MEMOIRS

ON THE

COLEOPTERA

BY

THOS. L. CASEY

II

1911

PUBLISHED BY
THE NEW ERA PRINTING COMPANY
LANCASTER, PA.

CONTENTS

II—NOTES ON THE COCCINELLIDAE WITH SOME GENERAL REMARKS AND SYNONYMY.

COCCINELLIDÆ.

Exochomus Redt.

Because of misidentifying a species described by Weise, now known under the name *Exochomus septentrionis*, I have done Mr. Leng an injustice (Can. Ent., XL, p. 412) which I desire to rectify. Mr. Leng informs me that he has corresponded with Dr. Weise on the subject and that the latter made known to him certain facts concerning the true *septentrionis*, which materially alter the conceptions formerly entertained. It seems that the true *septentrionis* is from a more western part of the Hudson Bay regions, that it is very feebly punctured and has the elytral maculation reduced to a narrow sutural vitta, expanded at the apical margin, and two small isolated discal spots on each elytron. Through the kindness of Mr. Leng I have received examples of *davisi* Leng, *septentrionis* Weise, as taken by Mr. Norman Criddle at Aweme, Manitoba, and a specimen of *högei* Gorh., taken at Pueblo, Colorado. There is no question in my mind now, that we have three allied but perfectly distinct species of this particular group of *Exochomus*.

The five examples of *davisi* sent by Mr. Leng are mutually homogeneous and similar in every way to the single specimen already in my cabinet, which I mistook for *septentrionis*. It differs from both *septentrionis* and *högei* in the constantly more developed black maculation, the anterior spots being united occasionally with the much broadened sutural vitta, but, especially and specifically, in the notably coarse deep punctures of the elytra, there being no material variation in this character.

The example of *högei*, from Pueblo, represents probably almost the extreme northern extension of this Sonoran species and is wholly similar to the El Paso specimens in my collection. On comparing it with the Manitoban *septentrionis*, certain important differences are at once apparent, the most manifest of which pertains to the position of the small circular spots of the elytra. In *septentrionis*

the posterior spots are distinctly nearer the lateral edge than they are to the suture and in similar degree to the anterior spots, so that from a dorsal point of view the four spots form a square. In *högei* the posterior spots are equidistant from the suture and lateral edges, while the anterior spots are nearly as in *septentrionis*, much nearer the lateral edges than the suture, so that, viewed in the same way, the four spots form an inverted trapezoid; this difference is accentuated by reason of the fact that the body in *högei* is more broadly oval than in *septentrionis*.

There is surprisingly little intra-specific variability of the maculation in *Exochomus*, as well as many other genera of Coccinellidæ, although some genera, such as *Hippodamia* and to a less degree *Coccinella*, are characterized by much more evident inconstancy in the ornamentation. The same criteria of inconstancy cannot be applied to all the genera of the family, some are constant and some inconstant.

A few months after the above was written, identically as printed, there appeared an article by Mr. Leng (Journ. N. Y. Ent. Soc., 1911, p. 6) on variable maculation in the Coccinellidæ, in which the author labors under several evident misconceptions.

The language on page 7: "Otherwise its attitude appears to be not very different from that of his former work on Coccinellidæ, published in 1899, in which he did not hesitate to adopt 'type of coloration as a primary taxonomic character,' " for example, taken in connection with the substance of the succeeding paragraph, where he alludes to the occasional presence of a basal spot in *Hippodamia glacialis*, when I had stated that it is invariably absent, as overthrowing my theory of the importance of type of ornamentation, proves conclusively that he has merely misapprehended the meaning of my expression "*type* of ornamentation." This phrase does not refer at all to the diversification of color pattern by reason of reduction or expansion, but to marked differences in the *scheme* of ornamentation. Excepting *arizonicus*, which Mr. Leng correctly assigned to a different genus or subgenus, all of our species of *Exochomus*, for instance, have a similar type of ornamentation when considered in a broad sense of that term, consisting, in its normal form, of a sutural stripe and two spots of black on each

elytron. When these spots and the vitta are greatly reduced we have forms like *högei*, when more expanded forms like *septentrionis*, *marginipennis* and *californicus*, and when most developed entirely black forms, such as *æthiops* and *mormonicus;* or, when some one or two of the normal features disappear, we have exceptional but not non-typical forms of ornamentation as observable in *deflectens*, *childreni* and others.

