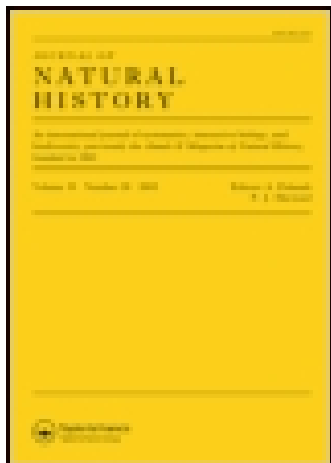


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XII.—On the insects of Jamaica

Philip Henry Gosse

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a slightly impressed line down the middle, which runs into a triangular depression in front of the scutellum; scutellum white, without apparent punctures.

Elytra, each furnished with nine deeply impressed lines, the third (from the suture) joined at the tip with the eighth, fourth and seventh joined at the tip, and the third and fourth also joined at the tip and connected with the fourth by a branch.

Hab. Philippine Islands. Mus. Brit.

Elytra considerably depressed above, the base somewhat margined close to the thorax; each elytron with the lateral edge widely sinuated, the end rounded.

Legs strong, the anterior pair close together at the base; tibiæ short, slightly bisinuated within; tarsi with the two basal joints narrow, the second subquadrate and both grooved at the base, the third subrotundate, somewhat widest in front, grooved at the base, and furnished on the sole with very close thick-set hairs.

This subgenus would almost appear to connect the two subdivisions *Cryptopygi* and *Gymnopygi* of the family *Calandridæ* of Schœnherr (Genera et Species Curculionidum, viii. p. 334); with the former it nearly agrees in the position of the antennæ, being about the middle of the beak (which however, as in *Brentidæ* and many *Curculionidæ*, may be only a sexual distinction); with the latter in the pygidium being exposed, or not covered by the elytra. The form may thus prove interesting as one of those links which serve to show how families, subdivisions and genera lapse into each other. In appearance, judging by Schœnherr's description, this in external colour seems to resemble his *Poteriophorus niveus*, iv. 846.

The figure, carefully made, of the natural size, by Mr. Wm. Wing, will show its form, the profile, and also the markings of the only species which was found by Mr. Cuming, F.L.S., at the north end of Luzon in the Philippine Islands in the province of Cagayan.

XII.—On the *Insects of Jamaica*. By PHILIP HENRY GOSSE.

THE following is a very imperfect list of the Insects collected by me during a residence of about a year and a half in Jamaica: imperfect, because many species seem to be as yet unnamed, and also because many others which I omitted to register with a number, it would now be exceedingly difficult to determine. Imperfect as it is, however, I communicate it, as local lists are always useful to science: and I shall use this one as a vehicle for recording a few scattered notices of individual species, which, though too trivial to form separate papers, may yet, as isolated facts, be worth preserving from oblivion.

I had left England with high expectations of the richness of the West Indian entomology : large and gaily-coloured beetles, I supposed, would be crawling on almost every shrub, gorgeous butterflies be filling the air, moths be swarming about the forest-edges at night, and caterpillars be beaten from every bush. These expectations were far from being realized ; a few species of butterflies, chiefly *Pieris*, *Callidryas*, *Terias*, *Heliconia Charitonia*, *Argynnis Passifloræ*, and *A. Delila*, *Cystineura Mardania*, and one or two *Nymphalidæ* and *Lycenadæ*, are indeed common enough at all times, and in almost all situations ; others are abundant at a particular season or locality ; but in general butterflies are to be obtained only casually. Moths are still more rare : I had provided myself with bull's-eye lanterns, and repeatedly took them out after nightfall, carefully searching the banks and hedges by the sides of roads, the margins of woods, &c., but never, in this way, took a single specimen. At some seasons, however, as December, and more particularly June, on rainy nights, hundreds of little *Noctuidæ*, *Pyralidæ*, *Geometradæ*, *Tineadæ*, &c. fly in at the open windows, and speckle the ceiling, or flutter around the glass-shades with which the candles are protected from the draughts. A good many small beetles, and other things, also fly in on such occasions, and several interesting species I have taken in this way which I never saw at any other time. But in general beetles and the other orders are extremely scarce, and especially Diptera ; I have often been astonished at the paucity of these, as compared with their abundance in Canada, the Southern United States, and other localities (in which I have collected) during the hot weather. One may often walk a mile,—I do not mean in the depth of the forest, but in situations comparatively open, beneath an unclouded sun,—and not see more than a dozen *specimens* of all orders. Nor is the beating of bushes productive of insects and their larvæ, as I have found it in North America. In Canada I have shaken off perhaps twenty species of lepidopterous larvæ in the course of an hour or two on an autumnal morning ; but I think I have seen scarcely more than half that number of caterpillars in Jamaica during a year and a half's collecting.

