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BY SAMUEL H. SCUDDER.

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VII.

The Orthoptera of the Galapagos Islands. BY SAMUEL H. SCUDDER.

THE first Orthoptera collected on the Galapagos Islands were obtained by Darwin in 1835, during the voyage of the "Beagle," and found their way to the British Museum, where they have been reported on by Walker and Butler. Darwin collected on several of the islands, but the specimens were not always kept separate. In 1852 the Swedish frigate "Eugenie" touched at the islands (Chatham, Charles, Indefatigable, Albemarle, and James), and from the collections made two species of Orthoptera were described by Stål, without statement of the particular islands on which they were taken. The islands were next visited, in 1872, by L. Agassiz in the "Hassler," which touched successively at Charles, Albemarle, James, Jervis, and Indefatigable, at all of which excepting James and Jervis Orthoptera were obtained. Next Commander Cookson visited the archipelago in the "Peterel" in 1875, touching at Charles, Abingdon, and Albemarle, and bringing back Orthoptera from all but Abingdon; these are in the British Museum, and have been reported on by Butler; including those obtained by Darwin, there were six species. In the same year Wolf, the State Geologist of Ecuador, visited the islands, and in a brochure published later made mere mention of two species of Acridium, of which the smaller (*Schistocerca literosa* Walk.) was found in the vicinity of the sea, the larger (*S. melanocera* Stål) in the interior of the islands. Mr. A. Agassiz later made a similar

observation. In 1888 the naturalists of the U. S. Fish Commission steamer "Albatross" obtained considerable collections on Chatham, Charles, Albemarle, Indefatigable, James, and Duncan Islands, which were reported on briefly by Bruner, who specified ten species and indicated five others. The "Albatross" again visited the islands early in 1891, and collections were made by A. Agassiz on Chatham, Charles, and Duncan Islands, which form the subject of a short unpublished notice by Riley. Finally, later in 1891, Baur made a special trip to the Galapagos for collecting animals and plants upon the land, under the auspices of Clark University, and brought back Orthoptera from Chatham, Hood, Gardner, Charles, Albemarle, Barrington, Indefatigable, Duncan, Jervis, and Tower.

All the specimens collected on these several explorations, except those of Mr. Darwin, Commander Cookson, and the frigate "Eugenie," and including specimens of all but one of the species reported as obtained by them, have been studied by me, and form the subject of the present paper. I owe the opportunity of studying them to the liberality of the U. S. National Museum, the Museum of Comparative Zoölogy, Clark University, and Dr. Baur.

They come from eleven different islands of the group, but mostly from Charles, Chatham, Albemarle, and Indefatigable. There are but twenty species of Orthoptera, twelve of which are found on Charles Island, eleven on Chatham Island, four each on Albemarle, James, and Indefatigable, while only a single one is known from each of the others. Only nine of the species are known from more than one island, though one is known from eight different islands. Excepting the cockroaches, five in number and cosmopolitan forms, only two are credited with occurrence elsewhere (on the west coast of South America), and these cases perhaps require reinvestigation. The fact that the cockroaches are cosmopolitan forms and have been brought only from the two islands (Charles and Chatham) which have or have had settled inhabitants, sufficiently shows that they have been introduced commercially. That these same islands have been more frequently visited by naturalists — Charles Island probably by all of them — is ample explanation for the larger number of species other than cockroaches known from them. The following table shows the distribution of the different forms: —

List of Species	Tower.	Albemarle.	James.	Jervis.	Duncan.	Indefatigable.	Barrington.	Chatham.	Hood.	Gardner.	Charles.
Anisolabis bormansi	...	...	...	...	...	...	...	*	...	...	...
Periplaneta americana	...	...	...	..	...	...	...	*	...	...	*
" australasiæ	...	...	...	...	...	...	...	...	...	...	*
Nauphoeta cinerea	...	...	...	...	..	...	...	*	...	...	...
" circumvagans	...	...	...	...	...	...	...	...	...	...	*
Leucophæa surinamensis	...	...	...	...	...	...	...	*	...	...	*
Galapagia solitaria	...	*	...	...	...	...	...	...	...	...	...
Vates sp.	...	...	...	...	...	...	...	...	...	...	*
Closteridea bauri	...	...	...	...	...	...	...	*	...	...	...
Sphingonotus fusco-irroratus	...	...	?	...	...	...	...	*	...	*	*
Schistocerca melanocera	...	*	*	*	*	*	*	*	...	...	*
" literosa	*	...	...	...	...	...	...	*	*	...	*
Halmenus robustus	...	...	*	...	...	*	...	...	...	...	...
Desmopleura concinna	...	...	*	...	...	...	...	...	...	...	...
Anaulocomera darwinii	...	...	...	...	...	*	...	*	...	...	...
Conocephalus insulanus	...	...	...	...	...	...	...	*	...	...	...
Nesœcia cooksoni	...	*	...	...	...	*	...	...	...	...	*
Gryllus galapageius	...	*	...	...	...	...	...	?	...	...	?
Gryllus sp.	...	...	...	...	...	...	...	...	...	...	*
Cycloptilum erraticum	...	...	...	...	...	..	...	...	...	...	*

One can hardly fail to be struck by the extreme poverty of this Orthopteran fauna under the equator, especially when the abundant vegetation of the higher ground is recalled. That a collector interested solely in insects would obtain more species is no doubt true; but that no greater variety has been obtained by naturalists intent on securing every possible form of animal life, is complete evidence of the meagreness of the fauna. Moreover, we have the expressed opinion of Mr. A. Agassiz, who collected insects "and was amazed at the poverty of the catch."

If, in examining this fauna, we leave out of consideration, as we certainly should, the five cockroaches which can in no sense be considered endemic, we have but fifteen species left. All these fifteen are distinctly South and Central American in their affinities, and five of them are apterous or subapterous forms, the wings of which cannot even form a parachute to partially sustain the body, while a sixth, Galapagia, has an apterous female. This large proportion of forms incapable of flight, in an assemblage itself of excessively meagre proportions, can be accounted for, it seems to me, only on the supposition that the Galapagos are of very recent origin, and have obtained their present Orthopteran fauna by the chance advent of pregnant females as waifs from the nearest shore, or the shore which the currents of the ocean practically make the nearest. An insect that could not fly would here actually stand the best

chance, because it would have less inclination to attempt to leave the drift wood or what-not, which kept it above the waters, and thus the exceptional proportion of subapterous forms may readily be explained.

At the same time, there can be little reason to question that a few of the species may be supposed to have reached the islands by flight. One of them, the Sphingonotus, is strong-winged, and is said by Stål to occur also in the island of Puná in the Bay of Guayaquil; this genus contains species which are among the exceedingly few Orthoptera believed to be common to the Old and New Worlds. Two others fall in the same restricted genus, Schistocerca, to which belongs *S. peregrina* Oliv., a species which has with little doubt crossed the Atlantic from South America to Africa, being found on both continents and being the only species of this numerous genus which has been found outside of America. Moreover, Walker — not the best authority, it is true — identifies specimens in the British Museum from the west coast of South America with *S. menalocera* from the Galapagos; and I have in my collection a new species of Schistocerca, the largest known to me,* which was taken at sea two hundred miles off the west coast of South America, or nearly half-way to the Galapagos.

* As this seems a fitting occasion, I append a description of the species, which will doubtless be found at home on the west coast of South America.

Schistocerca exsul, sp. nov. A species of the largest size, larger than any other that I have seen, allied to *S. americana*. Frontal costa of head very broad, narrowed slightly at summit, where it scarcely equals the width of the vertex between the eyes. Prozona of thorax compressed somewhat, but equally, the dorsum tectiform and slightly carinate; metazona very obtusely angulate behind. Anal area of the tegmina narrow, slightly narrower than the costal. Prosternal spine erect, compressed, the anterior face arcuate, the posterior straight, giving it a retrorse appearance. Head pale cinereous, the lower half obscurely infuscate, the frontal costa laterally infuscate above and the vertex marked irregularly with fuscous. Thorax blackish fuscous on the subrugose prozona, the lateral lobes more or less embrowned below, with an upper broad and lower slender pallid vitta; metazona punctate, fusco-castaneous, the dorsum anteriorly streaked longtitudinally with fuscous. Tegmina cinereous, sparsely and irregularly maculate with fuscous on the basal half in the vicinity of the principal veins, and on the apical half marked with blackish fuscous linear dashes upon the nervules, ranged in irregularly parallel obliquely transverse series, diminishing in importance outwardly. Wings hyaline with black veins becoming luteous toward the base in the anal area, giving this a slightly flavescent tone; a few subapical cells are infumated. Hind femora pallid cinereous, above feebly trifasciate with obscure fuscous; hind tibial spines yellow at base, red mesially, black apically.

