

## ICHNEUMONIDAE FROM THE ALLGÄU, BAVARIA.

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THE results are here recorded of an expedition to the Allgäu, Bavaria, undertaken by the author in 1949. As in earlier papers of a similar nature, a list of the determined material is followed by systematic notes and descriptions of new species, and observations of zoo-geographical interest. The differentiation of boreo-alpine species in their boreal and alpine habitats is considered; and also that of species with a large vertical range of distribution, at high altitudes and in the plains. Some biological observations are added and, in conclusion, a few additions and corrections to the paper (1949)\* on the previous year's expedition to the Berchtesgaden district.

This last-mentioned expedition yielded such rich and surprising results that I naturally wished to investigate the Ichneumonid fauna of other high-Alpine districts in Bavaria. Thus was planned the journey to the Allgäu, which was carried through from July to October, 1949.

During this time I worked in the Osterachtal, about from Hinterstein to the Giebel Massif, with the high mountain regions bounding it on either side, particularly on the individual mountains Hengst, Pfannenholz, Daumen and Feldalpe. The material captured was not so rich as that taken in the Berchtesgaden district and showed important differences: thus a useful complement to the previous year's results was obtained. Altogether more than 250 species have been worked out, in which are included twelve new species and two new genera. Besides these, numerous single specimens were captured, the identities of which have not been settled, and which have not been included in the list: it is highly probable that some of these represent further unknown species.

Here I wish to express my thanks for their collaboration to Herr Rolf Hinz, who has again worked out my Campoplegini, and to Mr. Geoffrey J. Kerrich, who undertook the determination of the Cteniscini. I also have pleasure in thanking Professor Zwölfer and Dr. G. D. Krämer for their friendly support of my expedition, and Forstmeister Hertrich, who allowed me the use of a forester's hut in his district, and helped me in many other ways. My wife's industrious and effective collecting has contributed to the results to an important degree.

Mr. Kerrich has kindly translated the paper from German.

## LIST OF DETERMINED SPECIES.

Starred species are treated in the subsequent systematic section.

## A. ICHNEUMONINAE.

<i>Protichneumon pisorius</i> F.....	♀, 1100 m., 20 Sept.
<i>Coelichneumon nobilis</i> Wesm.....	♀♀, 1200 m., 1 Aug.-24 Sept.
" <i>fuscipes</i> Gmel. ....	♀, 1700 m., Sept.
" <i>pumilionobilis</i> Heinr. ....	♂, 860 m., 15 Sept.
" <i>pumilionobilis</i> Heinr. ....	♀ Immenstadt, 30 Sept.
<i>Stenichneumon sputator</i> F. ....	♀, Immenstadt, 29 Sept.
" <i>militarius</i> Thunb. ....	♀♀♂♂, 1100 m., Aug.-Sept., common.
" <i>inezpectatus</i> Heinr. ....	♀♀♂♂, 1100 m., Aug.-Sept., common.
" <i>scutellator</i> Gr.....	♂, 1100 m., 24 Sept.
<i>Ichneumon extensorius</i> L. ....	♀♀, 1200 m., Sept.
" <i>ligatorius</i> Thunb. ....	♀♀, Immenstadt, Sept., common.
" <i>gracilentus</i> Wesm.....	♂♂, 1200-1400 m., Sept., common.
" <i>suspiciosus</i> Wesm. ....	♂, 1800 m., 24 Sept.
" <i>confusorius</i> Grav.....	♀♀, Immenstadt, 30 Sept.
" <i>albiger</i> Wesm. ....	♀♀♂♂, 1100 m., Aug.-Sept.
" <i>computatorius</i> Müll. ....	♂♂, 1100 m., Aug., common.
" <i>deliratorius</i> L. ....	♀, Immenstadt, 29 Sept.
" <i>stramentarius</i> Grav. ....	♀♀♂♂, Immenstadt, 3 Oct.
" <i>terminatorius</i> Grav. ....	♀♀♂♂, 1100 m., 1-15 Aug.
" <i>obsessor</i> Wesm.....	♂♂, 1200 m., end Sept.
" <i>languidus</i> Wesm. ....	♂, 1100 m., 24 Sept.
" <i>hereticus</i> Wesm. ....	♂, 1000 m., 30 July.
" <i>cessator</i> Müll.....	♂♂, 1200 m., beginning Sept.
" <i>luteipes</i> Wesm. ....	♂, 1700 m., 27 July.
" <i>captorius</i> Thoms. ....	♀, Immenstadt, 30 Sept.
" <i>raptorius</i> Grav.....	♂, 1200 m., 20 Sept.
" <i>nereni</i> Thoms.)	♂, 1400 m., 15 Sept.
" <i>gracilicornis</i> Wesm. ....	♂, 1400 m., 24 Sept.
" <i>emancipandus</i> , sp. n. ....	♀♀♂♂, 1700 m., Aug.
" <i>versutus</i> Holmgr. ....	♀, 2000 m., Nebelhorn, 10 July, coll.
" <i>eremitorius</i> Zett.....	Hörhammer.
" <i>burias</i> Heinr.....	♀♀, Immenstadt, Sept.
" <i>factor</i> D. T. ....	♀♀, Immenstadt, end Sept.
" <i>pseudocaloscelis</i> Heinr.....	♂♂, 1100-1200 m., Aug.-Sept.
" <i>jugicola</i> Heinr. ....	♀, 1600 m., 27 Aug.
" <i>sarcitorius</i> L.....	♂, 1700 m., beginning Aug.
" <i>gravidus</i> Wesm.....	♀♀♂♂, 1700 m., Sept.
" <i>gratus</i> Wesm.....	♂♂, 1200 m., Aug.-Sept.
" <i>supersanguineus</i> , sp. n.....	♀ 1200 m., 6 Sept.
" <i>pseudanalis</i> , sp. n.....	♂, 1200 m., 18 Sept.
<i>Amblyteles armatorius</i> Forst. ....	♀, 1600 m., 27 Aug.
<i>Pseudamblyteles culpatorius</i> Grav.....	♂♂, 1800 m., 21 Aug.
" <i>gradatorius</i> Thbg. ....	♀, 1700 m., 12 Sept.
" <i>infractorius</i> L. ....	♂♂, Immenstadt, Sept., common.
" <i>oratorius</i> F. ....	♀♀♂♂, 1700-2000 m., Sept.
" <i>castanopygus</i> Steph. ....	♀, Immenstadt, 30 Sept.
" <i>punctus</i> Grav. ....	♀♀♂♂, Moor Rauhenzell bei Immenstadt, Sept.
" <i>negatorius</i> F. ....	♀♀, Moor Rauhenzell bei Immenstadt, Sept.
<i>Ctenamblyteles homocerus</i> Wesm. ....	♀, Immenstadt, 30 Sept.
	♂, 1700 m., 10 Sept.
	♂♂, 1000 m., 30 July.
	♀, Immenstadt, 21 Sept.
	♂, 1000 m., beginning Aug.
	♂, 1400 m., 1 Sept.
	♀♀, Immenstadt, 30 Sept.
	♂, 860 m., 15 Sept.
	♂♂, 1700 m., Sept.

