

of the wasps of the genus *Pepsis* is apt to deceive the collector, especially during flight.

Alcathoe pepsoides atra n. sub-sp.

Male. Antenna black above, fuscous below. Head, thorax, abdomen, caudal appendage and legs black. A round hyaline patch at the anal margin of the hindwings. Alar expanse, 29 mm.

Female. Like the male, but lacking the caudal appendage. Alar expanse, 32 mm.

Habitat. Jemez Springs, N. M., 7,000 feet, August.

Types. Holotype male and allotype female, collection G. P. Engelhardt, Brooklyn Museum. Paratype male, U. S. National Museum.

Described from three specimens collected by J. Woodgate in the mountains near Jemez Springs, N. M., at altitude of 7,000 feet. Other specimens from the same source taken at Fort Wingate at 6,000 feet or less are typical *A. pepsoides* and so also are specimens collected by Prof. F. H. Snow in Oak Creek Canyon, Ariz., at 6,000 feet. This difference of 1,000 feet in elevation throughout the southern part of the Rocky Mountain system is accompanied by important floral and faunal changes, as, for example, the transition from cedar and piñon pine to yellow pine forests. Among insects the effect of altitude frequently is expressed by intensification in coloration and it seems plausible to explain the occurrence of the black form of *A. pepsoides* as due to such causes. The black form "*walkeri*" of *A. caudata*, of which only occasional specimens restricted to the male sex have been found, quite properly has been placed as a "variety." The form *atra* of *A. pepsoides*, on the other hand, occurs in both sexes and as it appears to replace the parent race at high altitudes, it has been given the rank of a sub-species.

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ON THE "ANNECTANT BUGS" OF MESSRS. McATEE
AND MALLOCH.

BY E. BERGROTH, Ekenäs, Finland. C

In Vol. XIX of this BULLETIN, McAtee and Malloch have published a paper under the heading "Some annectant bugs of the superfamily Cimicoidea." This paper requires some comments, lest some tyro in hemipterology may be misled by it.

After reading the pompous and self-sufficient introduction to the paper with all that big talk of the "defects," "errors," "confusion," and "flaws" in the writings of previous authors, one might really expect the quality of the paper to be somewhat different from what it proves to be.

The authors begin with a key to the groups treated in their paper, these "groups" consisting of four units: gen. *Idiotropus* Fieb., gen. *Peritropis* Uhl., gen. *Diphleps* Bergr., and the subfamily Isometopinae. As will be shown below, there are several errors in this key of a few lines. The authors then give a new generic description of what they call *Idiotropus* Fieb. Although the genus has two-segmented tarsi the joint authors assign it to the family Anthocoridae "because of preponderance of the evidence," adding that "if the genus be referred to Microphysidae, it does still more violence to diagnoses of that group." In their descriptions of *Idiotropus* the authors describe the rostrum as three-segmented in spite of the fact that Fieber, the founder of the genus, expressly states that it is four-segmented, and figures it so. The joint authors do not clearly state in what respects their *Idiotropus* does violence to diagnoses of that group and whose diagnoses they have used, but they have apparently stared their eyes out at the three-jointed rostrum. This character is of little consequence, for Schioedte has shown long ago that an anatomical investigation proves the rostrum of all Heteroptera, even those with apparently only three rostral segments, to be four-segmented, although basal segment is more or less shortened or rudimentary in many forms. *Idiotropus* as described by McA. and M. is no more an "annectant bug" or a "connecting link" than the Nabidid genus *Scotomedes* Stål with its apparently three-jointed rostrum is a connecting link between the Nabididae and the Reduviidae. It is in every respect (ex-