Length of body 66 mm; tegmina 77 mm.; hind femora 35 mm. One female, taken two hundred and fifty miles off the west coast of South America.

These three strong-winged Acrididæ may then be presumed to have reached the islands by flight from the mainland; the remainder, half of them apterous in the female sex or altogether, may be presumed to have reached the islands with the flotsam and jetsam of the ocean; while the poverty of the fauna is distinct evidence that the islands have only been peopled by these methods, and within a relatively recent time.

That this time is not actually very recent may be inferred from the variation of the same species on the different islands, variations which may be more or less clearly seen in the three species which we assume to have probably arrived through direct flight, but which are the only ones in which we have a fair number of specimens from three or more islands on which to ground an opinion. It is also to be inferred — but less confidently, from our incomplete knowledge of the American fauna — from the fact that outside of these species and the commercially introduced cockroaches, there is not a single one of the Galapagos species known upon the neighboring main, time having already permitted specific differentiation through isolation.

FORFICULIDÆ.

Anisolabis bormansi, sp. nov.

Plate I. Fig. 1.

Anisolabis maritima ? Brun.! (nec Bon.), Proc. U. S. Nat. Mus., XII 192.

Head smooth, piceous; labrum fusco-testaceous, mouth parts testaceous; antennæ 15-jointed, the basal joint testaceous, the second fusco-testaceous, the thirteenth white, and the remainder nigro-fuscous. Pronotum quadrate, the surface smooth, with a median depression and two straight divergent depressions from the middle of the front margin, on either side of which the surface is slightly tumid; hinder third piceous, the rest nigro-fuscous, except the margined sides which are luteous. Remainder of body piceous above, the abdomen with a castaneous tinge, feebly punctate; beneath dirty pallid, posteriorly infuscated. Legs pale flavous, the femora clouded broadly with pale fuscous in the middle, the tibiæ next the base. Sides of last abdominal segment obscurely carinate. Forceps triquetral at base, straight to near the slightly incurved, bluntly pointed tip, the inner edge distantly and feebly granulate; viewed laterally they are feebly arcuate upward.

Length of body, including forceps, 13 mm.; forceps, 2.4 mm.; antennæ, 5 mm.

Named for Mr. A. de Bormans, who has so largely extended our knowledge of Forficulidæ within recent years.

Chatham Island, 1 female, Explorations U. S. Fish Commission, 1888.

This species differs from *A. maritima* Bon., to which it was at first referred by Bruner (but with doubt), in the much shorter antennæ with fewer joints and different coloring, the banding of the legs, the presence of a lateral carina on the last abdominal segment, and the somewhat stouter forceps. It seems to be more nearly allied to the group of species of Anisolabis found in Western America, — *A. azteca*, *A. annulicornis*, *A. antoni*, etc., — in which the antennæ have some of the subapical joints of a strikingly different color from the rest.

BLATTIDÆ.

Subfamily PERIPLANETINÆ.

Periplaneta americana (Linn.).

Periplaneta americana Butl., Proc. Zoöl. Soc. Lond., 1877, p. 87; Brun.!, Proc. U. S. Nat. Mus., XII. 193.

This species was first recorded by Butler from Charles Island; subsequently by Bruner from Chatham Island, but one of the specimens in the National Museum is marked from Charles Island. Explorations U. S. Fish Commission, 1888.

Periplaneta australasiæ (Fabr.).

Periplaneta australasiæ Brun.!, Proc. U. S. Nat. Mus., XII. 194.

Recorded by Bruner from Charles Island. Explorations U. S. Fish Commission, 1888.

Subfamily PANCHLORINÆ.

Nauphoeta cinerea (Oliv.).

Nauphoeta bivittata? Brun.!, Proc. U. S. Nat. Mus., XII. 194.

The three specimens from Chatham Island referred by Bruner to *N. bivittata* Brunn. (a synonym of the above) undoubtedly belong here. I notice in all of them, as in a specimen from Mazatlan in my collection, that the dark band between the eyes is not only broader, but also more deeply colored, than that between the antennæ, a point which the various descriptions of this species do not appear to mention. Explorations U. S. Fish Commission, 1888.

Nauphoeta circumvagans Brun.

Nauphoeta lævigata? Brun.!, Proc. U. S. Nat. Mus., XII. 194.

The other three immature female specimens referred to by Bruner as probably belonging here (under the synonymical name *N. lævigata* Pal.) come from Charles Island, and from their immaturity must be placed here with some doubt, though by the color of the head and pronotum, which are uniformly dark castaneous, and the structure of the terminal parts of the abdomen, it agrees completely with this species and differs from the preceding. Explorations U. S. Fish Commission, 1888.

Leucophæa surinamensis (Linn).

Panchlora surinamensis Butl., Proc. Zoöl. Lond., 1877, p. 87.
Leucophœa surinamensis Brun.!, Proc. U. S. Nat. Mus., XII. 194.

Butler first recorded this species from the Galapagos, his specimens coming from Charles Island. The specimens recorded by Bruner (Explorations U. S. Fish Commission, 1888) come from both Charles and Chatham Islands; while Dr. Baur also obtained two immature specimens at Chatham Island.

MANTIDÆ.

Subfamily MANTINÆ.

GALAPAGIA, gen. nov.

Allied to Musonia Stål. Body slender subfiliform, the abdomen moderately stout. Posterior ridge of head with a slight rounded appressed elevation on either side, the lateral lobes rising and embracing the prominent, completely lateral eyes; antennæ filiform. Anterior lobe of the pronotum half as long as the posterior lobe, and equal in length to either the meso- or the metanotum, expanded somewhat at base, broadly rounded, subtruncate and depressed at apex, the sides parallel in the middle half. Legs slender, feebly setulose, the fore coxæ provided at apex on either side with a slight triangular elevated lobe; fore femora slender, mesially ampliate, more than twice as long as the tibiæ, with four spines on the exterior margin all beyond the middle, two or three inferior partly recumbent spines just beyond the middle, and an irregular series of seven or eight on the interior margin; fore tibiæ of normal form with two spines beneath on the exterior margin apically and six on the interior margin, three large and three small, besides the apical spur; first tarsal joint of fore legs much longer than the tibiæ, of the other legs and especially of the hind

legs more than one third as long as the tibiæ; hind femora with no genicular spines. Female wingless; tegmina of male with the venation of Musonia. Abdomen slightly expanded before the apex, as in Brunneria; supra-anal plate lanceolate, nearly twice as long as basal breadth; anal cerci moniliform, considerably longer than the supra-anal plate, subcylindrical, subequal, only the last joint tapering.

This genus is closely allied to Musonia Stål (= Thespis Sauss.), differing from it mainly in the ultimate structure of the fore tibiæ, the great size and length of the anal cerci, and the apical expansion of the abdomen. It appears to fall between it and Brunneria.

Galapagia solitaria, sp. nov.

Plate I. Figs. 2, 3.

Sordid clay yellow, feebly marked with black or blackish fuscous. Head with a few scattered fuscous points and a blackish spot at either end of the transverse sulcus behind the ocelli; each side of the summit in front of the posterior ridge with a large shallow fovea; antennæ annulate with pale fuscous. Whole body with a heavy mediodorsal carina, feeble on the anterior lobe of the pronotum, evanescent behind the apex where the pronotum is slightly tumid. Legs dotted with fuscous. Sides of the dorsum of the body with a series of distant black dots, becoming enlarged, enfeebled, and elongated on the abdomen, where they are united by a faint fuscous stripe and accompanied by a broken blackish fuscous slender stripe at the extreme sides of the segments. Thorax with sparsely scattered raised points, at all distinct only on the lateral edges, where they are more abundant and larger. Supra-anal plate feebly granulate.

Length of body, female 35 mm.; of pronotum, female 9 mm.; of tegmina, male 23 mm.; of hind tibiæ, female 11.5 mm.

S. Albemarle Island, 1 male, L. Agassiz, Hassler Expedition; 1 female, Dr. G. Baur.

Subfamily VATINÆ.

Vates sp.

Vates sp. Butl., Proc. Zoöl. Soc. Lond., 1887, p. 88.

Butler mentions two larval specimens from Charles Island. It seems impossible that he should have referred the Mantid I have described above to Vates, and so I conclude this is the one Orthopteron recorded from the Galapagos which I have not seen.

ACRIDIDÆ.