* <i>Limerodops fossorius</i> L. ....	♀, 1700 m., 1 Sept.
<i>Spilichneumon johansonii</i> Holmgr. ....	♂♂, 1200 m., Sept.
<i>Barichneumon saturatorius</i> F. ....	♂♂, 1100 m., Sept.
" <i>albognatus</i> Gr. ....	♂, 1000 m., 30 July.
" <i>persecutor</i> Wesm. ....	♂♂, 1400 m., 29 Aug.
" <i>sanguinator</i> Rossi ....	♀, Immenstadt, 29 Sept.
" <i>praeceptor</i> Thunb. ....	♀, Immenstadt, 5 Oct.
" <i>lepidus</i> Grav. ....	♀, 860 m., 17 Sept.
" <i>gemellus</i> Grav. ....	♂, Osterachtal 1200 m., 3 Sept.
<i>Ctenichneumon camelinus</i> Wesm. ....	♂, 1100 m., 13 Sept.
" <i>divisorius</i> Grav. ....	♂, 1700 m., 1 Aug.
" <i>edictorius</i> L. ....	♀♀, 1400 m., Sept.
" <i>repentinus</i> Grav. ....	♂♂, 1100 m., 1400 m. and 1800 m., Sept.
" <i>messorius</i> Grav. ....	♂♂, 1300 m., mid-Sept.
" <i>gnescastanus</i> Gr. ....	♀, Immenstadt, 30 Sept.
<i>Aoplus ruficeps</i> Grav. ....	♀, 1100 m., 3 Aug.
" <i>ochropis</i> Gmel. ....	♂, 1700 m., 12 Sept.
" <i>cornicula</i> Wesm. ....	♀♀, 1100 m., Aug.
" <i>castaneus</i> Gr. f. <i>pulchricornis</i> Gr. ..	♂, 1100 m., 16 Aug.
" <i>rubricosus</i> Grav. ....	♀, 1100 m., 21 Sept.
* <i>Platylabus alpinus</i> , sp. n. ....	♂, 1100 m., beginning Aug.
<i>Cratichneumon hemerithrus</i> Heinr. ....	♂♂, 1700 m., 2 Sept., common.
" <i>berthoumieuvi</i> Pic. ....	♂♂, 1100-1800 m., Aug.-Sept.
" <i>sicarius</i> Wesm. ....	♀, 1100 m., 9 Aug.
* <i>Cratichneumon pratensis</i> , sp. n. ....	♀, 1000 m., 27 July.
" <i>nigritarius</i> F. ....	♀, 1800 m., 24 Sept.
" <i>pseudocryptus</i> Wesm. ....	6 ♀♀, 1800-1800 m., 27 Aug.-12, Sept.
" <i>pustillus</i> Schmied. ....	♂, 1100 m., 24 Sept.
" <i>citrinops</i> Wesm. ....	♂, 1100 m., beginning Aug.
<i>Hybophorellus aulicus</i> Grav. ....	♂♂, 1700 m., 20-30 Sept.
" <i>duplicator</i> Roman. ....	♂♂, 1000 m., 30 July.
" <i>ssp. montecapitis</i> Heinr. ....	♀♀, 1100 m., 30 July-7 Aug.
<i>Hopliemenus bispinatorius</i> Thunb. ....	♀, 1100 m., 21 Sept.
* <i>Neischnus oxypterus</i> , gen. et sp. n. ....	♀♀♂♂, 1100 m., Sept., common.
<i>Asthenolabus† mesoleucus</i> Heinr. ....	2 ♂♂, 1400 m., 1 Sept.
<i>Ectopius exhortator</i> Thunb. ....	♂, 900 m., 16 Sept.
<i>Hypomecus albitarsis</i> Wesm. ....	1100 m., 1 ♂, 30 July.
<i>Phaeogenes ophthalmicus</i> Wesm. ....	♀♀, 1 and 24 Aug.
" <i>semivulpinus</i> Grav. ....	1600 m., 2 ♂♂, 27 Aug.
" <i>ischiomelinus</i> Grav. ....	2 ♀♀, Aug.
<i>Baeosemus aeneascens</i> Thoms. ....	♀♀♂, Immenstadt, 29 Sept.-4 Oct.
<i>Colpognathus celerator</i> Grav. ....	♀, 1100 m., 22 Sept.
<i>Dicaelotus pumilus</i> Grav. ....	♀, 1100 m., 20 Aug.