To this scarcity of insects however there are two or three local and seasonal exceptions. And this leads me to speak of the principal localities where I have collected my specimens, and to give a brief description of them, which yet will be but superficial, owing to my ignorance of botany and geology.

BLUEFIELDS.—I begin with this place, because it was the centre of my operations, and my stated residence during my whole sojourn in the island. Bluefields was once a sugar-estate, situated on a gentle slope, about a quarter of a mile from the

sea-shore. The greater part is now what is called *ruinate*, being covered with a dense and tangled mass of second growth, chiefly logwood, interspersed with calabashes (*Crescentia*) and many fruit-trees, such as the Avocado pear (*Persea*), orange-trees, mangoes, cocoa-nuts, *Blighia sapida*, guavas, papaws, and the different kinds of *Anona*. About a dozen acres are kept open, in pasture, in which there grow many flowering weeds, as *Argemone*, *Stachytarpheta*, small *Passifloræ*, *Asclepias*, &c. The fences consist of "dry walls," that is, low walls built up of loose stones without cement. Over these sprawl various kinds of *Cereus*, *Aristolochia*, *Aroideæ*, and beautiful *Convolvuli*, *Ipomææ* and *Echites*; while at their bases spring up numberless bushes of *Lantana*, of several species, always covered with their cheerful blossom, *Cleome*, and many papilionaceous and other flowering plants. The out-buildings of a sugar-estate, as the mill, the boiling-house, &c., still stand, but as mere skeletons; the bare walls, the beams and rafters yet remaining, but the planking of the floors and the shingles of the roofs almost quite gone. These buildings present a curious appearance; for with the singular rapidity of tropical vegetation, the whole interior is occupied with young trees, already overtopping the roof, and slender lianes hang down like cords from one to another, or are thrown in loops over the beams; while elegant ferns of many kinds spring from every crevice of the walls both within and without, and, curving outwards, depend in the most graceful forms. Various insects have established themselves in these ruined outhouses: the earthen floor of one is pierced with the burrows of a red *Sphex*, numbers of which are coming and going, and wheeling hither and thither close to the ground all day long; and in the dry dust of another are hundreds of the conical pit-falls of a *Myrmeleon* larva, the manners of which I found to agree exactly with those described by Reaumur. The soil of Bluefields is a friable whitish marl; its elevation may be from 50 to 100 feet above the sea.

BLUEFIELDS MOUNTAIN.—Immediately behind the spot I have been describing rises the loftiest elevation of the western portion of Jamaica. The Peak, which I may have occasion to mention once or twice, is estimated to be 2560 feet above the sea, but this, as well as the summit of the ridge generally, is covered with a dense and tangled forest, except that here and there in isolated spots the negroes have chopped down and "burned over" an acre or two, and planted cocoas (*Colocasia*) and plantains. As they do not reside here, however, but in the lowlands, visiting their mountain-gardens one day in a week, for cultivation or for collecting the produce, the solitude is scarcely broken, and the primæval wildness of nature is scarcely affected by these trivial intrusions. That giant of the lowlands, the