Subfamily TRUXALINÆ.

CLOSTERIDEA (κλωστήρ, εἶδος), gen. nov.

Body moderately stout, broadest at the mesothorax and tapering conically in either direction, more rapidly in front; resembling in general appearance the Sphenariæ among Pyrgomorphina. Head shaped in general like that of Machœrocera; vertex slightly convex and rugose, separated from the plane but equally rugose vertical fastigium by a transverse sulcus near the front margin of the eyes; fastigium subtriangular, as long as broad, narrowly truncate and rounded in front, forming slightly less than a right angle with the frontal costa; lateral foveolæ obscure, shallow, obovate, visible from above; frontal costa narrow, gradually broadening below the ocellus, sulcate; face above rapidly, below the lower level of the eyes moderately declivent; eyes moderately prominent, very much shorter than the genæ; antennæ moderately slender, a little longer than the head and pronotum together, the fourth and succeeding joints depressed but not expanded, of nearly equal width throughout. Pronotum enlarging rapidly and regularly backward, truncate at both ends, subcompressed, the surface convex and hardly separate by a faint carina from the lateral lobes, which are longer than high, the front margin sinuate, the outer margin straight and horizontal in posterior half, oblique and faintly arcuate in anterior half. Prosternum unarmed. Minute and wholly inconspicuous elongate pads in place of tegmina. No wings. Fore and mid legs rather slight; hind femora rather slender, unarmed at tip, the genicular lobes rather slight; hind tibiæ enlarging only a little just before the tip, externally with nine, internally with ten spines. Abdomen subconical, compressed, rugose, carinate mesially, the last segment deeply sulcate longitudinally.

Closteridea bauri, sp. nov.

Plate I. Figs. 4, 5.

Whole body bluntly rugose, the rugæ often longitudinal, especially upon the pronotum. Griseous; sides of frontal costa and the equally prominent lateral carinæ of the face distantly pointed with black; clypeus and labrum tinged with luteous and brownish fuscous; antennæ sordid white, streaked and marked with brownish fuscous, apically punctate and with a few brief fine hairs. Sides of dorsal field of pronotum with a distinct smooth area, slightly depressed and sharply delimited, of a velvety warm brown, margined outwardly by the lateral carinæ, inwardly by an otherwise straight angulate line, which extends from in front a little inward across the prozona, outward across the

anterior half of the metazona, so that the band, narrow anteriorly, expands to about double breadth in the middle of the pronotum and terminates in a point; posterior margin of the pronotum subcrenulate, the margin embrowned. Hind femora pointed with black along the carinæ, beneath with obscure signs of a broad basal and a much narrower subapical fuscous fascia; hind tibiæ faintly obscured with fuscous apically and a little beyond the base, the spines tipped with blackish fuscous. Abdominal segments more or less marked with blackish fuscous apically, and distantly punctate with brown.

Length of body 22 mm.; antennæ 8 mm.; pronotum 4.5 mm.; hind femora 13.5 mm.

Wreck Bay, Chatham Island, 1 female, Dr. G. Baur.

Subfamily Œdipodinæ.

Sphingonotus fusco-irroratus, Stål.

Plate I. Fig. 8.

Œdipoda fusco-irrorata Stål, Eug. Resa, Entom., pp. 345–346.
Sphinctonotus fusco-irroratus Stål, Recens. Orthopt., I. 135.
Sphingonotus fusco-irroratus Sauss., Prodr. Œdip., 197, 209; Suppl., 79.
Trinerotropis placida? Brun.! (nec Stål), Proc. U. S. Nat. Mus., XII. 193.

This species was originally described by Stål from the Galapagos (without further specification) and from the island of Puná in the Gulf of Guayaquil. It will probably therefore be found upon the continent, but Saussure was unacquainted with it when he prepared his Prodromus. Stål remarks: "Specimen Punense in omnibus obscurius." The pallid tarsi in strong contrast to the apically infuscated tibiæ are not specified in his description.

Five specimens before me from Charles Island have the basal and middle dark bands of the tegmina more sharply defined and less inclined to be mottled than those, six in number, from Chatham Island, and have a less number of fuscous points in the apical third of the tegmina; otherwise, I can see no differences between them. A single specimen from Gardner Island is like the Chatham Island specimens, which is the opposite of what would be looked for, Gardner Island being a mere satellite of Charles and distant from Chatham. Bruner credits the two specimens he saw to James Island, but the labels attached to them are marked Chatham Island. The specimen from Gardner Island and three of the Charles Island specimens are of Dr. Baur's collecting. The remainder are from specimens collected by the naturalists of the "Albatross," on different occasions in 1888 and 1891.

Subfamily ACRIDINÆ.

Schistocerca melanocera.

Plate II. Figs. 5, 6.

Acridium melanocerum Stål, Eug. Resa, Ins. Orth., 326–327; Walk., Cat. Derm. salt. Brit. Mus., III. 582; Butl., Proc. Zoöl. Soc. Lond., 1877, p. 88.

Acridium (*Schistocerca*) *melanocerum* Stål, Rec. Orth., I. 65.

Schistocerca melanocera Brun.!, Proc. U. S. Nat. Mus., XII. 193.

? *Acridium tibiale* Walk., Cat. Derm. salt. Brit. Mus., III. 582–583; IV. 620; V., Suppl., 60.

This species was described by Stål from one or more females from the Galapagos without specification of the island from which they came, — judging from size only, probably from Charles or Indefatigable. Walker makes no specification of the separate islands in the Catalogue of the British Museum, but Butler records apparently the same specimens from Charles and Albemarle Islands. Bruner records it from Indefatigable, Charles, James, Albemarle, and Duncan; Riley, in an unpublished report, from Charles and Indefatigable. Baur collected it on several of these, and also on Chatham, Jervis, and Barrington; Professor L. Agassiz, on Charles, Albemarle, and Indefatigable; and Mr. A. Agassiz, though he collected no specimens of this species on Chatham Island, leads one to infer (Bull. Mus. Comp. Zoöl., XXIII. 68) that he saw it there. It is therefore known from eight different islands, or a larger number than any other species of Orthoptera. The 82 specimens seen by me come from the following: Charles, 13 males, 13 females; James, 1 male, 2 females; Duncan, 2 males, 6 females; Albemarle, 16 males, 7 females; Indefatigable, 7 males, 9 females; Jervis, 1 male; Barrington, 4 females; Chatham, 1 female; in all, 40 males, 42 females.

I have subjected all these specimens to a tolerably rigid scrutiny, but I cannot find sufficient grounds for separating those of the different islands as races, much less as varieties or species. The most that this material — all preserved in alcohol — will permit is that there appears a distinct tendency toward the formation of races. There is, for instance, distinctly a difference in size between specimens from the different islands, as the following table will show. It contains the results of the measurement of the length of the tegmina of every individual that permitted it; some were imperfect when captured.

Indefatigable,	6 males	(44–48), aver. 46.5 mm.	7 females	(51–64), aver. 60 mm.
Chatham,			1 "	59 mm.
Charles,	12 males	(41–48), aver. 44.3 mm.	13 "	(52–62), aver. 57 6 mm.
Barrington,			3 "	(52–57), " 54.7 "
Albemarle,	16 males	(42–47), aver. 44.75 mm.	7 "	(48–59), " 51 9 "
Jervis,	1 "	44 mm.		
Duncan,	2 "	42 mm. each.	5 females	(49–58), aver. 53.2 mm.
James,	1 "	38 mm.	2 "	(55–57), " 56 "
Total,	38 "	(38–48), aver 44.55 mm.	38 "	(48–64), " 56.2 "

Exception should be made to a small female (tegmina 48 mm. long) which has been left out of the table ; it is marked as from Indefatigable Island, and is one of those reported on by Riley, but I think it must have been wrongly labelled, for not only is it distinctly smaller than the smallest other female from this island, but it differs also from all of them in other points in which both males and females from that island agree. These points of resemblance are : in having the maculation of the tegmina subdued and inconspicuous, as is common generally among specimens from nearly all the islands (the single specimen in question being distinctly maculate in fuscous on a subhyaline ground, much as in the Duncan Island specimens) ; in having the metazona, or all except its extreme anterior portion, pallid or clay-yellow, in strong contrast to the deeply infuscated remainder of the thorax (the rejected specimen being uniformly light colored throughout, or only darker on the posterior portion of the lateral lobes of the prozona) ; and in lacking almost absolutely any light-colored quadrate patch on the prozona near the upper limits of the lateral lobes, common in Schistocerca, only one or two specimens showing a faint trace of it (while in this small female the mark is distinct and set off by a brown edging). My belief is that the specimen in question came either from Duncan Island (which is most probable) or from Albemarle Island. It was collected by the "Albatross" party of 1891.[1]

In general also, but not invariably, the wings of the specimens from Indefatigable Island are darker in the humeral and axillary areas, the cells in the apical half being completely and often deeply infumated, and at the same time the main rays of the anal area are infuscated and thickened; in this respect the specimens from Charles, James, and Chatham Islands most nearly or often quite resemble them ; so too, in all of these, the apical half of the anal area is generally faintly infumated besides the infuscation of the veins. Finally, the antennæ are generally luteous throughout in specimens from Indefatigable Island with little or no apical infuscation, though this is occasionally tolerably distinct ; the same is true only in the few specimens from James Island and the single one from Chatham Island.