## B. CRYPTINAE.

* <i>Mesostenus albinotatus</i> Grav. sp. <i>monticola</i> Heinr. ....	4 ♀♀, 1 ♂, 1100-1800 m., 27 Aug.-24 Sept.
<i>Listrogathus pygostolus</i> Grav. ....	♀ 1100 m., 12 Sept.
<i>Acronictus stylator</i> Thunb. ....	♀, 1700 m., beginning Aug.
<i>Cryptus obscuripes</i> Zett. ....	♀, 1000 m., 30 July.
" <i>laborator</i> Thunb. ....	♀, ♂♂, 1600-1800 m., end Aug., common.

† *Asthenolabus*, n. nov., for *Stenolabus* Heinr. (præocc.).

<i>Cryptus divisorius</i> Tschek. ....	♂, 1700 m., 12 Sept.
" <i>murorum</i> Tschek. ....	♀, 1600 m., 22 Aug.
" <i>armatorius</i> F. ....	♀, 1200 m., 12 Sept.
" <i>viduatorius</i> F. ....	♀, 1000 m., 24 July.
<i>Spilocryptus mansuetor</i> Tschek. ....	♂♂, 1100 m., 5 Sept.
" <i>migrator</i> Grav. ....	♀♀, 5-15 Sept.
" <i>incubitor</i> Grav. ....	♀, 1600 m., 24 Aug.
<i>Ischnus brachyurus</i> Grav. ....	♀, 1200 m., 12 Sept.
" <i>alternator</i> Grav. ....	♀♀, ♂♂, 1100-1800 m., end Aug. and Sept., common.
* <i>Caenocryptus alpicola</i> Hab. ....	♂♂, 1100 m., 30 July, 1400 m., 2 Sept.
" <i>pubiventris</i> Thoms. ....	♂, 1100 m., 4 Sept.
<i>Schenkia brevicornis</i> Grav. ....	♂, 1200 m., 8 Sept.
" <i>rufithorax</i> Strobl. ....	♀, 1700 m., 10 Sept.
<i>Microcryptus basizonius</i> Grav. ....	♀, 850 m., 16 Sept.
" <i>sericans</i> Grav. ....	♀♀, 1100 m., 8 and 29 Aug., 1400 m., Sept. Immenstadt, 4 Oct.
<i>Aptesis nigrocinclus</i> Grav. ....	♂, Immenstadt, 28 Sept.
<i>Chaeretymma</i> (= <i>Cratocryptus</i> Thoms.) <i>anatorius</i> Grav. ....	♀♀, Immenstadt, end Sept., beginning Oct., common.
<i>Giraudia gyratoria</i> Thunb. ....	♂♂, 1100 m., Sept.
<i>Plectocryptus arrogans</i> Grav. ....	♀, 1400 m., 1 Sept.
" <i>albolineatus</i> Strobl. ....	♀♀♂♂, 1100 m., July-Sept.
* <i>Pseudocryptus griseascens</i> Grav. ....	♂♂, 1100 m., Aug.
<i>Rhombobius quadrispinosus</i> Grav. ....	♀, 1800 m., 21 Aug.
<i>Glypticnemis suffolkensis</i> Morl. ....	♂♂, 1100-1400 m., 4-18 Sept.
<i>Iselcia hercynicus</i> Grav. ....	Immenstadt, 4 Oct.
<i>Hemiteles hirticeps</i> Thoms. ....	♂, 850 m., 16 Sept.
" <i>micator</i> Grav. ....	♀♀ Immenstadt, 30 Sept., common.
<i>Panargyrops claviger</i> Tschek. ....	♀♀, 1700 m., 10 Sept.
<i>Exolytus laevigatus</i> Grav. ....	♀, 1100 m., 24 Sept.

## C. PIMPLINAE.

* <i>Pimpla arctica</i> Zett. ....	♂♂, 1500 m., 12 Sept.
" <i>aterrima</i> Grav. ....	♀, 1100 m., 22 Sept.
var. 2 Schmied. ....	♀♀♂♂, 1700 m., Sept.
" <i>sodalis</i> Ruthe. ....	♀♀, 1100-1400 m., Sept.
" <i>flavicoxis</i> Thoms. ....	♀♀, 1700 m., Sept.
" <i>melanacris</i> Perkins. ....	♀, 1000 m., 30 Aug.
<i>Itopectis curticauda</i> Kriech. ....	♀♀, Immenstadt, end Sept.
" <i>alternans</i> Grav. ....	♀♀, 1100 m., Sept.
<i>Apechthis resinator</i> Thunb. ....	♀♀, Immenstadt, 30 Sept.
<i>Tromatobia ovivora</i> Boh. ....	♀, 100 m., 31 July.
<i>Delomerista mandibularis</i> Grav. ....	♀♀, 1100-1300 m., Aug.-Sept.
<i>Rhaphialtes nigricans</i> Thoms. ....	♀♀, 1100 m., 15 and 22 Sept.
" <i>nigricoxis</i> Ulb. ....	♀, Immenstadt, 5 Oct.
" <i>punctata</i> Thoms. ....	2 ♀♀, 1700 m., 1 and 15 Aug.
" <i>brevicornis</i> Grav. var. <i>nigriscaposa</i> Thoms. ....	♀, Immenstadt, 29 Sept.
" <i>brevicornis</i> Grav. var. 1 Holmgr. ....	♀, 1700 m., beginning Aug.
" <i>lativentris</i> , Ulb. <i>altalpinus</i> , nov. sp. ....	2 ♀♀, 1700 m., beginning Aug.
<i>Zaglyptus moldavica</i> Const. ....	♀, Immenstadt, 27 Sept.
<i>Rhyssa amoena</i> Grav. ....	2 ♀♀, 1100 m., 10 Aug. and 5 Sept.
<i>Xylonomus alpestris</i> Haberm. ....	♀, 100 m., 27 July.
* <i>Odontocolon</i> ? <i>thomsoni</i> Clém. ....	♀, 1000 m., 27 July.
* <i>Leptacoenites frauenfeldi</i> Tschek. ....	4 ♀♀, 1 ♂, 1800 m., 1 Aug.
	♀, 1600 m., 27 Aug.