cept the beak) a quite typical Microphysid; to refer it to the Anthocoridae is little short of absurd. The venation of both the fore and the hind wing in the Microphysidae is very characteristic of this family and quite different from that of the Anthocoridae. As the joint authors give a figure of both wings of their *Idiotropus* and of the fore wing of a male *Microphysa tenella*, it is strange that they did not see that these two insects belong to the same family. As to this *Microphysa tenella*, some parts of which are figured on the plate, I suppose it is a new species with this name, but it is not mentioned at all in the text! These figures (18, 19, 20) much resemble the corresponding parts of *Myrmedobia tenella* Zell., but if they are taken from this European species, it remains for the authors to explain the reasons why they have transferred it to the genus *Microphysa*. Of all the literature concerning Anthocoridae and Microphysidae the joint authors seem to have known almost nothing except a small good but antiquated paper by Fieber printed 65 years ago. Had the authors known Reuter's excellent *Monographia Anthocoridarum* (which also comprises the Microphysidae), or Saunders' *Hem. Heteropt. of the British Islands*, or the *Catalogue of Lethierry and Severin*, or that of Oshanin, it would have been clear to them that it is a well known fact since nearly 60 years that *Idiotropus* Fieb. was founded on the males of the genus *Myrmedobia* Baer., which was based on females and of which it thus is a synonym, the males of this genus being macropterous, the females always brachypterous. From the first-mentioned work they would have seen that the genus *Idiotropus* McA. Mall. (nec Fieb.) has all characters of the family Microphysidae as given by Reuter in his monograph, apart from the rostrum which is three-segmented as in another Microphysid genus (*Nabidomorpha* Popp.).

To anyone acquainted with the sexes of *Myrmedobia* Baer. (*Idiotropus* Fieb.) it is clear that *Idiotropus* McA. Mall. is a quite distinct genus for which I propose the name *Mallochiola*. Uhler had correctly designated it in his collection as a new genus, but under a name which it is not desirable to maintain, as it is almost identical with the name of another genus of Hemiptera.

That authors writing anno mundi 1924 and living in a city with excellent libraries proceed to describe a remarkable new insect without consulting the existing monograph of the group

it belongs to or other modern works manifests a carelessness almost unprecedented in the writings of American entomologists.

The authors then speak of the genus *Peritropis*, which in their key is said to have two closed cells, although Poppius in his important paper on the Cylapinae (apparently unknown to McA. and M.) states that some species of this genus have only one cell. The authors contend that the grounds for placing *Peritropis* in the Miridae and in the subfam. Cylapinae of that family "indeed could not have been well considered," because the genus has two-jointed tarsi. The observation that the tarsi in *Peritropis* are two-jointed is correct (the fact was overlooked by Poppius), but this is barely a generic character, even if it proves to be constant, and does not prevent it being a typical member of the Cylapinae. In the Pentatomidae there are, apart from the Acanthosominae, some genera of various groups—for instance *Nealeria* Bergr., *Compastes* Stål, *Phalaecus* Stål, *Sira-tarsus* Bergr., and *Platytatus* Bergr.—that have two-jointed tarsi. None of the above genera are related *inter se*, nor are they connecting links between the groups they belong to and the Acanthosominae. Likewise we have a few Reduviid genera, for instance *Diarthrotarsus* Bergr. and *Leptoletes* Bergr., with two-jointed tarsi, being however typical Reduviidae and in no way connecting links between this family and some other one having two-jointed tarsi. In the genus *Reduvius* all tarsi are normally three-jointed as in the allied forms, but there is one species with two-jointed hind tarsi and another in which the front tarsi have a single segment. In the Aleocharinae among the Coleoptera we find several *very* closely allied forms with a different number of tarsal joints. Why should not the Miridae occasionally have two-jointed tarsi? In the majority of Miridae the tarsi are constructed in such a way that the apex of the two first joints is as thick as the base of the following joint or nearly so and that it is produced on its underside over the base of the next joint. The tarsal segments are thus practically inflexible and separated from each other not by a true articulation but by a more or less long and always oblique suture, which sometimes is so weak that the use of potassium hydrate is necessary to make it distinctly visible. In a letter to Knight several years ago I called these Mirids leaf-walkers in opposition to the true Mirinae which are straw-climbers with properly articulated flexible tarsi. If in a Mirid tarsus of the inflexible type the suture between two