Now if Mr. Leng will examine the related European *Brumus 8-signatus*, he will perceive at once what I mean by type of ornamentation; for the spots of *8-signatus* are in such number, and especially in such position, that by no conceivable variation could they ever assume any such form as in our representatives of *Exochomus*. So again, if Mr. Leng will examine the pronotum of the true *Coccinella* as typified by *9-notata*, for example, and compare it with the pronotum of *Olla* or *Adalia*, he will again find a difference which is that of *type* in the sense which I desired to convey by that term. All our *Hippodamiæ* have a common type of ornamentation, excepting the *spuria* and *parenthesis* groups and *15-maculata*, which have more or less different types of maculation. *15-maculata*, abundant near St. Louis, having the post-scutellar spot expanded transversely, sometimes simple and sometimes resolved into two spots but never, so far at least as evinced by my series, exhibiting the slightest tendency to unite with the scutellar dash—a character so generally prevalent,—possesses for those reasons a rather different type of maculation from any of the allies of *divergens*, showing that it is an isolated species.

A good many genera as we conceive them now are composite and include diverse elements, some of which do not adhere to the type of ornamentation characterizing the majority of the species; but this only means that these various types indicate very well-marked groups or subgenera of the genus, which we deem it better not to define as subgenera because of the interminable nature of the subject. In *Hyperaspis*, for instance, a type of maculation appears as in *levrati* and *metator*, which is deceptively similar to that prevailing in a large group of *Brachyacantha;* and many other examples could be cited, such as the European *Exochomus 4-pustulatus*, the Cuban *E. venustulus* or the South African *E. versutus*, when compared with our own forms of the genus; some of them are evidently subgenerically different.

On page 8, Mr. Leng states that my adoption of type of coloration as a primary taxonomic character, led me—through an assumed paucity of material—into many "confessed errors," which must deprive my conclusions of full authority. Disregarding for the moment Mr. Leng's misapprehension of the term type of coloration or maculation, it is uncertain to me whether or not he means that by my having openly confessed error, my investigations are thereby deprived of authoritative weight. If this be the sense intended, we can say with sincere conviction that it is only those who are primarily interested in truth for its own sake, as the single goal for which we should aim in scientific study, who deem it essential to reverse their judgment publicly upon the appearance of the welcome light of additional evidence, more particularly in a field that none of us really understands or could more than partially comprehend in the longest human lifetime. Such occasional confessed reversals of judgment may damage one's reputation among a certain element, who do not care to take the trouble to weigh the evidence themselves, as evincing vacillation and consequent unreliability,—for to be held in high authority by the multitude in science as well as in politics, one must never admit anything that he may have said or done to be really wrong; but, among those wise enough or sufficiently experienced to appreciate how little we do really know, such a course should but increase their confidence.

Furthermore Mr. Leng may have no fear of belittling any modicum of value my works may possess; it is quite beyond his power to belittle the grains of truth, and I should be grateful to anyone who may discover and eliminate the chaff:—that is the real chaff, for, some being real and some opinionative, the latter may still be the subject of legitimate disputation.

And now a few words as to the recent work of Mr. Roswell H. Johnson, alluded to at some length by Mr. Leng. It must be remembered that this author has attacked the subject purely from the standpoint of the experimental biologist, dealing with variability of spots and dashes of ornamentation and leaving almost wholly out of consideration all those elements shown by experience to have intrinsic weight in systematic taxonomy, such as structural features both general and special, sexual characters, form, sculpture and many other available and important criteria in defining species,

so that his work can not be viewed seriously from the standpoint of classification. Outline is frequently of some value and yet all the published figures are alike in this respect, the same diagram being used for all, upon which to depict the dots and dashes. It is very easy for one viewing the subject chiefly in this light to be mistaken by forming series extending from unmarked to profusely marked individuals; for, having his attention fixed solely upon maculation, he is sure to overlook other more significant landmarks. I have had some experience throwing light upon the author's methods, which it seems desirable to record at the present opportunity.