## D. LISSONOTINAE.

* <i>Lissonota cylindricator</i> Vill. magna, ssp. n.	♀, 1700 m., 12 Sept.
" <i>clipeator</i> Grav.	♀♂♂, 1200 m., Sept., common.
" ? <i>gracilenta</i> Holmgr.	♀, 1100 m., 16 Sept.
<i>Lampronota calenator</i> Panz.	♀, 1100 m., Aug.
<i>Cryptopimpla caligata</i> Grav.	♀♂♂, 1100-1400 m., Aug.-Sept.
" <i>calceolata</i> Grav.	♂, 1200 m., 18 Sept.
" <i>hertrichi</i> , sp. n.	♀, Immenstadt, 29 Sept.
* <i>Diblastomorpha bicornis</i> Boie	2 ♀♀, 1800 m., 24 Sept.
<i>Conoblasta ceratites</i> Grav.	♀, 1200 m., 6 Sept.
" <i>alpina</i> Heinr.	♀, 1100 m., 24 Sept.
" <i>alpina</i> Heinr.	2 ♀♀, 1200 m., 13 Sept.
<i>Glypta evanescens</i> Ratzb.	♀♂, 1600 m., 27 Aug.
" <i>macrura</i> Haberm.	♂, 1100 m., 1 Aug.
" <i>genalis</i> Möll.	♀, 1100 m., beginning Aug.
" ? <i>rubicunda</i> Bridg.	♂, 1800 m., 1 Aug.
<i>Ezetastes laevigator</i> Vill., sub-sp. <i>alpinus</i> Kriechb.	♀♂♂, 1800 m., 1 Aug.
" <i>guttatorius</i> Thunb.	♀♀, 1800 m., Aug.
* <i>Leptobatus alpinus</i> , sp. n.	♀♂♂, 1000 m., 3 Sept.
	♀♂♂, 1100-1200 m., Sept.

## E. METOPIINAE.

<i>Ceratopius dissectorius</i> Panz.	♀♂♂, 1600-2000 m., July-Aug., common.
<i>Metopius micratorius</i> F.	♀, Immenstadt, 27 Sept.
<i>Alomya debellator</i> F.	♂♂, 1200-1600 m., Aug.
<i>Ezochus gravipes</i> Grav.	♀♀, 900 m., 16 Sept.
" <i>incidens</i> Grav.	♂, 900 m., 16 Sept.

## F. DIPLAZONINAE.

<i>Diplazon laetatorius</i> F.	♀♀, 1000 m., 30 Aug.
" <i>albognatus</i> Grav.	♂, 1000 m., 30 Aug.
" <i>annulatus</i> Grav.	♂♂, 1700 m., 1 Aug.
<i>Syrphoctonus pectoratorius</i> Grav.	♂♂, 1100 m., and 1800 m., Aug., Sept.
" <i>tarsatorius</i> Panz.	♀♀, 1600 m., Aug.
" <i>ornatus</i> Grav.	♀♂♂, 700-1800 m., Aug. and Sept.
" <i>cinctus</i> Grav.	♂♂, 1100-1200 m., Aug. and Sept., common.
" <i>punctiventris</i> Thoms.	♀♀, 1800 m., Aug.
" ? <i>dimidiatus</i> Schrank	♀, Immenstadt, 28 Sept.
" <i>pictus</i> Grav.	♂, 1000 m., 24 Sept.
	♀, 1100 m., 20 Sept.

## G. MESOLEPINAE.

<i>Xenoschesia fulvipes</i> Grav. forma <i>nigricornis</i> Heinr.	♀, 1400 m., 3 Sept.
<i>Absyrtus luteus</i> Holmgr.	♀♂, 1100 m., Sept.
<i>Perilissus filicornis</i> Grav.	♀♂, 1100 m., 1-15 Aug.
* <i>Himerta</i> ? <i>thaseni</i> Bauer	♀, 1700 m., 28 July.
"	♀, 1600 m., 27 Aug.
<i>Barytarbes laeviusculus</i> Thoms.	♂, 1700 m., 30 July.
" <i>flavoscutellatus</i> Thoms.	♂, 1000 m., 22 July.
<i>Nemesoleius flavipes</i> Grav.	2 ♀♀, 900 and 1700 m., 2 and 16 Sept.
"	8 ♂♂, 900-1100 m., 28 July-16 Sept.
<i>Perispuda sulphuratus</i> Grav.	♂, 1100 m., 7 Aug.
" <i>flavitaris</i> Thoms.	♀♂♂, 1000-1700 m., 5 Aug.-12 Sept.
* <i>Lagarotis semicaligatus</i> Grav.	♀♂♂, 700-1200 m., 17-30 Sept.
" <i>debitor</i> Thunb.	♀♂♂, Immenstadt, 29 Sept.-4 Oct.
" <i>debitor</i> Thunb. <i>montalpina</i> , f. nov.	♀, 1800 m., 24 Sept.
" <i>ustulatus</i> Holmgr.	♀♀, 1500-1800 m., Aug.
" <i>erythrocerops</i> Heinr.	♀♀, 1500-1800 m., Aug.
" <i>subalpinus</i> , sp. n.	♀♂♂, 1100-1400 m., 1-21 Sept.