The single female from Chatham Island, which agrees so well with the average size of the females from Indefatigable Island, seems also to agree with them in every other particular. I can find no feature in it which is not generally found in the others, and of one specimen in particular it is almost an exact duplicate.

[1] Since writing the above, which is left as first written, I have inquired of Mr. Agassiz about the track of the "Albatross" in 1891, and learn from him that the vessel did not touch at Albemarle Island, and that insects were collected only at Chatham, Charles, and Duncan Islands. He adds that one night was passed off Indefatigable Island, and the party who went on shore, he among them, did not so far as he recollects collect any insects ; it was late in the evening when they landed. There can therefore, I think, be little doubt that the specimen came from Duncan Island.

The specimens from Charles Island, most numerous in the collections, average a little smaller than those previously mentioned, but agree on the whole better with them than with those from any other island. The maculation of the tegmina, however, is still less conspicuous than in the specimens from Indefatigable Island, least so of all the Galapagos specimens; Albemarle specimens approach them in this particular most closely, and indeed very closely, but the ground color of the Charles Island specimens is usually darker, owing to a generally deeper and broader infuscation of the principal veins and their branches, like that common in the specimens from Indefatigable Island. The contrast between the lighter metazona and the darker prozona is only rarely as marked as in the specimens from Indefatigable Island, from which they further differ uniformly in the possession of the bright quadrate patch on the upper portion of the lateral lobes on the prozona. The infumation of the humeral and axillary areas of the hind wings is almost confined to the apical half and is there on the whole not so deep as in the Indefatigable Island specimens, while the principal rays of the anal area are rarely conspicuous, and, apart from the veins, the apical half of the anal area is rarely, and then but very faintly, infumated.

The Albemarle type may next be mentioned. The average specimens from that island are distinctly smaller than those already mentioned, though the largest are larger than the smallest (in each sex) on both Indefatigable and Charles Islands, and the smallest are among the smallest found anywhere. The maculation of the elytra is more subdued than in specimens from any of the islands excepting Charles, though this feature shows not a little variation, and, while distinct enough in some, in others is very feeble indeed; the general infuscation of the ground due to the obscurity of the veins is less in specimens from this island than in those of any other but Duncan Island, for the reticulation of the proximal half of the tegmina is almost entirely light colored; occasional specimens however are almost as dark as the average from Indefatigable Island. In the bipartite coloring of the pronotum and in the quadrate patch, the specimens from this island agree wholly with those from Charles Island, varying to just about the same degree. As to the wings, any infumation which exists — and it is sometimes entirely absent from the veins — is altogether confined to the apical half of the humeral and axillary areas and to the extreme border of the upper half of the anal area, while the thickened costal margin is generally completely luteous, with but slight infuscation except at the tip; while in the forms from the previously considered islands it is generally infuscated throughout, sometimes to a considerable degree.

Duncan Island, better than any of the other islands, possesses a type which might perhaps be regarded as a race, and since the specimen before mentioned as credited to Indefatigable Island agrees completely (with a single slight departure which will be noted) it is considered here. The most striking feature in the specimens is the decided and clearly delimited maculation of the tegmina, — in reality only an exaggeration of that found in specimens from all the

islands, but here particularly conspicuous from its generally deeper color and sharper delimitation, and from the nearly complete absence of any infuscation of the veins, so that the effect of the maculation is intensified by its contrast with the subhyaline, or, in the basal half of the tegmina, the pallid ground. There is little contrast between the ground color of the prozona and metazona, excepting that the lateral lobes of the prozona are generally infuscated, the dorsal area of both being nearly uniformly light colored flecked with fuscous; in two females, however, especially in one of them, the flecking is so much grosser on the prozona as to approach closely to what prevails elsewhere. All have a distinct light colored maculation near the summit of the lateral lobes. The apical half of the humeral and axillary areas is very faintly infumated, the costal margin is luteous throughout, and the apical margin of the anal area not at all, or in the slightest degree, infumated; it is here only that the specimen purporting to come from Indefatigable Island differs, in that the apex of the wing is decidedly infumated, though not nearly so densely as in the specimens from Indefatigable Island or some individuals from the others, as already noted; and it would indicate a range of variation in this point on Duncan Island far less than is found on some of the others. The antennæ are luteous at base, becoming gradually infuscated apically. The conspicuous dark maculation of the otherwise light tegmina and the feeble infumation of the apex of the wings, with the nearly uniformly colored dorsum of the prothorax and the relatively small size, are the distinctive marks of Duncan Island forms.

The other islands are poorly represented by specimens, and less can be said about them confidently. From each of two of them we have three specimens, but only in one case, James Island, both sexes. Here we find an anomaly in the striking contrast in the size of the sexes, which a larger number of specimens would probably alter; the single male is far the smallest from any of the islands, while the females are of the average size. In general they agree best with the specimens from Indefatigable Island, — in the maculation and ground color of the tegmina, the infumation of the wings, the uniform lightness of the antennæ, and in the coloration of the prothorax, except in the single point that the bright dash on the lateral lobes is tolerably distinct in all, and in one very fairly marked. There is however a single female from Albemarle Island which is almost a duplicate of one of the females from James Island in every particular except the apical infuscation of the antennæ in the former.

The specimens from Barrington Island, females only, vary but little. In all, the maculation of the tegmina resembles that seen in Indefatigable Island specimens, and the ground color and neural infuscation is the same in one; but in the others the apical half is distinctly hyaline, and the infuscation of the veins slight. The wings remind us of the Duncan Island type; their apical infumation is very slight, and there is no distinction worth pointing out. The contrasted coloring of the prozona and metazona are here more marked than in any other specimens, and the bright spot of the lateral lobes is most distinct. The antennæ are luteous only at the base, and almost immediately become black-

ish fuscous. On the whole, therefore, they approach most nearly the Duncan Island type.

The single specimen from Jervis Island, a male, is almost an exact duplicate of some of the similarly sized males from Albemarle Island, with faintly infumated wings.

From this review, we may conclude that three or four distinct types are becoming gradually differentiated on the eight islands from which they are known. The Duncan Island type is the most clearly marked, and is approached the most closely by the Barrington Island form. The latter shows, however, some closer points of resemblance to the Indefatigable Island type, with which the Chatham Island specimen agrees perfectly, and the James Island specimens nearly as well. The Albemarle Island type is another, with which the Jervis Island specimen agrees completely and the Charles Island form is not greatly removed from it.

Without doubt, more satisfactory results could be reached from the study of specimens which were properly preserved. All the specimens seen were killed and long immersed in alcohol, changing the character of the coloring and markings to an unequal and distracting degree; and as the sole differences (besides mere size) which we have been able to trace among specimens from different islands are drawn from the coloring and markings, it is much to be hoped that collections will some day be made in large numbers from every island, and from different points on Albemarle Island, killed in the cyanide bottle and preserved without contact with alcohol. Meanwhile this may serve as a preliminary study.

Mr. A. Agassiz states that this species is found only inland on the higher ground, while the next species is confined to the lower levels. Wolf made a similar observation.

Schistocerca literosa.

Plate II. Figs. 1, 3.

Acridium literosum Walk., Cat. Derm. salt. Brit. Mus., IV. 620–621; V., Suppl., 63; Butl., Proc. Zoöl. Soc. Lond., 1877, 88.
Schistocerca sp. Brun.!, Proc. U. S. Nat. Mus., XII. 193.