Mr. Johnson prepared his material in the form of plaques made of two glass plates, separated by a piece of velvet upon which were closely placed in parallel lines, a large number of specimens of what he considered single species, arranged according to development of marking, in order to display the range of variation at a glance. One of these plaques, purporting to contain only specimens of *Hippodamia lecontei*, from Fairfield, Washington State, he very kindly presented to me; the diversity of ornamentation revealed within it was certainly amazing. The specimens were of course quite useless in that condition for purposes of study, and I therefore took the plaque apart and mounted in the regular way as many examples as remained uncrushed by the pressure of the glass plates.

After carefully studying these 112 specimens, so mounted, it became evident that they could readily be resolved into three clearly demarcated series of species or subspecies, one of which, represented by 35 specimens, was conspicuously homogeneous within itself, well isolated from the others and subject to comparatively little variation of any kind, even in size of body. This was the form named *caseyi* by Mr. Johnson; its spots are all relatively heavy and the basal spots of the elytra are frequently loosely joined transversely; but it is distinguished primarily from the other two by having the black area of the pronotum invariably attain, or virtually attain, the side margins at the middle, a condition never observable in the latter.

The second series of 47 specimens represented the northwest coast subspecies, formerly alluded to by the writer as having been confounded by Mr. Leng with *divergens;* the three scutellar spots are frequently united to form a triangular star, which never exhibits

the slightest tendency to spread laterally; but the posterior maculation of the elytra is notably variable, the two post-median spots very frequently being united transversely, differing in this way, as well as in the amalgamation of the three scutellar spots, from *divergens*, in which the tendency is not apparent, at any rate as shown by my extensive material from many regions.

The third series, consisting of 28 specimens, was also decidedly variable in markings but had, as one of its chief distinguishing features, an irregular transverse laterally attenuated basal fascia, sometimes wanting and frequently disintegrated, but always evincing a tendency to lateral extension in the amalgamated scutellar and post-scutellar spots, except rarely when the latter were wanting. It can be considered a variety of *extensa* Muls.

Both of the last two forms are somewhat larger in average size than the first and vary also very much in the development of the discal diverging lines of the pronotum, from wholly wanting—rather a rare condition, to very large and breaking through to the pale border—also an exceptional development.

Besides these three dominant forms, there were two uniques, one *uteana* Csy., and the other a slight variation of *5-signata* Kirby. There were no specimens that could be regarded as intermediates uniting the three series mentioned above, and all the crushed and rejected specimens were simple replicas of others and of no material importance.

To one inspecting these segregated series, which I have carefully preserved intact, while bearing in mind that they were indiscriminately mingled together in the plaque under the name *lecontei*, of which New Mexican species I could not find a specimen, the opinion becomes unavoidable that Mr. Johnson's conclusions are valueless from the taxonomic viewpoint, though only natural if we consider the special character of his investigation.

Synonymy and Corrections.

STAPHYLINIDÆ.

On p. 61 and 62 (Mem. Col., I), for *palliola* read *palleola*.
On page 51 (l. c.), 12th line from top, for *repleta* read *reperta*.
On page 83 (l. c.), 16th line from top, for **subfusca** read **suffusca**.
Atheta (*Stethusa*) *affluens* Csy. (Mem. Col., I, p. 5) may be considered a variety or perhaps less, of *irvingi* Csy. (l. c.).

Atheta (*Hilara*) *sejuncta* Csy. (l. c., p. 64) may be considered a synonym of *Atheta* (*Hilara*) *libens* Csy. (l. c., p. 63).

It is probable that *Rovalida* Csy. (l. c., p. 69) is a synonym of *Halobrecthina* Bernh. (Deut. Ent. Zeits., 1909, p. 519). The infra-lateral carinæ of the head are very feeble and incomplete and may very easily have been overlooked by Dr. Bernhauer.

Dimetrota (*Dalotia*) *crucialis* (Mem. Col., I, p. 107) is found by observation under better conditions to be a synonym of *pectorina* Csy. (l. c., p. 106).