<i>Alexeter rapinator</i> Grav.	♀, 1700 m., 2 Sept.
var. 1 and var. 2 Schmied.	♀♂♂, 1100-1400 m., end Aug.-beginning Sept.
" <i>inconspicuus</i> Schmied.	♀♂♂, 1100-1200 m., Sept.
" <i>nebulator</i> Thunb.	♀♀, 1000-2000 m., Sept.
" <i>gracilentus</i> Holmgr.	♂, 1700 m., 27 July.
" <i>fallax</i> Holmgr.	♀♂♂, 1100-1200 m., Aug.-Sept.
" <i>albibras</i> Thoms.	♀, 1100 m., 21 Aug.
" <i>sectator</i> Thunb.	♀♂♂, 1100-1800 m., Aug.-Sept.
<i>Scopesia bicolor</i> Grav.	♀♂♂, 1500-1800 m., Aug.
" <i>regularis</i> Thoms.	♂♂, 1100-1300 m., Sept.
" <i>alpinagans</i> Heinr.	2 ♂♂, 1700-1800 m., beginning Aug.
" <i>rufonotatus</i> Holmgr.	♀♂♂, 1000-1100 m., end July-mid Sept.
"	♂, 1700 m., 1 Aug.
" <i>gesticulator</i> Thunb.	♀♂♂, 700-1200 m., Sept.
<i>Mesoleius aulicus</i> Grav.	♀, 1200 m., 10 Sept.
" <i>multicolor</i> Grav.	2 ♀♀, 1000-1100 m., end July.
" <i>fuscipes</i> Holmgr.	♀, 1100 m., 30 July.
"	♀, 1000 m., 30 Aug.
" ? <i>brachypus</i> Thoms.	♀, 1100 m., 7 Aug.
" <i>ruficollis</i> Holmgr.	♀, 1700 m., 28 July.
" <i>rugipleuris</i> , sp. n.	♀♂♂, 1600 m., Aug.
* <i>Cuboscoptes epachthoides</i> , sp. n.	2 ♀♀, 1600 m., 27 Aug., 1700 m., 12 Sept.
"	3 ♂♂, 1800 m., end July, beginning Aug.
<i>Hadrodactylus typhae</i> Geoffr.	♀♀, 1100 m., beginning Aug.
" <i>confusus</i> Holmgr.	♂, 1000 m., 30 Aug.
" <i>fugax</i> Grav.	♀♀, 1600 m., 21 Aug.
"	♂, 1700 m., 1 Aug.
* <i>Meropaches bulsanensis</i> Schmied.	♀, 1400 m., 1 Sept.
<i>Mesoleptidea faciator</i> Thunb., var. 1 Schmied.	♀, 1600 m., 27 Aug.
" <i>stili</i> Holmgr.	♀, 1800 m., 3 Sept.
" <i>cingulatus</i> Grav.	♀, 1100 m., 29 Aug.
"	♀, 1000 m., 27 July.
"	2 ♂♂, 1100 m., 28 July, 1700 m., 1 Aug.
" <i>proseleucus</i> Grav.	♀♂♂, 1000-1800 m., Aug.
<i>Euryproctus nemoralis</i> Geoffr.	♀♀, 1300 m., Sept.
" <i>annulatus</i> Grav.	♂, 1100 m., 24 Sept.
" <i>plantator</i> Thunb.	♂♂, 1100 m., Sept.
" <i>alpinus</i> Holmgr.	♀, 1100 m., 8 Aug.
" <i>crassicornis</i> Thoms.	3 ♀♀, 3 ♂♂, 1100-1300 m., 4-15 Sept.
" ? <i>regenerator</i> F.	♂, 1100 m., August.
<i>Dialges</i> † <i>xanthostomus</i> Grav.	♂, 900 m., 16 Sept.
<i>Callidiotes luridator</i> Grav.	♀♂♂, 1100 m., end July-beginning Aug.

## H. TRYPHONINAE.

<i>Netelia</i> † ( <i>Parabates</i> ) <i>virgatus</i> Fourc.	♀♀, 1100 m., Aug.
" ( <i>Parabates</i> ) <i>millieratae</i> Kriechb.	♀, 1100 m., Aug.
<i>Eclitrus praeclarus</i> Schmied.	2 ♀♀, 1100 m., 29 July and 9 Aug.
<i>Tryphon obtusator</i> Thunb.	♀♀, 1100-1400 m., Aug., Sept.
" <i>incestus</i> Holmgr.	♀♂♂, 1100 m., Aug.
" <i>separandus</i> Schmied.	♂, 1100 m., 30 July.
<i>Cosmoconus elongator</i> F.	♀♀, 1100 m., Sept.
" <i>genalis</i> Strobl	♀♂♂, 1400-1800 m., Aug., Sept.
<i>Dyspeles praerogator</i> L.	♀♂♂, 1100 m., Aug.
" " L. forma <i>arrogator</i> Heinr.	♂♂, 1100 m., beginning Aug.
<i>Errormenus zonarius</i> Grav.	♂, 1000 m., 22 July.

† *Dialges* Först. for *Pantorhaestes* Först. after Townes, Mem. Amer. Ent. Soc., 1944, p. 522.  
 † I place this genus in the Tryphoninae following Townes (Mem. Amer. ent. Soc., 1944, p. 18, although I am not quite convinced of the correctness of this. The genus includes *Parabates* Först. and *Panicus* auct. non Schrank. *Panicus* Schrank is a synonym of *Ophion* Fabr. having the same type-species *luteus* L.

<i>Trichocalymna propinquus</i> Gr. ....	♂, 1100 m., beginning Aug.
<i>Scopiorus bipustulatus</i> Holmgr. ....	♂, 1700 m., 27 July.
" sp. near <i>pastoralis</i> Grav. ....	2 ♂♂, 1600 m., 8 and 27 Aug.
<i>Exenterus amictorius</i> Panz. ....	♀♀, Immenstadt, end Sept.
<i>Anisodenton ridibundus</i> Grav. ....	♀♀, ♂, 1100-1200 m., Sept.
" <i>alacer</i> Grav. ....	♂, 1100 m., 21 Sept.
	♀♀♂♂, Immenstadt, end Sept., beginning Oct., common.
<i>Diaborus filipalpis</i> Thoms. ....	♀♀, 1600 m., 8 Aug.
" sp. ....	♀, 2 ♂♂, 8 Aug.