The male of this species was described by Walker from the Galapagos without mention of any island; but as the specimens described were collected by Darwin, and Butler includes some of Darwin's collection in his paper, Butler's specimens, two in number, which he credits to Charles Island are probably Walker's types. Bruner's specimens, 1 male, 3 females, are from Chatham Island. The specimens reported on by Riley, 4 females, are also from Chatham Island. Besides this Baur brought home 4 males, 2 females, from Chatham Island, 6 females from Hood Island, and 2 males from Tower Island. It has therefore now been obtained from four different islands, from

all of which excepting Charles Island I have examined specimens, though only females from Hood and males from Tower. The result of my examination of these is to convince me that each of these three islands (from two of which, curiously enough, Hood and Tower, *Schistocerca melanocera* has not been reported) supports a distinct race, which for convenience I have designated by a distinct name. For readier comparison, and to bring out the correspondences as well as distinctions, the characters are given in a tabular form. The race from Hood Island, *S. l. punctata*, is the largest of the three (length of tegmina 39.5–45.5, aver. 41.6 mm.), and that from Chatham Island, *S. l. discoidalis*, the smallest (length of tegmina, male 27–28.5, aver. 27.75 mm., female 36.5 mm.), *S. l. hyalina* from Tower Island being apparently intermediate (length of tegmina, male 31–31.5, aver. 31.25 mm.). The points of distinction between the several races are shown in the following table.

	S. L. DISCOIDALIS, Chatham Island.	S. L PUNCTATA, Hood Island	S. L. HYALINA, Tower Island.
1. Space between eyes	very narrow, about two thirds as wide as narrowest part of frontal costa.	rather narrow, scarcely or not narrower than narrowest part of frontal costa.	narrow, slightly narrower than the narrowest part of frontal costa.
2. Punctuation of frontal costa above ocellus	sparser than in the others.	closer than in *S. l. discoidalis.*	as in *S. l. punctata.*
3. Metazona	more nearly equal in length to the prozona than in the other races, being but one seventh to one eighth longer.	relatively longer than in the other races, being one third to one quarter longer than the prozona.	midway between the other races, being one quarter to one fifth longer than the prozona.
4. Lateral lobes of prozona	with a darker stripe in the ♂ than in *S. l hyalina*, the stripe extending upon the head; in the ♀ the stripe is less conspicuous.	in the ♀ (♂ unknown) as in ♀ of *S. l. discoidalis*, the stripe extending upon the head.	in the ♂ (♀ unknown) with a lighter stripe than in *S. l. discoidalis*, the stripe not extending upon the head.
5. Punctuation of metazona	midway in character between that of the other races.	deeper and larger than in the other races.	feebler and finer than in the other races.
6 Posterior branch of discoidal vein of tegmina	with four branches.	with five branches.	with five branches.
7. Fuscous spots of tegmina	numerous and rather heavy, especially in the inner discoidal area, where they are deeper in color and congregated.	as in *S. l. discoidalis*, the reticulation of the inner discoidal area denser than in the other races.	less numerous and lighter than in the other races, in the inner discoidal area but little darker and hardly at all congregated.
8. Anal area of wings	having all the veins, except close to the base, brown, breaking the hyaline surface into cells distinct throughout.	as in *S. l. discoidalis.*	having all the veins and cross-veins of the inner half pallid or luteous, making this portion of the wing purely hyaline.
9. Apical fissure of last abdominal segment of male	not deep, with a central tubercle at bottom, breaking the basal curve.	(unknown).	deep and uniformly U-shaped, with no basal interruption.

In Nos. 1, 2, 3, and 6, *punctata* agrees better with *hyalina* than with *discoidalis;* better with *discoidalis* than with *hyalina* in Nos. 4, 5, 7, and 8. In Nos. 1, 4, 7, and 8, *discoidalis* agrees better with *punctata* than with *hyalina;* better with *hyalina* than with *punctata* in No. 3. In Nos. 1, 2, 3, and 6, *hyalina* agrees better with *punctata* than with *discoidalis;* better with *discoidalis* than with *punctata* in Nos. 5 and 7. On the whole, *punctata* (Hood) stands between the other two, showing slightly closer affinity with *discoidalis* (Chatham) than with *hyalina* (Tower).

It is impossible, from Walker's meagre and unimportant description, to determine whether the race found on Charles Island (if indeed his specimens came from there) agrees with either of these three or not. In size it agrees perfectly with *S. l. hyalina*, but his "antennæ piceous, tawny toward the base," would seem to exclude it, and even more his description of the tegmina as "towards the base nearly wholly black," while his "front thinly punctured" points rather to *S. l. discoidalis*. It is more probable that Charles Island harbors a peculiar race.

This species, though a true Schistocerca, departs from the typical structure in the direction of Osmilia by the narrow space between the eyes, which is considerably less than the width of the upper narrowed part of the frontal costa. The prosternal spine is stout, cylindrical, narrowing only at the subacuminate tip. It has no sort of special relation to the Caloptenoid series, as stated by Walker (*loc. cit.*, V., Suppl., 63).

Mr. A. Agassiz states that this species is confined to the lower levels of the islands it inhabits, and is not found inland, where *S. melanocera* has its station. Wolf made a similar observation.

HALMENUS (ἅλλομαι), gen. nov.

Having the aspect of Pezotettix. Head pretty large, but appressed, higher and broader than the pronotum, the space between the eyes of the same breadth as the summit of the frontal costa; fastigium of vertex in front of eyes rhomboidal, plane, slightly declivent, rounded on the front lateral margins so as to join imperceptibly with the frontal costa, which is of subequal breadth, sulcate at and just below the ocellus, a little contracted at summit. Eyes subprominent, regularly ovate, half as long again as the genæ below them. Antennæ linear, subdepressed, much longer than head and pronotum together. Pronotum compressed, the dorsal area transversely gently convex, melting gradually with no carina into the lateral lobes; metazona faintly carinate, posteriorly obtusangulate and much shorter than the prozona, the latter cut by two distinct sulci, one scarcely in front of, the other a little behind, the middle; lateral lobes longer than high, both angles obtuse, the lower margin truncate a little obliquely in front; no humeral sinus. Prosternal spine erect, conical, bluntly pointed. Mesosternal lobes distant but nearer apically than at base, with straight margins; metasternal lobes approximate in the male, almost as distant as the mesosternal lobes in the female. Tegmina abbreviated, sublanceolate,

about as long as the pronotum. Hind femora unarmed above, rather slender, reaching the extremity of the abdomen; hind tibiæ with smooth margins between the spines, the inner and outer series of which are of nearly equal length, the outer series consisting of nine spines, the last before the apex; second joint of tarsi not half so long as the first. Last dorsal segment of male abdomen deeply and broadly concave, unarmed, centrally emarginate.

Halmenus robustus, sp. nov.

Plate I. Figs. 6, 7.

Pezotettix vic. sp. Brun.!, Proc. U. S. Nat. Mus., XII. 193.

Head and dorsum of pronotum testaceous, the frontal costa sometimes dotted above with fuscous, as is also the vertex next the eyes; antennæ concolorous, sometimes infuscated on the apical half; lateral lobes of prozona blackish fuscous (extending upon the head as a quadrate spot behind the eye) with a bright white broad broken and bent stripe below, the lower margin of irregularly mingled black and white; the white band extends also across the metazona, but above it the lobes are testaceous, longitudinally streaked with black. Prozona coarsely and very faintly rugose; metazona heavily punctate. Tegmina strongly infuscated except on dorsal field. Outer face of hind femora with extreme basal, premedian, and faint postmedian oblique blackish fuscous stripes, the geniculations infuscated; tibiæ uniformly testaceous, the spines black-tipped. Abdomen heavily marked with black, especially on the sides.

Length of body, male 30 mm., female 32 mm.; pronotum, male 7.5 mm., female 8.5 mm.; hind femora, male 15.5 mm., female 18.5 mm.; tegmina, male 9.5 mm., female 11 mm.

Conway Bay, Indefatigable Island, August 6, 1 male, 1 female, G. Baur; Indefatigable Island, 1 male, U. S. Fish Commission, 1888; James Island, 1 male, immature, U. S. Fish Commission, 1888.

DESMOPLEURA (δεσμός, πλευρά), gen. nov.

Body parallel-sided. Head prominent, the summit horizontal, scarcely convex, the fastigium of vertex slender, elongate, declivent, sulcate, apically broadened; front pretty strongly declivent, the costa subequal throughout and sulcate, scarcely contracted below the ocellus and only a little narrower above, where it equals the width between the eyes; lateral carinæ of face prominent; eyes elongate, rather prominent, longer than the genæ beneath them; last joint of maxillary palpi apically truncate, similar to the preceding; antennæ linear, longer than head and pronotum combined. Pronotum compressed, subequal, very obtusely angulate behind, subtruncate in front, the sulci feebly impressed but distinct, the dorsum feebly convex with no lateral carinæ; lower side of the lateral lobes mesially broadly angulate; prosternal spine conical, appressed to the mesosternum; mesosternal lobes distant; metasternal lobes subcontiguous

in the male, enclosing between them two deep contiguous fossæ. Tegmina and wings fully developed, the former slender. Hind femora slightly surpassing the tip of the abdomen, the dorsal margin unarmed; hind tibiæ not ampliate nor with ampliate margins, the spines on either side subequal, the outer series consisting of nine spines, with none at the apex; first and third joints of hind tarsi subequal, the second less than half as long as either of them. Last ventral segment of male elongate, triangularly produced.