Sableta (*Canastota*) *beatula* Csy. (l. c., p. 109) is a synonym of *Silusida nanella* Csy. (Tr. Acad. Sci. St. Louis, XVI, p. 271); the generic reference of the former and not the latter being correct.

Datomicra insolida Csy. (Mem. Col., I, p. 125) is a synonym of *Dimetrota sectator* Csy. (l. c., p. 102), the former generic reference probably being more nearly correct than the latter; the species properly belongs to neither genus in all probability.

Dolosota Csy. (l. c., p. 136) is a synonym of *Pancota* Csy. (Tr. Acad. St. Louis, XVI, p. 345), the systematic position of the former being correct as a member of the Myrmedoniini.

Microlia pernix Csy. (*Pancota* and not *Dolosota*),—Mem. Col., I, p. 144—is, without much doubt, the same as *Homalota silacea* Erichs. The very peculiar coloration of the antennæ seems to indicate this.

It is highly probable that *Hoplandria acudentata* Dury (Journ. Cin. Soc. Nat. Hist., XXI, p. 65),—the publication date on the cover appearing as September, 1910, but not distributed, according to notification from the Secretary, Mr. Chas. Dury, until Oct. 1st,—is the same as *Hoplandria læviventris* Csy. (Mem. Col., I, p. 176), the distribution of the latter work having begun on Sept. 23d and received by a number of institutions on Sept. 24th, 1910. My copy of the Cincinnati publication was not received until Oct. 10, 1910. The latter name therefore has priority by about a week. I greatly regret that there should have been any conflict, and if I had suspected that the species *læviventris*, described from four females, were the same as *acudentata*, described from the male, I would have withheld the former very properly as being founded upon the female only. Of course there is a chance that my surmise as to the specific identity of the two forms may not be correct, but the evidence upon careful comparison of the descriptions seems to indicate its strong probability. The male in this genus is often materially larger than the female.

Gnypeta oregona Csy. (Tr. Acad. St. Louis, XVI, p. 199) is a synonym of *Gnypeta helenæ* Csy. (l. c., p. 193).

Lissagria impressifrons Csy. (l. c., p. 254) may be regarded as a malformation of *Lissagria robusta* Csy. (l. c.). *Lissagria læviuscula* Lec., is now represented in my cabinet by a good series; it is the largest species of the genus and the measurements given by LeConte are not far from correct.

Oligurota Csy. (Ann. N. Y. Acad., VII, 1894, p. 361) must be united with *Thecturota* Csy. (l. c., p. 357) as no better, at the best, than a subgenus.

For other corrections see remarks under the tribe Bolitocharini in the preceding paper.

ELATERIDÆ.

The names *idoneus, abdominalis* and *arizonicus*, applied by the writer (Can. Ent., 1907, pp. 31, 32) to forms of *Chalcolepidius* allied to *snowi* Csy., are to be suppressed. Additional material shows that they are probably not even varietal in nature. *Snowi* is related to *webbi*, but is abundantly distinct and not to be confounded therewith.

Chalcolepidius acuminatus Csy. (l. c., p. 32) has the inner margin of the lateral white pronotal areas outwardly arcuate throughout its length and not almost straight, as it is in *apacheanus;* but the elytra are generally not materially more acuminate than in that species. It occurs also in northern Mexico. The allied *nobilis* Csy., seems to be confined to the Huachuca Mts., of southern Arizona.

Chalcolepidius sodalis Csy. (l. c., p. 33) may be united with *aztecus* as a slight variety.

BUPRESTIDÆ.

It is probable that *Buprestis virens* Csy. (Proc. Wash. Acad. Sci., XI, p. 105) is, rather than a subspecies of *rufipes*, simply the female of that species, though, if this be the case, the differences between the sexes of *rufipes* in size and form are not indicated in allied species of the genus.

Dicerca inflatula Csy. (l. c., p. 140) may be united with *abrupta* Csy. (l. c.).

TENEBRIONIDÆ.

Telabis proxima Csy. (Proc. Wash. Acad., IX, p. 315) may be united with *prominens* Csy. (l. c., p. 314); the prominent and somewhat everted apical angles of the prothorax in the latter are completely lost in the type of the former, but otherwise there is such an extreme likeness that there can be no doubt of the propriety of the course suggested.