## I. PLECTISCINAE.

<i>Cylloceria melancholica</i> Grav. ....	♀♀♂♂, 1100 m., Aug., Sept.
<i>Proclitus mesozanthus</i> Först. ....	♀♀♂♂, 1100 m., 23 Sept.
<i>Plectiscus collaris</i> Grav. ....	♀♀, 1100 m., 23 Sept.

## K. OPHIONINAE.

<i>Therion circumflexum</i> L. ....	♀, 1100 m., 21 Sept.
<i>Blaptocampus nigricornis</i> Wesm. ....	♀, 1100 m., 24 Sept.
<i>Agrypon variatissimum</i> Wesm. ....	♀♀♂♂, 1100-1200 m., 5-12 Sept.
" <i>opaculum</i> , sp. n. ....	♀, 1100 m., 16 Aug.
<i>Charops decipiens</i> Grav. ....	♀, 1100 m., 1 Aug.
<i>Campoplex obliteratus</i> Holmgr. ....	♀, 1000 m., end July.
" <i>inermis</i> Först. ....	♀, 1100-1400 m., 2-15 Sept.
" <i>confusus</i> Först. ....	♀♀, 1600-1800 m., 30 July.
	♀♀, 1100 m., beginning Aug.
	♀♀, 1000 m., 3 Sept.
<i>Sagaritis femoralis</i> Grav. ....	♂, 1000 m., 27 July-1 Aug.
<i>Cymodusa leucocera</i> Holmgr. ....	♀♀♂♂, 1100 m., 26 July-26 Sept.
" <i>flavipes</i> Brischke ....	♀♀♂♂, 1100 m., 1-15 Aug.
<i>Casinaria albipalpis</i> Grav. ....	♀♀, 1100 m., 1-15 Aug.
" <i>punctiventris</i> Woldst. ....	♀♀, 1100-1400 m., 2-15 Sept.
<i>Eulimneria geniculata</i> Grav. ....	♂, 1000 m., 27 July-1 Aug.
<i>Anilastus vulgaris</i> Tschek ....	♀, Immenstadt, 30 Sept.

## SYSTEMATIC SECTION.

*Coelichneumon pumilionobilis* Heinr.

This species is being described in the course of a paper on Ichneumonidae from Styria to be published in 1952 in the *Bonner Zoologische Beiträge*.

*Ichneumon emancipandus*, sp. n., ♀. (Figs. 1, 2.)

Type: Allgäu, Osterachtal, 1600 m., ♀, 27. viii. 1949; in coll. II of G. Heinrich.

Resembles *emancipatus* Wesm. in general form and colouring, and agrees in the form of the gastrocoeli, which are each broader than the space between. Differs in having the flagellum shorter and not at all broadened beyond middle, and in the hypopygium, which covers the greatest part of the ovipositor cleft (as in *caloscelis* Wesm.).

♀.—Head and thorax black, with only the scutellum and a mark on the subalar swelling white. Abdomen three-coloured, black, having tergites 2-3 yellowish-red and 4-7 with white spots. Legs red, with coxae and trochanters, and barely the apical third of the hind femora black; tibiae more yellowish-red, the hind tibiae not really apically black,

but only somewhat darkened above at extreme apex. Antennal flagellum black, brownish at base, white-ringed.

Length 12 mm.

Antennal flagellum short, setaceous, moderately stout, not at all broadened beyond middle, but slightly compressed before apex; 36-segmented, with the first about twice as long as apically broad, about the sixth in lateral and the ninth in dorsal view quadrate, no segment broader than long.

Fig. 2.

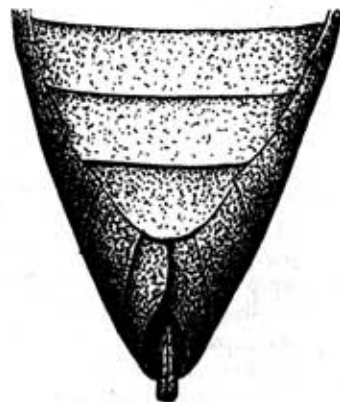


Fig. 1.

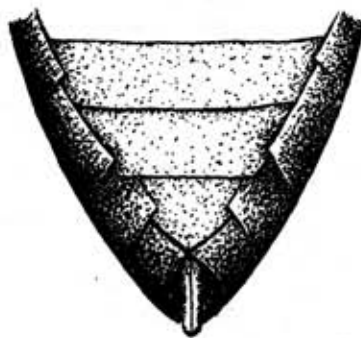


Fig. 1.—Apex of abdomen from below, showing hypopygium, of *Ichneumon emancipandus*, sp. n., ♀.

Fig. 2.—Apex of abdomen from below, showing hypopygium, of *Ichneumon emancipatus* Wesm., ♀.

Head transverse; temples slightly narrowed and rounded behind, as are the cheeks below; cheeks moderately long, quite as long as breadth of mandibular base; epistoma slightly convex, not at all separated from clypeus, which is flat and apically truncate. Scutellum raised above metascutellum. Propodeum with area superomedia quadrate, with horizontal part little more than half length of area posteromedia. Postpetiole broad, with median area clearly defined and finely aciculate. Gastrocoeli large, transverse, each broader than the space between them.

Abdomen apically obtuse, broad-oval as in *emancipatus* Wesm., but with hypopygium large, covering the ovipositor cleft considerably further than in that species; ovipositor not at all exerted.