cotton-tree (*Eriodendron*), reaches not to these elevated regions, but its place is supplied by scarcely less bulky fig-trees, whose hoary trunks and broad horizontal limbs are a perfect nursery of *Orchidaceæ* and *Bromeliaceæ*; and magnificent Santa Marias (*Calophyllum*), broad-leaves (*Terminalia* ?), and parrot-berries (*Sloanea*) tower up to an enormous pre-eminence above their fellows. Dense thickets of joint-wood (*Piper geniculatum* ?) grow in large patches to the exclusion of every thing else: in other places the trees are tall, slender, and somewhat open in growth; but the edge of the woods is formidable with cutting sedges and spinous *Solanaceæ*, relieved by beautiful tufts of *Cannæ*. The mountain cabbage and the long-thatch are the prevalent forms of *Palma*; tree-ferns are abundant, and caulescent species of great beauty climb to the summits of tall trees; while in the damp and dark hollows, and by the sides of the winding paths which lead to the negroes' grounds, terrestrial ferns of many species grow in luxuriant profusion. Such a scene, beautiful as it is, is not favourable to the development of insect existence; a few species occur there which are not elsewhere met with; but it is at a rather lower range, at the brow of the mountain, that I have found more success in entomologizing. A property of considerable extent is here partially reclaimed, and devoted to the growth of the pimento and coffee; and though its back is bounded by the dark and tangled forest-peaks I have alluded to, its area displays a very different aspect. Five hundred feet of elevation produce some difference in vegetation, and probably the openness of the cleared ground still more. The bamboo, planted along the sides of the shelving road, throws its gigantic plumes overhead; the mahoe (*Hibiscus*) displays its large and showy flowers; the scarlet blossoms of *Malaviscus arboreus* and the crimsoned ones of some species of *Melastomaceæ*, beautify the edge of the forest, and large beds of *Urena lobata* border the road. In such parts as have been cultivated for a few years, and then (according to the custom of West Indian agriculture) allowed to run to waste, bushes of numberless kinds have sprung up, many of which are in blossom at all seasons. Though the flowers of most of these are individually small and inconspicuous, yet from their profusion they present an attraction to Hymenopterous and Lepidopterous insects; and such a wilderness of vegetation is usually more or less productive to the entomologist. In this particular locality I have usually found butterflies pretty numerous, principally *Nymphalidæ* and *Hesperiadæ*, and those of sorts rarely found in the lowlands; but from the tangled character of the "bush," and from the height of the blossomed summits about which they hover, they are less readily obtained than observed. It is to this scene that I shall allude when I

have occasion to mention Bluefields Mountain, distinguishing the loftier and more wooded region as Bluefields Peak.

SABITO.—In going from Bluefields to Savanna le mar, the road for some miles borders the sea-shore, which at first is a sandy beach, but soon rises to a shelving, rubbly sort of cliff, at the top of which the highway passes. The first portion, extending to about a mile from Bluefields, is called Sabito Bottom; the soil here is a heavy sand, mixed with shingle, doubtless washed up by the surf in heavy gales; large masses of the Jamaica lily (*Pancratium*) spring up on each side of the path; a narrow belt of single trees, chiefly of the sea-side grape (*Coccoloba*) on the left hand, overhang both the road and the sea-beach, and on the right a dark and fetid morass is hidden by great bushes of the black-withe. This would seem an unpromising place for a collector, and yet it forms one of the signal exceptions I have mentioned to the general paucity of insects. Many magnificent butterflies frequent this bottom, as *Aganisthos Orion*, *Charaxes Cadmus*, *Charaxes Astyanax*, *Papilio Pelasus*, *P. Cresphontes*, *P. Polydamas*, *P. Marcellinus* and other *Papilionidæ*, besides more common *Lepidoptera*. And when we get up the hill, where the trees are manchioneel, cedar (*Cedrela*), mahogany, bully-tree (*Achras*), log-wood, &c., with the fragrant wild coffee (*Tetramerium odoratissimum*), the papaw, the trumpet-tree (*Cecropia*), the beautiful Spanish jasmines (*Plumeria alba et rubra*), festooned with the noble tubular blossom of *Portlandia*,—we find insects very numerous. Many species of *Pieris*, *Callidryas*, *Terias*; of *Nymphalidæ*, *Heliconia Charitonia*; of *Lycenadæ*, of *Hesperiadæ*, and not a few of other orders, are at most seasons abundant here. A large portion of my insect-spoils was collected in this locality.

BELMONT.—Pursuing the same sea-side road, but in an opposite direction from Bluefields, we come to the estate of Belmont. It is very sandy, close to the sea, and on the same level with Sabito Bottom; yet it possesses some peculiarities both in botany and entomology. Prickly *Acacias* of several species border the road, intermingled profusely with the formidable pinguin (*Bromelia Pinguin*). The fences are logwood hedges, over which trail many beautiful creepers, as different kinds of *Ipomæa*, and the lovely *Clitoria Plumieri*; and passion-flowers throw their feeble stems and entwine their tendrils among the shrubs and herbaceous plants that fringe the road-sides. Some small *Melitææ*, *Cystineura Mardania*, and *Charaxes Astyanax*; some pretty low-flying *Glaucopidæ* and *Pyrilidæ*, haunt these lanes, and a few rare *Coleoptera* have been taken from the shrubs.

