

colony of the larvae in the same trunk and also a good series of imagoes. Some of my larvae kept since January have shed so many skins that they are now only half the size they were at first. While I do not suppose that this Lampyrid is absolutely a cactus insect, it is as much so as many of the Staphylinidae. As I wrote before I have the larvae of *Maseochara velutina* or *opacella*; they are running free among the swarming insects in the rotten pulp, and I see no evidence of their inhabiting the puparia of the Volucellas.

The other day I tore to pieces a cactus stump that had rotted and dried up, and inside I found several cocoons of the large weevil *Cactophagus validus* that had no exit holes. I cut into one with my knife and found to my great surprise not only the chitinous fragments of the weevil larva but also about 90 specimens of a Colydiid beetle

(*Bothriдерes cactophagi* Sz. n. sp.), all imagoes and all dead and more or less mutilated. Among them were 5 or 6 skins of a dermestid larva (*Attagenus hornii*) with a long thin pencil of hairs at the tail and long yellowish pubescence on the sides and beneath. There was no trace of the larva of the Bothriдерes. I found on close inspection a small ragged hole at one end of the cocoon sufficient to pass out or in a Dermestid or Colydiid beetle. Another Cactophagus cell opened by me contained 55 species of the Bothriдерes, a third 76 specimens, and still another cell contained a dead and moldy larva of the Cactophagus and only one dead imago of Bothriдерes. Not a single specimen of Bothriдерes in the whole lot is perfect. I would like to know what these Bothriдерes are doing there in such numbers, as if they had been caught in a trap and died there.

APPENDIX.

DESCRIPTION OF NEW SPECIES OF COLEOPTERA.

BY E. A. SCHWARZ.

CRYPTOPLEURUM CEREI, n. sp. (family Hydrophilidae).—Broadly oval, convex, shining, sparsely pubescent above, piceous black, antennae, palpi and legs pale testaceous, elytra either entirely or only at apex reddish. Head finely and rather sparsely punctulate, second joint of maxillary palpi moderately thickened at middle, not inflated. Thorax, when viewed from above, with the sides not rounded but obliquely narrowing from base to apex; the inflexed portion separated from the dorsal surface by a distinct ridge; angle of the true marginal line slightly

behind the middle; base not margined; surface rather sparsely but evenly and finely punctulate, inflexed portion smooth. Elytral striae rather fine, not strongly punctured, distinctly impressed apically, less distinctly so toward the base, the two inner striae very fine, very finely punctulate and not impressed from the base to the middle; intervals flat, sparsely and finely punctulate. Prosternal area nearly opaque, moderately finely and quite densely punctulate; mesosternal area much longer than in *C. americanum*, coarsely but not very densely punctate; metasternum

shining, not impressed, finely and sparsely punctulate, sinuous elevated line fine but distinct.

Length, 1.6 mm.

Locality, Tucson, Arizona; type, U. S. Nat. Mus. (Collection Hubbard & Schwarz).

Described from two specimens found by Mr. H. G. Hubbard on December 30, 1896 in a decaying *Cereus giganteus*. The species is distinguished from *C. minutum* by its shining surface, the sculpture of the elytra, not inflated 2nd palpal joint, sculpture of metasternum and other characters. *C. americanum* agrees with *C. cerei* in the structure of the palpi but differs by the sculpture of the elytra and of the underside and by its much shorter mesosternal plate.

OMALIUM (*Phyllocrepa*) CACTI n. sp. (family Staphylinidae).—Moderately elongate, parallel, subdepressed, shining, piceous; mouthparts, antennae, sides of thorax, the larger portion of elytra and the legs reddish yellow; pubescence not obvious when the insect is viewed from above but quite conspicuous upon a lateral view.

Head as long as wide, slightly convex between the eyes, alutaceous, impunctate between the frontal impressions which are deep and shining, distinctly and sparsely punctulate behind, without impressions in front of ocelli; tempora not prominent, rounded and much shorter than the diameter of the eyes; labrum slightly emarginate in front; last joint of maxillary palpi fully twice the length of the preceding joint; antennae slightly longer than head and thorax combined, with a six-jointed club, but joint 6th is much smaller and narrower than joint 7, though considerable wider than joint 5; joint 2 slightly longer than wide; joint 3 at base narrower than joint 2 and about twice as long

as wide; joints 4 and 5 each as long as wide, joint 6 decidedly wider than long. Neck alutaceous without distinct punctuation.

Thorax distinctly wider than long; front margin truncate and hardly narrower than the base; sides regularly arched, front angles obtuse, not prominent, hind angles more distinct but likewise obtuse; a feeble depression along the sides in front of the hind angles; surface alutaceous, moderately finely, not densely punctate. Scutellum alutaceous with a few fine punctures.