This genus is very distinct from any known to me autoptically, appearing to be most nearly allied to Aptenopedes Scudd., and Rhytidochrota Stål.

Desmopleura concinna, sp. nov.

Plate II. Figs. 2, 4.

Euprepocnemis sp. Brun.!, Proc. U. S. Nat. Mus., XII. 193.

Whole body pallid beneath, the sides and front of head and lower half of lateral lobes of pronotum faintly suffused with pink; a broad dorsal blackish fuscous band, broken by a mediodorsal lighter interrupted stripe, extends over head and prothorax, a broad piceous band runs from behind the eye across the upper half of the lateral lobes of the pronotum, separated from the dorsal band only by a clay-yellow stripe; and the tegmina have all the veins blackish fuscous except those along the ulnar-anal area, which is clay-yellow in continuation of the pronotal stripe. The fore and mid legs and the dorsal area of the hind femora are light pinkish brown, the genicular lobes of the hind femora and the larger part of the hind tibial spines black. The frontal costa of the head is feebly and sparsely punctate above, the summit is delicately carinate, the carina invading the sulcate fastigium. The pronotum is smooth, carinate and feebly punctate, and very sparsely furnished with fine hairs of moderate length; the legs and abdomen are similarly furnished.

Length of body, 13.5 mm.; of antennæ, 6.5 mm.; pronotum, 3.2 mm.; tegmina, 11 mm.; hind femora, 9 mm.

James Island, 1 male, U. S. Fish Commission, 1888.

LOCUSTIDÆ.

Subfamily PHANEROPTERINÆ.

Anaulocomera darwinii, sp. nov

Plate III. Figs. 1, 4, 5.

Anaulacomera cornucervi? Brun.! (nec Brunn.), Proc. U. S. Nat. Mus., XII. 192–193.

Green, unicolorous. Fastigium of vertex triangular with broadly emarginate sides, beyond the middle strongly compressed, apically subacuminate, above

sulcate, the sides tinged with reddish. Pronotum with the disk plane, the lateral lobes at almost exactly a right angle to it, the angle rounded, the lobes of equal height and length, truncate in front, broadly rounded beneath and behind. Stridulating area of the male tegmina slightly infuscated, marked in the female with a fuscous spot. Fore femora feebly armed beneath with a single spine, middle femora with three spines. Last dorsal segment of male abdomen rather deeply and broadly emarginate. Anal cerci of male excessively long, arcuate, and nearly as stout at base as the distal extremity of the slender and weak femora, apically biramose, the upper arm the shorter, directed backward and upward and somewhat incurved, compressed, tapering and bluntly pointed, the lower at right angles to the first, directed downward and backward and bent a little inward, subcylindrical, but compressed and terminating in a constricted aduncate subhelicoid process. Ovipositor of female large, arcuate, tapering toward either end, pointed, armed as in *A. cornucervi* Brunn.

Length of body, male 13 mm., female 16 mm.; tegmina, male 20 mm., female 21.5 mm.; hind femora, male 11.5 mm., female 13.5 mm.; ovipositor, female 8 mm.; cerci, male 5.3 mm.

This species is most nearly allied to *A. cornucervi* Brunn., to which it was referred by Bruner doubtfully, but it differs in the character of the last abdominal segment, and in the cerci, which are not toothed at the base and are even more extravagant in form than in that species; the fastigium of the vertex is also very different.

Chatham Island, 1 male, U. S. Fish Commission, 1888; Wreck Bay, Chatham Island, 1 male, 1 female pupa, June, G. Baur; Indefatigable Island, 1 female, U. S. Fish Commission, 1888.

Subfamily PSEUDOPHYLLINÆ.

NESŒCIA (*νῆσος, οἰκέω*), gen. nov.

Allied to Meroncidius; of stout form. Head not prominently exserted; face broad, smooth, strongly appressed, the margins of the mandibles visible beyond the sides of the clypeus; fastigium of vertex not extending beyond the auriculate antennal scrobes, triangular, bluntly pointed, tuberculate at base on either side, deeply sulcate and arcuato-declivent; frontal costa between the lower portion of antennal scrobes compressed ovate, separated from the fastigium by a deep arcuation; antennæ twice as long as body, apex of first joint with a rather small intero-posterior spine. Pronotum broadly rounded in front, the middle elevated to a slight tubercle, not at all produced posteriorly, but truncate; the lateral lobes simple, trapezoidal, the anterior angle subrectangular, the lower margin straight and faintly oblique, the hind margin not at all produced; disk crossed by two very distinct sulci, subequidistant from each other and the margins. Prosternum bispinose; mesosternum obliquely and broadly sulcate on either side from the centre toward either anterior outer angle,

broadly transverse like the metasternum, both with a pair of very deep fossæ posteriorly, united by a deep transverse sulcus, which in the metasternum is nearly as deep as the fossæ and arcuate, the fossæ more distant in the mesosternum (where each is nearer the other than the outer margins of the lobes) than in the metasternum; lobes of both forming tumid bosses more or less obliquely disposed. Tegmina abbreviated, of about the length of the pronotum, the inner margins divergent in the female, parallel and attingent beyond the stridulating area in the male, densely reticulate, the principal veins distinct and subparallel. Fore tibial foramina visible from above as similar longitudinal slits with rounded borders, the tibiæ but slightly enlarged by their presence; fore femora slightly shorter than the middle pair, both with a pair of subapical spines on their anterior carina; hind femora twice as long as fore pair, armed externally beneath with four spines toward the apex, the genicular lobes small and rounded; hind tibiæ with no apical spine above on the outer side.

Nescœcia cooksoni.

Plate III. Figs. 9, 10.

Agrœcia cooksoni Butl., Proc. Zoöl. Soc. Lond., 1877, pp. 87–88.
Bucrates? cocoanus? Brun.! (nec Boliv.), Proc. U. S. Nat. Mus., XII. 192.

There is no doubt that the insect described by Butler is the one before me, although placed by Butler in an entirely wrong subfamily. Butler's specimens were immature; at least he so regarded them and made no mention of tegmina, though the largest were certainly full-sized; he reported them from Charles and Albemarle Islands. The specimen referred hesitatingly by Bruner to *Bucrates cocoanus* Boliv. (also to a wrong subfamily) was immature, and was taken on Charles Island by the U. S. Fish Commission in 1888. L. Agassiz on the "Hassler" expedition took 1 male and 1 female mature on Albemarle Island, the female in a bird's nest; and G. Baur obtained mature specimens (2 males, 2 females) on Albemarle Island at La Tosa in July; and an immature specimen at Aquada on Indefatigable Island. I append measurements of the adult.

Length of body, male 33 mm., female, 33 mm.; of pronotum, male 6 mm., female 6.5 mm.; tegmina, male 8 mm., female 7 mm.; hind femora, male 15.5 mm., female 17 mm.; ovipositor, female 13.5 mm.

Subfamily CONOCEPHALINÆ.

Conocephalus insulanus, sp. nov.

Plate III. Figs. 2, 3.

Probably green in life, the specimens in hand discolored by alcohol. Fastigium of vertex short, broad, apically rounded, with parallel sides barely ex-

tending by its own breadth beyond the front margin of the eyes, beneath with a subapical slender transverse fuscous stripe, fading laterally. Lateral lobes of pronotum subangulate in the middle, rounded in front and behind. Tegmina and ovipositor alike extending beyond the middle of the extended hind tibiæ, the costal vein of the former very slightly divergent from the radial, indistinct. Fore femora in the female with one subapical spine, middle femora with two, both unarmed in the male. Ovipositor as long as the hind femora, straight, slender, infuscated at extreme apex. Last dorsal segment of male very broadly and subtriangularly emarginate. Anal cerci of same stout, a little arcuate, apically enlarging, with a superior apical tooth directed inwards, beneath which is a larger subapical, stout, subconical denticle, more strongly incurved and nearly as long as the cerci, terminating in a spine.