adjacent segments is entirely obliterated, as the case is in *Peritropis*, this is only what might be expected to occasionally occur and is of still less systematic importance than in the Pentatomid and Reduviid genera with two-jointed tarsi. *Peritropis*, therefore, cannot be said to "go far toward bridging the gap between mirid and isometopid forms," it is no more an "annectant bug" or a "connecting link" than *Mallochiola* is. It is a true Mirid and I agree with Poppius that its place is in the subfamily Cylapinae. Writers who, like McAtee and Malloch, feel a calling for systematic reformatory work in Hemiptera will have to use other characters than the number of rostral and tarsal joints, and, above all, should not draw conclusions from a single detached character unsupported by others.

The joint authors give a new description of the genus *Diphleps* Bergr. and their description and figure of the head are very different from the ones given by me. This is due to the fact that in my type-specimen, when still fresh, the head by some accident had been crushed back from in front. Several American hemipterists, who have seen the type, agree in this. As the head also in the injured specimen is quite symmetrical and identical on either side, I was misled as to its real structure. An examination by transmitted light proves the venation of the membrane to be as figured by McA. and M. These authors do not include *Diphleps* in the Isometopidae, because it "resembles *Peritropis* so much so that the presence of ocelli loses its impressiveness as a primary character segregating mirid from non-mirid forms." This seems to me to be a great exaggeration, and I think that every unbiased hemipterist having a *Diphleps* and a *Peritropis* before him side by side must admit after a careful comparison that the resemblance is only superficial—a parallelism or convergence in certain characters—and that the differences are much more obvious and salient. This does not preclude the probability that the Miridae in a measure are of polyphyletic origin and that *Peritropis* and other Cylapinae descend from one branch of the Isometopidae. As I have remarked in another place, I regard the Mirids of the division Halticaria as more or less directly descendent from certain Isometopidae, but the latter, still largely undescribed, are much more polymorphous than has heretofore been surmised, and after a study of them all it will by and by be clearer from what groups of Isometopidae the different groups of the Miridae have their source. It would be premature here

to dilate further upon this subject. I will only set forth that in my opinion it is not *Peritropis* and its allies, but the Bryocorinae that ought to be derived from *Diphleps*-like ancestors. Only among them we find forms with a cuneus similar to that of *Diphleps* and in the venation of the membrane approaching it. I can see no "annectant bug" in *Diphleps*; it belongs to the Isometopidae, although forming a distinct subfamily. In the opinion of the American authors *Teratodia* Bergr. is the male of *Diphleps*. This seems to me highly improbable. My figures (1 and 3) of the pronotum are correct. In *Diphleps* the anterior pronotal angles are projecting in the form of a large interiorly sinuate, exteriorly rounded lobe touching a large part of the eye, in *Teratodia* these angles are only slightly produced, not nearly touching the eye. There is no sexual difference of this kind in any other Isometopid or Mirid. The black median annulation to the second antennal joint, so conspicuous in *Diphleps*, is lacking in *Teratodia*. Unfortunately the type of the latter is the only male of the subfamily Diphlebinae hitherto found. Until *Diphleps* and *Teratodia* have been found in copulo or at least together on the same tree, I regard them as distinct.

The Isometopidae are considered only a subfamily by McA. and M., and in the key to the groups they are said to have one closed cell in the membrane, although there are two cells in some genera, the other cell being particularly well developed in *Isometopidea* Popp. The joint authors give a key to eight of the Isometopid genera, but as they in their descriptions of the new genera *Alcecoris* and *Wetmorea* and of *Lidopus* Gibs. have omitted the most important generic characters—the shape and length of the clavus and the presence or absence of a claval commissure—it is impossible to know from the descriptions in what groups of the family these genera should be placed in the systematic arrangement outlined by me (Not. Ent. IV, pp. 4-5). As I happen to know two undescribed species of *Alcecoris*, a genus easily recognized by the unusual structure of the two first antennal joints, I can here state that this genus belongs to the division Myiommaria. Reuter, who well knew both *Myiomma* Put. and *Heidemannia* Uhl., has long ago stated that he had carefully compared them, that they are perfectly identical, there being no generic difference, and that Poppius also had examined them with the same result. He also expressly stated that the differences in the structure of the head, which seem to be present in