*Ichneumon supersanguineus*, sp. n.

Type: Allgäu, Immenstadt, Rauhenzell, 600 m., ♀, 29. ix. 1949, in coll. II of G. Heinrich.

Very distinctive in the vivid blood-red coloration of the female (see below). Resembles and is related to *I. ruficollis* Holmgr., but is certainly distinct in the narrower temples, the more elongate basal flagellar segments, and the shorter area superomedia; moreover in 11 specimens

the hind femora are always totally but the frontal orbits never red, and the fifth tergite never bears a white mark.

♀.—Black. Pronotal collar, mesoscutum, tergites 1–3, and legs almost entirely, vivid blood-red. Scutellum yellowish-white. Flagellum white-ringed, sometimes basally red. Two anal marks. Coxæ and first segments of trochanters black; tibiae not apically black.

Length 12 mm.

Temples not broad, narrowed and rounded behind; cheeks slightly narrowed below and scarcely buccate. Malar space a little longer than breadth of mandibular base. Clypeus apically truncate, about  $2\frac{1}{2}$  times breadth of its median length. Mandibles slender. Scutellum flat discally, somewhat raised above metascutellum. Propodeum with area superomedia quadrate; with horizontal part more than half length of area posteromedia; costulae absent. Median area of postpetiole broad, clearly defined and strongly aciculate. Gastrocoeli small, triangular. Vertical region and temples coarsely punctate, but less strongly than in *ruficollis* Holmgr. Mesoscutum shallowly and not very strongly punctate, distinctly shining. Hind coxæ strongly punctate, with no scopula. Ovipositor scarcely exerted.

Flagellum of moderate length, filiform, 36- to 38-segmented, the first segment about  $1\frac{1}{2}$  times as long as broad, about the seventh quadrate, slightly thickened beyond middle, the broadest segment about  $1\frac{1}{2}$  times as broad as long, segments 7 or 8 to 14 with a white ring, in four specimens with the basal segments brownish.

Colour variability in 11 specimens—apart from the above-mentioned parts the following are red: epistoma (5 specimens), facial orbits indistinctly (3 specimens), hinder angles of pronotum (9 specimens), subalar swellings (5 specimens), tegulae (8 specimens), metascutellum (7 specimens), fore and hind coxæ at apex (4 specimens), and antennal scape (2 specimens).

♂.—The capture of a whole series of males, described below, at the same time and in the same special, closely limited biotope as the above females renders the association of the sexes almost a certainty.

As always in the Ichneumoninae, the red colour of the female mesoscutum is replaced by black in the male. This sex is otherwise distinguished by the tarnished, irregular reddish-yellow colour of the middle tergites, which extends at least on to the sides or base of the fourth tergite and sometimes over its whole surface; and the postpetiole is similarly coloured on the hind margin or angles, or sometimes in greater part.

The following parts are always yellowish-white: mandibles in greater part, hinder angles of pronotum, and scutellum except at base. Clypeus usually with two pale spots or a percurrent transverse band, and facial orbits often yellowish-white marked; these parts seldom entirely black. Legs reddish-yellow, with the following black: coxæ and trochanters always, usually hind femora except at outer base, and commonly the fore and mid femora at base and extending more or less on the under

side. Hind tibiae more or less broadly black at apex, indistinctly sulphur-yellow in middle. All tarsi pale. Occasionally the hind femora are dirty brownish-red in greater part.

Scutellum more strongly raised above propodeum than in female, its hind margin reddish (as in that sex also). Propodeum as always shorter than in female; area superomedia in consequence distinctly broader than long. Gastrocoeli relatively larger and broader than in female, each about as broad as the space between. Number of flagellar segments as in female, about segments 7 to 17 with elongate tylöidi, the middle ones almost the whole length of their respective segments.

Described from 11 ♀♀, Allgäu, Immenstadt, Rauhenzell, 28. ix.–2. x. 1949, plus numerous ♂♂ taken at the same time and place.

This species was found on a *Sphagnum* bog, with dwarf pines and sparse moorland grasses, and with *Vaccinium uliginosum* growing round the edges.

*Ichneumon analisorius*, sp. n., ♀, ? ♂.

Type: Allgäu, Immenstadt, Rauhenzell, 600 m., ♀, 30. ix. 1949, in coll. II of G. Heinrich.

This species belongs in Berthoumieu's *memorator*-group and could easily be mistaken for *analis* Wesm.; but the whole series of 12 females from the single type-locality differs from Wesm. type, which I have been able to see, in the proportions of the flagellar segments and also subtly in the form of tergite 2. By direct comparison, the cheeks in front view appear a little more narrowed below than in *analis* Wesm. The question whether we are dealing with a specific or subspecific difference remains to be resolved; but on account of the striking correspondence in other respects I favour the former view.

♀.—Head and thorax black, without pale or red colouring. Postpetiole, tergites 2 and 3, and sides or more or less at base red; following tergites and usually the whole petiole black; but sometimes the petiole is red with only a median black mark before postpetiole, or occasionally the whole segment red. Legs red, with the following parts black: coxæ and trochanters, hind tibiae at apex, hind femora usually in about apical half but sometimes just in apical third above; hind femora occasionally black except narrowly at base. Flagellum tricoloured, white-banded, usually with scape, pedicellus and segments preceding white band more or less blackened.

Length 8 to 9 mm.

Flagellum short, filiform, little narrowed to apex, mostly 23- to 24- but occasionally 25-segmented; the first hardly  $1\frac{1}{2}$  times as long as broad, second or third quadrate, sixth broader than long; segments 6, or usually 7 to 10, with white ring.

Temples rather strongly narrowed and rounded behind, and cheeks in front view equally clearly narrowed below. Area superomedia parallel-sided, about  $1\frac{1}{2}$  times as long as broad. Gastrocoeli small, triangular.