CONTENT.—About fifteen miles to the eastward of Bluefields, on the road which winds up from Black River towards Hamp-
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stead, and the summit of the Luana mountains, stands a little cottage called by this name, singularly situated on a mass of bare rock on the steep mountain-side. Above, below and around is the primæval forest, scarcely interrupted by the small and widely-scattered clearings that here and there occur. From so singular a position—the tops of the trees immediately beneath the little space that surrounds the dwelling scarcely reaching to the level of its base—the eye commands a magnificent prospect, embracing the sinuous coast, from Pedro Bluff on the east as far as Mount Edgecombe on the west, ranging over the sombre intervening forest with the cultivated openings, and resting on the broad savannas and flooded meadows that surround Black River; this town with its bay and shipping in the distance, and the course of the river itself visible at intervals, winding like a silver thread through the dark morass.

The high-road, passing just behind and above the cottage, climbs the mountain in the zigzag direction so frequently adopted in Jamaica, to diminish the steepness of the ascent; and it is a mile or two of this road that forms the most remarkable exception to the general scarcity of insects that I have noticed. During the month of June the shrubs and trees that border the road (which is cut through the forest) are alive with insects of all orders, but particularly Coleoptera; many species of *Longicornes*, *Lampyridæ*, *Buprestidæ*, *Cassididæ*, *Chrysomelidæ*, &c., occur by hundreds on the twigs and leaves; and the air is alive with butterflies, Hymenoptera and Diptera. I cannot at all tell why this abundance exists; it is very local; beyond a certain point, the road, the forest, seem to be unchanged, but the insects have ceased: it is very temporary also; it suddenly commences about the end of May, and by the middle of July scarcely a dozen beetles are seen where there were thousands. I might have supposed it a casual thing, if I had had but one season's experience; but in 1846 it was the same as in 1845, the same abundance at precisely the same season, and with the same local limits. It is worthy of record, that at the same time and place the leaves of the trees were studded with shelled Mollusca, of the genera *Helix*, *Helicina*, *Cyclostoma*, &c., as I never saw them elsewhere.

It is not improbable that some peculiarities in the geological or the botanical character of this region would account for what I have mentioned; but I regret that of this I have no knowledge. The mahoe (*Hibiscus tiliaceus*), the bastard cedar (*Guazuma ulmifolia*), the mammee sapota (*Lucuma mammosa*), the locust (*Hymenæa Coubaril*) and the trumpet-tree (*Cecropia Peltata*), are some of the forest-trees, with others called burn-wood and down-tree, of which I know not the systematic appellation. But there is one tree which grows numerously in that locality, which I

suppose to have some influence on the Lepidoptera and Hymenoptera; it is provincially called the potatoe-wood; it is at that time covered with blossoms, which, though they grow in thick racemes, offer nothing pleasing to the sight or the scent. But these form the centres of attraction to the insects I have named; *Pierides* and *Theclæ* in particular flutter around the sunmits in considerable numbers, and swarms of small beetles and flies. The *Bauhinia* displays its elegant blossoms, and in one corner a large patch of *Cassia* attracts *Papiliones* and *Coliades*; but in general there is an almost total lack of the flowering herbaceous vegetation that fringes the roads in most other places. It is remarkable also that the trees in these woods are nearly, if not quite, destitute of epiphyte *Orchidaceæ*, which are so abundant on Bluefields Mountain at a similar elevation, that hardly a tree is without one or more specimens. But in other respects the character of the vegetation in the two regions differs greatly.

This district I habitually visited every alternate week, very frequently spending eight or ten days at a time with my worthy friends at Content. Probably two-thirds at least of my collection of insects were the result of my labours here. The elevation of the region may be assumed (I speak only from my own estimate) as ranging from 1500 to 2000 feet above the sea.

Before I leave this subject, I would add, that during the period of insect-abundance on the Hampstead road, a large number of species were taken by flying in at the open windows of Content cottage by night. Many valuable specimens occurred in this way, not only of the crepuscular and nocturnal Lepidoptera, but of other orders in considerable variety. *Curculionidæ*, *Longicornes* and *Lampyridæ* were very numerous. I am inclined to think that a far greater number of insects are active by night than by day.

At length then I proceed to the list of species, deferring the notice of a few other less important localities until they arise.

[To be continued.]

XIII.—*A few general Remarks on the Fossil Conchology of the Great Oolite of Minchinhampton in comparison with that of the same Formation in other localities.* By JOHN LYCETT, Esq.*

THE following observations have been suggested to me by a remark of Dr. Buckland in his Bridgwater Treatise, and which has since been occasionally quoted and repeated by others;—in effect, that during the vast period when the secondary formations

* Read before the Cotswold Naturalists' Club at Purton, August 3, 1847.