Length of body, male 33 mm., female 35–37 mm.; pronotum, male 8.7 mm., female 8.5–8.7 mm.; tegmina, male 45 mm., female 49–51 mm.; hind femora, male 24 mm., female 27 mm.; ovipositor, female 25–27 mm.

This species is closely allied to *C. dissimilis* Serv., *C. hebes* Scudd., and allies, but differs in the length of the ovipositor and the character of the male cerci.

Wreck Bay, Chatham Island, G. Baur, 2 males, 2 females.

GRYLLIDÆ.

Subfamily GRYLLINÆ.

Gryllus galapageius, sp. nov.

Plate III. Fig. 8.

Gryllus domesticus aff. Brun.!, Proc. U. S. Nat. Mus., XII. 192.

Of the size and general appearance of *G. luctuosus* Serv., to which it is apparently most nearly allied. Piceous, the head with no interantennal stripe, and finely punctate, like the pronotum, which is unrelieved by any variation in color, except that the disk has a pair of faint and obscure minute reddish spots and the hind margin is narrowly dull castaneous. The inner face of the anterior tibiæ has no distinctly formed tympanum, but is simply provided with a slight elongate and very slender excavation with no membrane; it is so small as easily to escape observation, and on this account I was at first inclined to place the insect in Gryllodes, which the form of the pronotum, the abundance of rhomboidal cells in the dorsal area of the tegmina, and the general aspect will not permit. Legs fusco-rufous, the hind tibiæ obscure. Tegmina a little longer than the body, blackish fuscous at base, becoming gradually testaceous apically, the deflected marginal field fusco-luteous with pallid veins, the space separating the marginal and dorsal fields distinctly luteous; mediastinal vein three-branched, the last branch just before the tip. Wings very long, nearly

double the length of the tegmina. Ovipositor as long as the body, luteo-castaneous. Cerci very long, brown, clothed thinly with very long fine hairs.

Length of body 16 mm.; tegmina 11.5 mm.; wings beyond tegmina 10 mm.; hind femora 11 mm.; ovipositor 15.5 mm.; cerci 12.5 mm.

Nine immature specimens from Charles and Chatham Islands, all but two of them males, agree in coloration and general appearance with the single female from Albemarle Island described above, so that there can hardly be a doubt that they belong together. The only difference is that the abdomen of the immature specimens is very faintly and very obscurely mottled with dull red. U. S. Fish Commission, 1888, 1891.

While resembling *G. luctuosus* Serv. more than any other species known to me, and having like it an ovipositor as long as the body and very long wings, this insect differs from all the species mentioned by Saussure in the lack of a tympanum on the inner face of the fore tibiæ, by which it is distinctly allied to the genus Gryllodes. It differs further from *G. luctuosus* in the three-branched mediastinal vein of the female tegmina, the greater relative length of the ovipositor, and the darker color of both body and tegmina, the latter of which are marked in much the same way.

Gryllus sp.

A second species of Gryllus, but unfortunately represented in the collections only by three female pupæ, occurs on Charles Island. It differs from pupæ from the same island and from Chatham (all referred to the preceding species with only the doubt inherent in their immature condition) in the decidedly narrower tegminal pads and in coloration, being much and conspicuously mottled, especially upon the abdomen. The pronotum is less enlarged anteriorly, but otherwise, and especially in the lateral lobes, of the same form; the basal color, however, is not piceous but polished blackish castaneous, the front of the lateral lobes and both front and posterior portions of the dorsum more or less fusco-luteous in longitudinal dashes. It is of a slightly larger size at what is apparently the same age.

Subfamily MYRMECOPHILINÆ.

Cycloptilum erraticum.

Plate III. Figs. 6, 7.

Head yellowish testaceous, the clypeus dotted with fuscous increasingly from base outward, the lower portion, with the labrum, completely infuscated; eyes subtriangular, broadest above; maxillary palpi testaceous, the last joint much enlarged, obliquely truncate, and as long as the third; antennæ much longer than the body (apparently twice as long but broken), the basal joint the

color of the head, the remainder a little paler, excepting an occasional joint (at sub-regular intervals of about a dozen joints) which is narrowly ringed with fuscous; besides this all the joints are finely ringed with pallid at their base, and as finely twice or thrice ringed with light fuscous. Pronotum large, long, a third longer than its greatest posterior breadth, broadly rounded behind, the lateral lobes forming posteriorly a faint rounded angulation with the plane dorsum, light castaneous, the anterior third or more much mottled with flavous and having a faint median carina. Tegmina reddish testaceous, the membranous parts white, extending just as far back as the pronotum. Legs testaceous, the upper surface of the fore femora with a few ranged granulations. Abdomen brownish fuscous, becoming blackish fuscous on the sides, especially on the anterior parts of the segments. Supra-anal plate strongly transverse, hinder border very broadly and regularly convex, entire, its tip surpassed by a pair of minute, upcurved, cylindrical, bluntly terminated processes; subgenital plate subtriangular, rounded, convex, simple.

Length of body 8.5 mm.; pronotum 4.25 mm.; hind femora 5 mm.

Charles Island, G. Baur, 1 male.

This species is much larger than any other of the genus, excepting *C. brasilianum* Sauss., from which it differs in the longer terminal joint of the palpi, the shorter tegmina, and the relatively longer pronotum. Nevertheless this appears to be its nearest ally.

EXPLANATION OF THE PLATES.

(The drawings are by J. H. Emerton.)

PLATE I.

Fig. 1. Anisolabis bormansi, female; dorsal view. $\frac{4}{1}$.
" 2. Galapagia solitaria, female; dorsal view. $\frac{3}{1}$.
" 3. Galapagia solitaria, male; dorsal view. $\frac{3}{1}$. The cross veins are not shown.
" 4. Closteridea bauri, female; lateral view. $\frac{3}{1}$.
" 5. Closteridea bauri, female; dorsal view. $\frac{3}{1}$
" 6. Halmenus robustus, female; head and thorax, dorsal view. $\frac{3}{1}$.
" 7. Halmenus robustus, female; lateral view. $\frac{1}{1}$.
" 8. Sphingonotus fusco-irroratus, female; dorsal view. $\frac{2}{1}$.

PLATE II.

Fig. 1. Schistocerca literosa, female, from Chatham Island; dorsal view. $\frac{1}{1}$.
" 2. Desmopleura concinna, male; lateral view. $\frac{2}{1}$.
" 3. Schistocerca literosa, female, from Chatham Island; lateral view. $\frac{1}{1}$.
" 4. Desmopleura concinna, male; dorsal view. $\frac{2}{1}$.
" 5. Schistocerca melanocera, female, from Barrington Island; dorsal view. $\frac{1}{1}$.
" 6. The same; lateral view. $\frac{1}{1}$.

PLATE III.

Fig. 1. Anaulacomera darwinii, female; lateral view. $\frac{2}{1}$.
" 2. Conocephalus insulanus, female; lateral view. $\frac{3}{1}$.
" 3. Conocephalus insulanus, male; dorsal view of abdominal appendages. $\frac{4}{1}$.
" 4. Anaulacomera darwinii, male; dorsal view of abdominal appendages. $\frac{4}{1}$.
" 5. Anaulacomera darwinii, male; lateral view. $\frac{3}{1}$.
" 6. Cycloptilum erraticum, male; dorsal view. $\frac{3}{1}$.
" 7. Cycloptilum erraticum, male; lateral view. $\frac{3}{1}$.
" 8. Gryllus galapageius, female; dorsal view, with one of the tegmina removed. $\frac{1}{1}$.
" 9. Nesœcia cooksoni, female; lateral view. $\frac{1}{1}$.
" 10. Nesœcia cooksoni, male; dorsal view. $\frac{1}{1}$.