Elytra at base decidedly wider than the thorax, distinctly longer than wide and about as long as the exposed portion of the abdomen; humeri distinct but rounded; surface more shining than the thorax, densely punctate, the punctures coarser than those of the thorax and more or less distinctly subseriately arranged; color reddish yellow with the base, the sutural space and the apex more or less widely infuscated. Abdomen subparallel, above and beneath alutaceous, with fine, scattered setigerous punctures.

Underside of head on each side of the gular sutures indistinctly rugose; prosternum alutaceous without distinct punctures; mesosternum alutaceous, not carinate; metasternum alutaceous and very sparsely punctate. Tibiae hairy on outer edge, the middle and posterior ones also with a few short spines. Fifth joint of hind tarsus slightly longer than joints 1-4 combined.

Length 2.6—2.8 mm.

Locality, Tucson, Arizona; type, U. S. Nat. Mus. (Collection Hubbard & Schwarz).

Described from many specimens found by Mr. H. G. Hubbard December 25, 1896 in decaying *Cereus giganteus*.

EPHISTEMUS CACTOPHILUS, n. sp. (family Cryptophagidae).—Rather narrowly oval, more narrowed behind than in front, very convex, shining, pale brownish red,

legs and antennae pale. Elytra beset with sparse, extremely short and inconspicuous hairs. Head very minutely and sparsely punctulate; thorax more distinctly but still very finely and sparsely punctulate; elytra less finely, sparsely punctate. Prosternum smooth; metasternum finely, sparsely punctulate; abdomen smooth.

Length, 1 mm.

Locality, Tucson, and Sabina Cañon (foot of Sta. Catalina Mts.), Arizona; type, U. S. Nat. Museum (Collection Hubbard & Schwarz).

Closely allied to *E. apicalis* Lec., but slightly smaller and less rapidly narrowing behind; it differs by its uniform pale color, distinct punctuation of the upperside and the pubescence of the elytra which, however, is barely visible under ordinary magnifying power.

I have seen many specimens found by Mr. Hubbard in decaying *Cereus giganteus* in December and January, and also found it myself under the same conditions in April 1898 at Catalina Springs, Ar. (foot of Sta. Catalina Mts).

The Florida species mentioned by Mr. Hubbard is specifically distinct and remains undescribed.

BOTHRIDERES CACTOPHAGI n. sp. (family Colydiidae)—Elongate-oblong, brown, not densely pubescent. Head and thorax nearly opaque, the former densely, moderately coarsely punctate. Thorax longer than wide, widest shortly behind the front angles, which are prominent, hence narrowing towards the base; sides slightly arcuate, with a tubercle just behind the middle; surface coarsely, densely punctate, with two impressions along the middle: the anterior one

small, punctiform and sometimes obsolete, the posterior one deeper, smooth and shining at bottom and connected with the base of the thorax by a sharply limited triangular impression. Elytra somewhat shining, moderately convex in both sexes, rather finely striate, striae finely punctate, interstices finely uniseriately punctulate, alternating in width, the narrower ones more elevated, more pubescent and subcariniform toward apex. Prosternum coarsely and deeply punctate; abdomen anteriorly very finely and sparsely punctulate, toward tip a little more coarsely and more densely.

Length, 2.8—5 mm.

Locality, Tucson, Arizona; type U. S. Nat. Museum (Collection Hubbard & Schwarz).

I have seen several hundred specimens, all of them more or less mutilated. Slightly more elongated than either *B. montanus* or *geminatus* and distinguished at once by the form of the posterior dorsal impression of the thorax. The species was found by Mr. H. G. Hubbard within old cocoons of *Cactophagus validus* and is no doubt parasitic in, or predaceous on the larva of the Calandrid.

COSSONUS HUBBARDI, n. sp. (family Calandridae)—Form of body slightly less elongate, and much less shining above, than in any of the North American species referred to this genus; surface subdepressed (about as in *C. corticola*), color black, antennae and legs red. Beak longer than half the thorax, subdepressed, shining, extremely feebly dilated apically, the dilated portion longer than the basal portion, sparsely finely punctulate, basal portion coarsely punctate, the punctuation extending over the front to the hind margin of the eyes; front with a deep, oblong fovea extending to the anterior part of the vertex which is otherwise smooth,

slightly more convex than the front but not separated from it; antennae inserted at outer fifth of the beak, scape extending slightly beyond the hind margin of the eyes, first funicular joint about twice as long as wide, second joint slightly longer than wide, obconical, joints 3-7 transverse, gradually but not strongly increasing in width, club large, oblong-oval, opaque, pubescent, basal portion very little smoother than the apical portion.

Thorax very little longer than wide, sides straight from base to three-fourths of the length, then rounded and narrowing, apical constriction hardly perceptible; base sinuate each side of a short median lobe; surface extremely coarsely, densely cribrato-punctate, the interstices of the punctures broader and more shining on the disk than on the sides: a distinct depression anterior to the scutellum where a shining cariniform elevation may be seen, and, in front of this, a larger, equally shining rudiment of a smooth median line.