Coniontis pectoralis and *picescens* Csy. (l. c., X, pp. 86, 87) may be regarded as subspecies of *levettei* Csy. (l. c., p. 87).

Coniontis inflexula Csy. (l. c., p. 107) may be united with *exigua* Csy. (l. c., p. 106); the character by which it was separated is rather striking in appearance but is adventitious without much doubt.

Coniontis verna Csy. (l. c., p. 94) must be removed from the *opaca* group and placed in the *abdominalis* group, of which it is the smallest member.

Additional Notes.

CICINDELIDÆ.

Cincindela exoleta Csy., is a synonym of *senilis* Horn, and not a subspecies.

C. boulderensis Csy., is simply a subspecies of *punctulata–micans*, having the foveæ of the subsutural line very feeble or subobsolete.

I have recently taken a specimen of *C. hentzi* Dej., on the Blue Ridge, near the southern boundary of Pennsylvania; it is mentioned by Mr. Leng as occurring only in Massachusetts.

C. arizonæ Wick., is not a subspecies of *rufiventris*, but is a distinct species, allied more closely to *hæmorrhagica* than to *rufiventris*.

TENEBRIONIDÆ.

A short time ago I received from Mr. L. E. Ricksecker, a specimen of the very rare *Auchmobius sublævis*, of LeConte, taken at a point about 90 miles inland from San Diego, near Julian, and therefore in the vicinity of the type locality. A casual inspection shows that the description of the antennæ given by Dr. Horn is wholly erroneous, and that the Owen's Valley representative cited by that author is not only distinct, but represents a very different genus or more probably tribe. The antennæ in *sublævis* are rather slender and cylindric, enlarged very slightly in the last four joints as in the Eurymetoponini generally, and of virtually typical structure; the third joint is much elongated, being about as long as the next two combined. The anterior tibiæ are truncate at tip and not or barely at all everted externally. The epistoma is of a purely Eurymetoponid type but slightly exaggerated, being somewhat produced medially, with its tip rather deeply sinuate, but without the faintest suggestion of the lobate form occurring in *Trimytis*. In fact the only decisive peculiarity of *Auchmobius*, when compared for example with *Cryptadius*, resides in the absence of supra-orbital carinæ, and I am almost of opinion that it is none other than the true *Eurymetopon*, the elytral sulci mentioned as pertaining to the latter being sometimes faintly observable in the similarly non-striate elytra of *Cryptadius*. At any rate, *Auchmobius* belongs to the Eurymetoponini and there is no tribe Auchmobiini, the remarkable antennal characters published by Horn, which impelled the suggestion of such a tribe, being non-existent. The Owen's valley species, whatever it may be, mistaken by Dr. Horn for *Auchmobius sublævis*, does however probably represent a distinct tribe as above intimated; but of this I can say no more without an inspection of that interesting nondescript.

I have recently received a large female example of *Zopherodes elegans* Horn, taken at some point between Fort Wingate and Sta. Fé, New Mexico. It has nothing in common with *Zopherinus* as I formerly thought possible, but is a typical *Zopherodes* like all the others found in our western Sonoran regions. In *Zopherinus* the white incrustation generally covers the entire upper surface, excepting the elevations and a pronotal blotch, as for instance in *venosus* Chmp.; it may be confined, however, to the lateral margins only, as in *limbatus* Csy., or may be wanting altogether, as in *lævicollis*. In *Zopherodes*, however, it is wanting except very rarely and then appearing at the margins only, as in *elegans* Horn.

Zopherodes lugubris Csy., does not come from the Grand Cañon as supposed, but occurs in the more southern part of the state, recently having been collected near Tuçson.

Z. verrucipennis Csy., may be regarded as a synonym of *otiosus* and not a subspecies.

Anepsius catenulatus Csy., may be united with *atratus* Csy., as a synonym. *Atratus* resembles *delicatulus* Lec., very much, but is black and not piceous in color. The prothorax is less transverse and the elytra are shorter; the sculpture is rather stronger and closer throughout.

INDEX.

All species the names of which are without designation of authorship in the following index, are described as new in the preceding pages of this work.

Issued August 15, 1911.