the figures, should be ascribed to the drawer and do not exist in the specimens themselves. In spite of all these emphatic statements of Reuter, which the authors say they "are not unmindful of," they have not relied on them, but dismiss them with the remarks that the "almost holoptic condition [of *Heidemannia*] is sufficient to distinguish it from *Myiomma* and that they think they "can rely on the figure prepared by Puton." The quoted remarks show how little attention they have paid to Puton's paper, for these figures were not prepared by Puton, who expressly states that they were drawn and painted by Fieber a few days before his death. Also on the plate Fieber is clearly indicated as the drawer. From Fieber's many figures in Reuter's Hem. Gymn. Eur. we know that they, though beautifully drawn and colored, are far from exact, and his figures of *Myiomma*, made when he was old and infirm, are more particularly incorrect. Puton says in his description: "Yeux énormes, occupant tout le dessus de la tête et ne laissant entre eux qu'un étroit espace rectangulaire." This description ought to have been sufficient to dispel every doubt concerning Reuter's statements, it is correct and also fits *Heidemannia* perfectly, but is totally at variance with Fieber's figures, which represent the interocular space as subequal in width to an eye and the posterior parts of the ocular orbitae as strongly divergent backward. McA. and M. have either not understood the above sentence or (what is more probable) they have not found it worth the trouble to read the description at all. I have carefully compared some specimens of *Myiomma* and *Heidemannia* and can verify Reuter's statements in all points. The interocular space immediately before the ocelli is in *Myiomma* one-fourth the width of an eye, in *Heidemannia* about the same, in front of that place it is just a trifle narrower in *Heidemannia* than in *Myiomma*, the meso-scutum is quite as exposed in *Myiomma* as it is in *Heidemannia* with exactly the same oblique lateral ridges, etc. *M. cixiiforme* Uhl. is closely allied to *M. feberi* Put., the chief difference being in the sculpture of the corium. The outcome of McAtee's and Malloch's setting-aside of Puton's and Reuter's statements is that their key to the genera breaks down at the start.

It is but fair to add that a few good and correct observations are also to be found in the paper, as might be expected when it is signed by a Malloch, whose excellent achievements in dipterology I am well acquainted with.

THE NEUROPTERA AND MECOPTERA OF KANSAS.¹

BY ROGER C. SMITH, Kansas State Agricultural College.

Kansas has a good representation of Neuroptera and Mecoptera, and several species among those listed may be appropriately classed as common insects. This list is of especial interest in that it shows a blending of the eastern and western species, and of northern and southern ones.

Several lists of the Kansas species of these two orders have been published, the most important one being Tucker (5).²

² Numbers in parentheses refer to the bibliography.

Other lists somewhat less complete have been published by Banks (1) and Tucker (4).

The list here given includes those taken by the writer in five summers' collecting in Riley County, those in the collection of the Department of Entomology of the Kansas State Agricultural College, and those in the collection of Kansas University supplied through the courtesy of Professors S. J. Hunter and H. B. Hungerford. A list of the identified specimens of these orders now in the Kansas University collection was furnished the writer also with the locality and name of the identifier. Parts of these data have been included in this paper in an effort to make the list as nearly complete as is possible at this time.

Specimens of nearly all of the species listed have been sent to Dr. Nathan Banks for determination or verification, and the writer is pleased to acknowledge this valuable and authoritative assistance. Species marked with an asterisk (*) were verified by Dr. Banks, otherwise, unless credited to him or to someone else, the specimens were identified by the writer. Where no collector is named, the specimens were usually collected by the writer. The names of collectors have been given except where the species is rather common and many specimens have been taken.

In the listing of species, Comstock's classification as to families has been followed.

¹ Contribution No. 346 from the Entomological Laboratory, Kansas State Agricultural College. This paper embodies some of the results obtained in the prosecution of State Project No. 115 of the Agricultural Experiment Station.