Elytra at base wider than the thorax, striate, the striae extremely coarsely punctate; intervals narrow, subcostiform, sutural interstice behind the scutellum depressed. Prosternum and mesosternum very coarsely and densely punctate; metasternum and abdomen less densely but also coarsely punctate. Front tibiae not sinuate at inner edge.

Length, 3.7-4.8 mm.

Locality, Tucson, Arizona; type U. S. Nat. Museum (Collection Hubbard & Schwarz).

I have seen only five specimens of this species which is readily known from all North American species of this genus (including *Borophloeus* Woll.) by its hardly dilated beak and the extremely coarse punctuation. It seems to be one of the rarest insects peculiar to the Giant Cactus.

CACTOPINUS, nov. gen. (family Scolytidae;

subfamily Tomicinae) — Body moderately slender, head subglobose, retracted into the thorax; antennae short, scape slightly shorter than the funicle, widening apically, convex at outer edge and here furnished with a few long setae; funicle 5-jointed; the first large, obconical, joints 2-4 small, increasing in width, joint 5 closely applied to the club and twice as wide as long; club oval, comparatively small, about as long as the funicle, sparsely pubescent on both sides and with two distinct straight, or nearly straight sutures. Clypeus, in the male, armed with a long process consisting of two cylindrical rods which are laterally connate except near the tip where a contraction and separation of the rods takes place.

Prothorax as long as wide or slightly longer than wide, rounded at the sides which are not margined; disk, in both sexes, with a longitudinal, tuberculated and distinctly elevated median area which projects beyond the base of the thorax as a triangular lobe.

Elytra with the basal margin not elevated, conjointly rounded at tip, surface punctate-striate, sutural stria distinctly impressed, declivity steep, with the sutural space sulcate.

Prosternum very short in front of coxae, which are nearly contiguous. Abdomen horizontal, segments 1 and 2 of equal length, each about as long as segments 3 and 4 combined. Legs rather short, hairy; front tibiae narrow, very little dilated apically, outer edge not arcuate, neither denticulate nor serrate, slightly sinuate near apex, outer apical angle moderately produced laterally, terminal mucro straight and moderately slender; middle and hind tibiae slightly more slender than the anterior tibiae; tarsi short, joints 1-3 of equal length, joint 3 not dilated, joint 4 distinct, claw joint long and slender.

CACTOPINUS HUBBARDI, n. sp. — Elongate-oval, usually subopaque; the whole body, including the legs, beset with rather sparse, long erect yellowish hairs; color piceous;

antennae and tarsi paler; thorax and elytra usually covered with a peculiar incrustation (or exudation?)*.

Head differing in sculpture according to sex, usually retracted into the thorax to beyond the eyes. Thorax about as long as wide at the middle; front margin greatly arcuate and fringed with short, dense, yellow hairs, anterior and posterior angles rounded, sides arcuate, base nearly straight; disk at middle with a longitudinal, tuberculated area which, commencing usually some distance behind the front margin of the thorax, becomes narrower toward the base, more and more abruptly elevated above the lateral parts of the thoracic disk, and finally extends beyond the base as a triangular, hood-like projection over the scutellum †; sides and inflexed flanks of thorax without distinct sculpture.

Elytra about $1\frac{1}{2}$ times longer than the thorax at middle, punctate-striate, the striae feebly impressed, punctures large; interstices narrow, convex, very finely uniseriately punctured, each with a row of long, erect or suberect long hairs, sutural interval gradually becoming deeper behind; declivity steep, convex at the sides, sutural interval deeply and broadly sulcate and limited externally

*This incrustation is always present in fully matured specimens and completely conceals the sculpture of the elytra, except that a few of the longer hairs always remain visible; on the thorax the tubercles of the median elevated area are never covered. In the more immature specimens the incrustation is less dense, and the above description of thoracic and elytral sculpture has been taken from such specimens. Upon immersion in chloroform the incrustation is dissolved, and the surface of the insect appears to be shining with thoracic and elytral sculpture much more pronounced. Dr. J. B. Smith writes me that the elytral structure indicates the possibility of excretory pores on the surface.

†The amount of individual variation, as exhibited in a long series of specimens, regarding the various features of this remarkable structure of the thorax is very great, and hardly two specimens can be found which precisely agree in all structural details. The variations refer more especially to the extent of the tuberculated area, the degree of its elevation, and to the form and size of the post-basal prolongation.

by the third interval which becomes cariniform and bears a row of five tubercles; fifth interval also with some tubercles; the suture itself being elevated at the bottom of the sulcus.

