The American forms most nearly allied to *S. putris*, namely *S. ovalis* Say (*obliqua* Say) and *S. totteniana* Morse (now usually considered a race or variety of *ovalis*), differ conspicuously from my Siberian species in the jaw, which has no salient median inferior projection, and equally in the teeth, the pointed mesocones being much longer, while the marginals have two little cusps. There is thus no possibility of specific identity.

A remarkable thing about the genus *Succinea* is the presence of species on remote islands, such as the Hawaiian Islands (numerous species), Galapagos Islands Cocos Island, Clarion Island, Sokotra, etc. Darwin thought that the young might be carried on the feet of birds. Lyell thought that the eggs might be carried among the feathers of water-fowl.

ENTOMOLOGY.—*Notes on* Grylloblatta *with description of a new species.* A. N. CAUDELL, National Museum.

The examination of additional specimens of the *Grylloblatta* found in California, as recently announced[1] by the writer and of a topotypic nymph of the Canadian species *campodeiformis* Walker, makes it advisable to describe the specimens from California as belonging to a distinct species. Dr. E. M. Walker has kindly examined the holotype of the Californian form and pronounces it unquestionably distinct from the Canadian species. It is therefore here described as:

Grylloblatta barberi, new species.

The type of this species is the large male nymph discussed in the aforementioned article. In general appearance it is very like the Canadian *campodeiformis* but structurally it differs from that species as follows: The antennae are composed of a greater number of segments, their number ranging from 35 to 40 while the maximum number noted in the related species is 29 in the adult, a nymph of that form before the writer having 25. The antennae are also decidedly longer than in the Canadian form, as shown by measurements given below. The posterior femora are, as noted in the previous article, longer than in *campodeiformis*, the appended comparative measurements being illustrative. The transverse sulcus near the anterior margin of the pronotal disk is sinuate in all specimens seen while in *campodeiformis* it is straight as shown by Walker's description and illustrated in the immature specimen of that species examined. Thus the characters mentioned as differential in the former article appear to be constant and specific except for the fact that the posterior margin of the pronotal disk is obtuse-angulate in the nymphs of both species, thus being a nymphal character. The cerci are more tapering and considerably longer than in *campodeiformis* and the large nymph selected as holotype, which is very probably in the last

[1] Can. Ent. 55: 148–150. 1923.

nymphal instar, has the same number of segments as described for adults of the Canadian form; in the earlier stages, however, only seven segments are present. The smaller female nymphs have the inner valves of the ovipositor arising caudad of the ventral ones and scarcely exceeding the tips of the latter.

The following measurements are from the four immature specmens forming the basis of the present description, from a single immature topotypic female of *campodeiformis* and from measurements given in Dr. Walker's published articles, or inferred therefrom.

		TOTAL LENGTH TO TIP OF ABDOMEN	ANTENNAE	PRONOTUM	POSTERIOR FEMORA	CERCUS	NUMBER OF SEGMENTS IN THE ANTENNAE	NUMBER OF SEGMENTS IN THE CERCUS
		mm.	*mm.*	*mm.*		*mm.*		
Grylloblatta barberi n. sp.	Holotype ♂ nymph.	20	15	3	5	6	40 and ?	8
	Paratype A. ♂ nymph.	19	14	2.8	4.5	5.8	39 and ?	8
	Paratype B. ♀ nymph.	17	11	2.5	4	5	35 and ?	7
	Paratype C. ♀ nymph.	18	?	?	4	4.25	36 and 38	7
Grylloblatta campodeiformis Walker.	Type, adult ♀.	30	8.5	?	3.4	3.6	26 to 29	8
	Cotype, adult ♀.	30	9	?	3.2	3.5	26 to 29	8
	Topotype, adult ♂.	16.5	?	?	?	?	? ?	8
	Topotype, ♀ nymph.	15	?	?	3.25	?	? ?	8
	*Topotype, ♀ nymph.	13	7	2	2.5	3.5	25 and 25	7
	Topotype, ♂ nymph.	11	?	?	2.75	?	22 and ?	8
	Topotype, ♂ nymph.	11	?	?	2.1	?	? ?	8
	Topotype, ♂ nymph.	12.5	?	?	3.1	?	? ?	8

*Specimen examined by the writer and now in the National Museum.

The type material of *barberi* consists of four specimens as follows: Holotype, the large male nymph, evidently in the last instar, taken by H. S. Barber on January 23, 1923, in Plumas County, California and discussed in the previous paper by the present writer;[2] paratype A, an immature male, also probably in the last instar, taken at the same locality as the holotype by F. J. Silor; paratype B, an immature female specimen of an earlier instar than the above but with the same data; paratype C, with same data as the last and evidently in the same stage of development.

Holotype and paratypes A and B in the collection of the United States National Museum; paratype C sent in exchange to Dr. E. M. Walker.

Cat. no. 27265 U. S. N. M.

The writer takes pleasure in dedicating this interesting species to Herbert S. Barber of the National Museum in recognition of his ability to discover interesting and unusual forms of insect life in unsuspected places.

[2] See footnote 1.

NOTES

The paratypes of *Grylloblatta barberi* were taken by Mr. Silor some five hundred feet above the point where Mr. Barber collected the holotype, one being found in an outhouse and the others under pieces of timber. Mr. Silor writes that if they are exposed by turning over the timber on a hot day and the sun hits them, they move slowly, but if they are found on a cloudy day they run rapidly. Dr. Walker writes that living specimens of *Grylloblatta campodeiformis* observed by him ran about like cockroaches, and would eat nothing but cake; Mr. Hearle found, however, that they would feed readily on flies with the wings removed, and Dr. C. G. Hewitt fed specimens on ant pupae.

The antennae of *Gryloblatta* bear sensory pits, small circular scars present on all segments except the apical one. There are several on each segment forming a preapical circle around each segment except the basal one, where they are apparently absent on the dorsal surface. From each of these scars or pits arises a very long and slender tactile hair, longer than the setae and finer than the ordinary hairs. These organs are present in both species of *Grylloblatta* and also in the Asiatic *Galloisiana nipponensis* of Caudell and King, though in the latter species they are less obvious.

Both species of *Grylloblatta* and *Galloisiana nipponensis* possess an invaginated gland which opens between the first and second ventral abdominal segments. Normally this gland is noticeable only as a pair of transverse, closely appressed lips, but in two of the immature specimens of *Grylloblatta barberi* a soft, white, tongue-like process is protruded; in the larger nymph this process is about three-fourths of one millimeter in length and about one-fourth as thick as long. This gland is present in both sexes and in a single immature specimen of *Grylloblatta campodeiformis* studied by the writer it is partly protruded and the apex appears truncate and slightly chitinized, an appearance not noticed in *barberi*. On the posterior margin of the basal segment of the abdomen, just above this gland, there is a pair of small setae. In *Galloisiana nipponensis* this gland is obscurely indicated in the two alcoholic nymph studied, being not at all extruded; the only adult specimen of that species seen has the venter mostly eaten away by ants. The glandular structure discussed above can not be satisfactorily investigated without dissection, and limited material makes this inadvisable.

Dr. Walker in his description of the nymphs of *Grylloblatta campodeiformis* notes that the cerci consist of eight segments, the same as in the adult, but with the basal two segments less distinctly separated. This is not true, however, of a topotypic nymph of that species examined by the present writer, as in this specimen the cerci are but seven segmented, and the basal one of these seven segments is so closely amalgamated with the succeeding one as to be recognized as distinct only by setal arrangement and the position of sensory pits.