damaged, had been provisionally set aside as unidentifiable. Of these Teneriffe specimens only one has a perfect antenna, which proves to be composed of thirty-three segments. In the largest specimen the maxillary teeth are large, sharp, and eight in number; in the others, however, these teeth are very blunt and more or less fused. The example from Falmouth has thirty antennal segments on one side and thirty-five on the other, and the maxillary teeth are conspicuous and four on each side.

No doubt the species has been introduced into Teneriffe from the mainland, just as it has into Madeira and the Azores; and what has been said above with regard to the distribution of the specimen from St. Michael's Mount will apply equally well to the one from Falmouth.

clude that it does not occur in Scandinavia, Denmark, Germany, and Austro-Hungary; for the Myriopoda of these countries have been so thoroughly investigated, that such a conspicuous species could not easily have been overlooked. Unfortunately nothing or next to nothing is known of the Myriopod fauna of Portugal and France, and in the absence of this information any attempt to account for the existence of this species in Britain must clearly be regarded as purely provisional.

No one will probably dispute that the species has been introduced from the mainland into Madeira. Moreover, it is quite likely that from Madeira it has made its way into the Azores. But its existence in England may be due to at least one or more than one of three causes—either the species inhabited England and France before the separation of the former tract of land, or it has been introduced from the continent since the separation, or it has been carried over to us from the Azores. In support of this last hypothesis we may urge the great rarity of the species in England and its apparent confinement to our south-western counties. For, coming from so warm a locality, we should expect that it would only be able to maintain itself in the extreme south-west, where the climate is moist and relaxing and frosts are of rare occurrence. The introduction of the species into England from the Azores might have been effected, one would think, by means of a floating tree-trunk driven before a south-westerly gale.

We can never, however, satisfy ourselves on these points until collectors have filled up the gaps in our knowledge with respect to the Myriopod fauna of Portugal and France.

XL.—*Descriptions of new Species of* Upupæ *and* Trochili *in the Collection of the British Museum.* By Osbert Salvin, M.A., F.R.S.

Upupæ.

Upupa somalensis.

Upupa epops senegalensis, Shelley, Ibis, 1885, p. 397.

Adult male. Similar to that of *U. epops*, and with the primaries and tail similarly banded with white; the upper back,