♂.—Front broadly and slightly concave, feebly pubescent, not distinctly punctate; clypeus armed with a broad and long horn-like process, usually as long as or longer (very rarely shorter or much shorter) than the thorax and which is composed of two nearly cylindrical rods which are laterally connate and of equal width from the base to near the tip. The anterior and posterior sides of the horn are shining and more or less distinctly tuberculate, the lateral margins are densely tuberculate and apparently irregularly serrate and furnished with a fringe of moderately long hairs. Some distance from the tip, each rod is angularly contracted laterally, and only the inner half of each is prolonged into a shining, cylindrical prong-like process averaging about one-eighth the length of the horn. The prongs are distinctly separated from each other, and the separation often extends more or less deeply into the apical portion of the horn. The outer truncature at the base of the prongs is usually inerm, but in all immature specimens, and often also in mature specimens, it is furnished with a spine-like, pointed process, as long or longer than the prongs. In some specimens this process is dissolved into two or more stiff setae. ‡

♀ — Head unarmed, feebly convex, indistinctly punctured, covered with short, not dense, yellowish pubescence; front with a small, shallow impression which is smoother than the surrounding space.

Length, 1.7–2.2 mm.

Locality, Tucson, Arizona; types,

‡ In the living specimens the horn is carried straight forward; in the dead mature specimens, the horn is more or less vertical, while in all immature specimens it is recurved back over the thorax.

U. S. Nat. Mus. (Collection Hubbard & Schwarz).

I have seen several hundred specimens, discovered by Mr. H. G. Hubbard in the dry pulp of *Cereus giganteus*. All the specimens came from a single cavity in a decayed trunk, December, 1896.

This singular Scolytid is at once recognizable from the structure of the thorax and the remarkable cephalic armature in the male. Its affinities and systematic position have, however, remained obscure to me, and the elucidation of these points must be left for future studies.* Its food-habits and

mode of development also deviate from those of other Scolytidae. The dry pulp of *Cereus giganteus* in which this species lives is of a very peculiar nature and resembles certain species of hard Agarics more than a piece of wood. This pulp is extremely hard and brittle, and having examined several pieces sent me by Mr. Hubbard I fail to recognize any regularity or system in the borings of the beetle and its larva. Imagos, pupae and larvae are to be found indiscriminately scattered in the irregular chambers and galleries with which the interior of the pulp is honey-combed.

CLASSIFIED LIST OF SPECIES OBSERVED BY H. G. HUBBARD ON THE
GIANT CACTUS.

BY E. A. SCHWARZ.

Hymenoptera.

Polistes flavus Cresson.

Coleoptera.

Dactylosternum cacti Lec., *Pelosoma capillosum* Lec., *Megasternum cerei* Sz., *Tyrus elongatus* Brend., *Trimium puncticolle* Lec., *Eumicrus lucanus* Horn, *Maseochara semivelutina* Solsky, *M. spacella* Sharp, *M. puberula* Casey, *Apheloggosa rufipennis* Casey, unknown genus of *Aleocharinae*, *Homalota* sp. sp., *Falagria* sp., *Oligota* n. sp., *Xanthopygus cacti* Horn, *Belonuchus ephippiatus* Say, *Xantholinus dimidiatus* Lec., *Lithocharis tabacina* Casey, *Physeto-*

porus grossulus Lec., *Erchomus convexus* Er., *E. punctipennis* Lec., *Omalium cacti* Sz., *Trichopteryx* sp. sp., *Ditoma gracilis* Sharp, *D. sulcata* Lec., *Bothrideres cactophagi* Sz., *Ephistemus cactophilus* Sz., *Attagenus hornii* Jayne, *Hololepta yucateca* Mars., *H. cacti* Lec., *H. vicina* Lec., *Paromalus opuntiae* Lec., *P. consors* Lec., *P. gilensis* Lec., *Acritus arizonae* Horn, *Holoparamecus pacificus* Lec., *Alindria teres* Melsh., *Lycaina discoidalis* Horn, Clerid larva (not bred), *Monilema giganteum* Lec., *Ulosonia marginata* Lec., *Cynaesus angustus* Lec., *Platydema inquilinum* Linell, *Cactophagus validus* Lec., *Apotrepus densicollis* Casey, *Cossonus hubbardi* Sz., *Cactopinus hubbardi* Sz.

Lepidoptera.

Melitara fernaldialis Hulst. Larva feeding on decaying pulp of the Giant Cactus. Imagos were bred by Hubbard and myself at Catalina Springs, Ar., in April 1898.

*Prof. A. D. Hopkins of Morgantown, W. Va., has consented to make a thorough investigation of this Scolytid. He has just now (February 13, 1899) forwarded to me a series of careful drawings illustrating the structural details of *Cactopinus*, but I am unwilling to anticipate the conclusions derived from his studies. Dr. J. B. Smith has also kindly prepared sketches and microscopic slides illustrating the mouthparts and other details.



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