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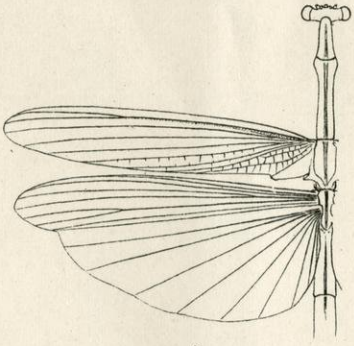
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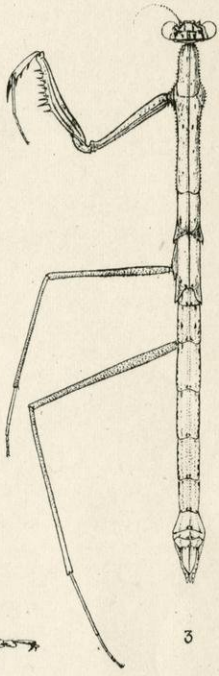
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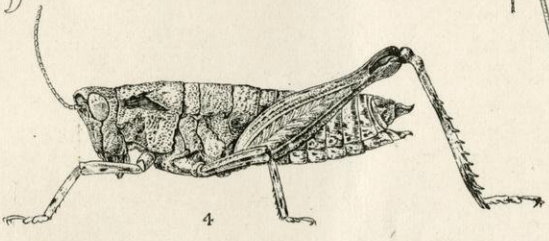
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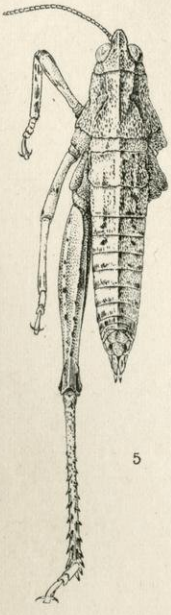
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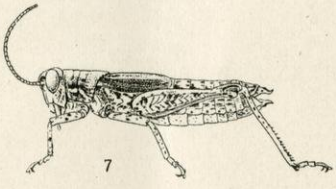
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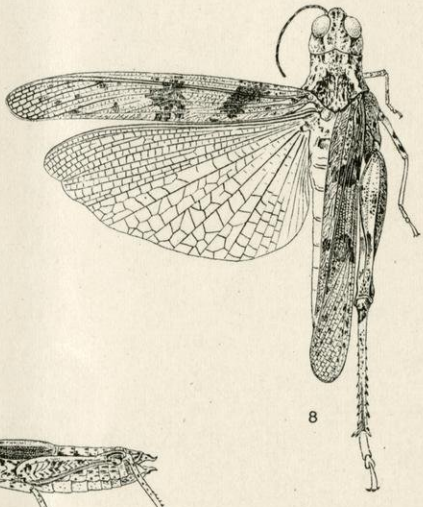
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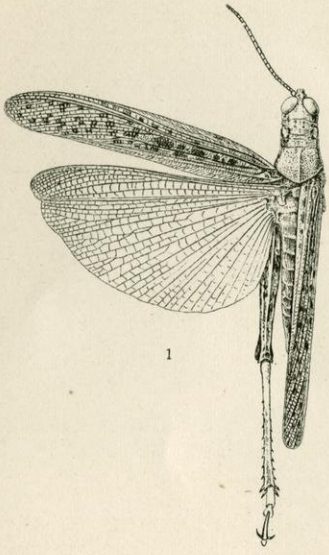

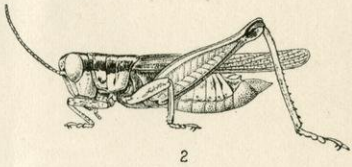

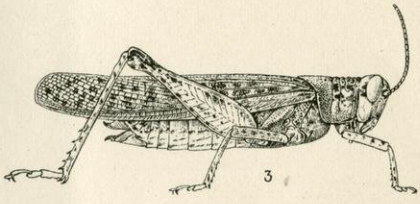

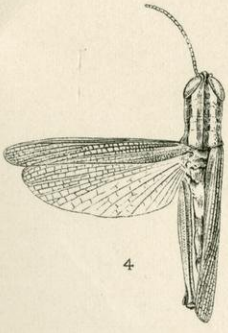

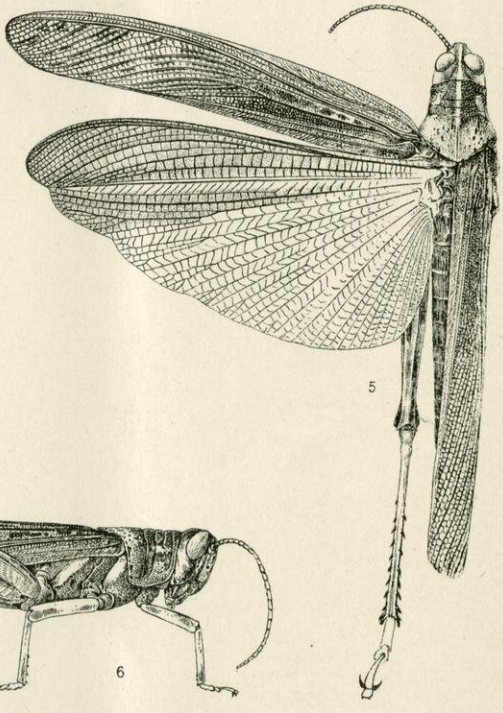

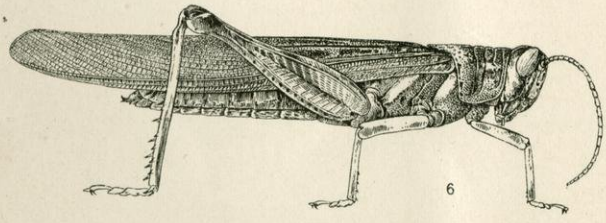

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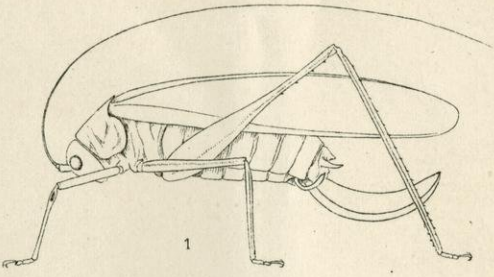

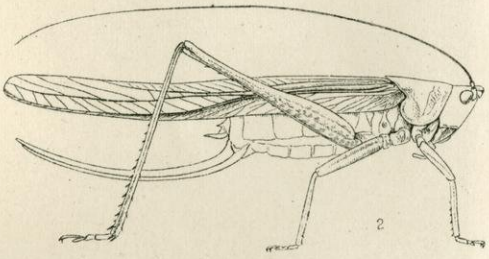

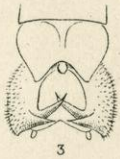

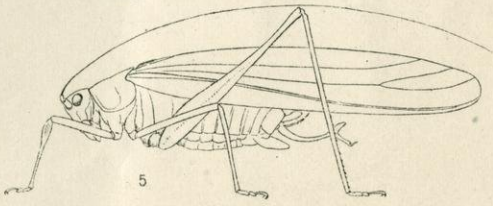

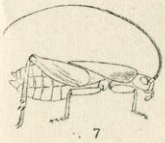

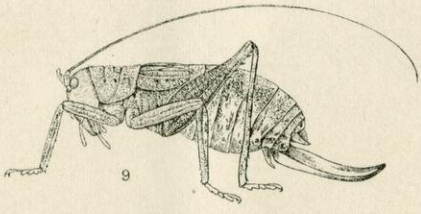

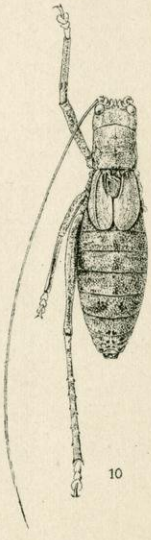

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THE FOLLOWING REPORTS ARE IN PREPARATION ON THE DREDGING OPERATIONS OFF THE WEST COAST OF CENTRAL AMERICA TO THE GALAPAGOS, TO THE WEST COAST OF MEXICO, AND IN THE GULF OF CALIFORNIA, IN CHARGE OF ALEXANDER AGASSIZ, CARRIED ON BY THE U. S. FISH COMMISSION STEAMER "ALBATROSS," DURING 1891, LIEUT. COMMANDER Z. L. TANNER, U. S. N., COMMANDING.

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H. B. WARD. The Sipunculoids.

H. V. WILSON. The Sponges.

W. McM. WOODWORTH. The Planarians.

[1] Bull. M. C. Z., Vol. XXI., No. 4, June, 1891, 16 pp.; and Vol. XXIII., No 1, February, 1892, 89 pp., 22 Plates.

[2] Mem. M. C. Z., Vol. XVII., No. 2, January, 1892, 95 pp., 32 Plates.

[3] Bull. M. C. Z., Vol. XXIV., No. 7, August, 1893, 72 pp.

[4] Bull. M. C. Z., Vol. XXIII., No. 5, December, 1892, 4 pp., 1 Plate.

[5] Bull. M. C. Z., Vol. XXIV., No. 4, June, 1893, 10 pp. [Zool. Anzeig., No. 420, 1893.]

[6] Bull. M. C. Z., Vol. XVI., No. 13, July, 1893, 3 pp.

[7] Bull. M. C. Z., Vol. XXV., No. 1, September, 1893, 25 pp.

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