## Diagnostic differences.

*analisis* Wesm.

Flagellum 26- to 28-segmented, 4th or 5th quadrate, 6th not transverse.

Head, pronotal collar or coxae red-marked.

Scape and base of flagellum (? always) unicolorous red.

Tarsi more slender; of mid-tarsus second segment about twice as long as its breadth at apex.

*analisorius*, sp. n.

Flagellum 23- to 25-segmented, 2nd or 3rd quadrate, 6th transverse.

Head, pronotal collar and coxae black.

Scape, pedicellus and segments preceding white band almost always more or less intensively blackened.

Tarsi somewhat stouter; of mid-tarsus second segment only about  $1\frac{1}{2}$  times as long as, third scarcely longer than, its breadth at apex.

## Colour variability in 12 ♀♀.

Flagellum red at base, only scape and pedicellus wholly or partly dark (5 specimens).  
Tergites 2-3 and basal half of 4 red (1 specimen).

First segment wholly red (2 specimens).

Hind femora only red at base (3 specimens).

Fore coxae wholly black (2 specimens).

Flagellum red at base but blackened before the white ring (7 specimens).  
Tergites 2-3 and only sides of 4 red (8 specimens).

Petiole black, or at least black-marked above before postpetiole (10 specimens).

Hind femora in basal half or more extensively red (9 specimens).

Fore coxae somewhat reddish at apex above (10 specimens).

♂ (?).

On structure, size and colour the following males would go well with the foregoing females. In Berthoumieu's key to species they would run to *quaterannulatus* Thoms., but they differ from that species in the long area superomedia and considerably larger size. From *latrator* Grav., ♂ they differ only in having the flagellum pale rust-red beneath instead of yellow, in the elongate area superomedia, and in the considerably larger size (8-9 mm. instead of 5-7); but whether these characters are sufficiently constant for the separation of the species remains to be seen.

Described from 12 ♀♀, all from a *Sphagnum* bog with dwarf pines (locotypes), with which I associate 1 ♀, 24. vii. 1946, from Bildhausen Kr. Kissingen in northern Bavaria. 1 ♂, 13. ix. 1949, Osterachtal 1100 m., Allgäu: 2 ♂♂, 13. vii. 1948, Berchtesgaden, 1000 m.

*Ichneumon jugicola* Heinr., ♀.

1949. Mitt. Münchn. Ent. Ges., xxxv-xxxix. 35.

The specimen listed in this paper agrees perfectly with the type except that the flagellum is 39- not 37-segmented.

*Cratichneumon pratincola*, sp. n., ♂.

Type: Berchtesgaden, 1400 m., ♂, 26. v. 1947; in coll. II of G. Heinrich. Further material: Allgäu, Osterachtal, 1700 m., 2 ♂♂ end August 1949: Bildhausen Kr. Kissingen (northern Bavaria), numerous ♂♂, vii. 1947.

♂.—Body black without any white marking. Flagellum with a white ring or half-ring. Femora and tibiae red, with hind tibiae at extreme apex and hind tarsi dark brown to black.

Differs from the normal black-legged colour-form of *nigritarius* Fabr. in the red colour of the legs, and from the red-legged var. *aethiops* of the same species purely in the constant absence of the white band of the inner orbits. Since an entirely black-faced form of *nigritarius* Fabr. var. *aethiops* Grav. can occur, though rarely, no absolute sharp separation has been found between the phenotypic characters of the two species. There is, however, a decisive ecological difference; in contrast with *nigritarius* Fabr., the typical parasite of *Bupalus piniarius* L., this species does not live in coniferous woods but exclusively in open country, such as pasture-land with slight growth of bush or light, grassy edges of woods. In the Bavarian Alps the occurrence of *nigritarius* Fabr. ceases at the upper tree-limit, whereas *pratincola*, sp. n., appears above this, in the high-mountain region between about 1400 and 1600 m., as has been found in the Berchtesgaden district as well as the Allgäu. *Pratincola*, sp. n., is absent from former north-east Germany and probably also from north Germany, but it appears in middle Germany and thence becomes increasingly common to the south and east.

Length 12 to 13 mm.

It may seem very risky that, contrary to my general principles, I should here base a new species of Ichneumoninae on the male sex alone, and that on colour differences that do not work for every single specimen. Yet for more than 20 years I have observed this form in many localities in middle and southern Europe, and have everywhere confirmed the above-mentioned ecological difference. This has led me to the acceptance of a species different from *nigritarius* Fabr. more compellingly than a clearer colour difference alone would perhaps have done. My long hesitation in publishing this observation has been in the hope of first discovering the female, but in this I have not succeeded. It seems the more necessary to name the species at the present time, in order to leave this problem and the search for the unknown female with other ichneumon specialists. Either this female has remained confused with that of *fabricator* Fabr., or else it lives so concealed in the grassy ground vegetation that it is extraordinarily hard to find.

This case is analogous with that of the two wood-mice, *Sylvaemus sylvaticus* L. and *flavicollis* Melch., which are ecologically separated and undoubtedly different species, but those characters overlap in such a way that specimens occur which no specialist can determine with certainty.

*Cratichneumon pusillus* Schmied.*Stenichneumon pygmaeus* Habermehl, 1925, ♀.*Ichneumon pusillus* Schmiedeknecht, 1928-29, n.n.

Through the kindness of Dr. Erich Schmidt of Bonn I have seen Habermehl's type of this species, which is in his collection.

Genus *PLATYLABOPS* Heinrich.

1950. *Platylabops* Heinrich, Mitt. Sammelst. Schmarotzerbest. (Naturw. Mus. Aschaffenburg), xxvii. 4-5. Type *Ichneumon apricus* Grav.

In the genotype the space between the flat gastrocoeli is relatively broad, about as broad as each of them. I now propose that the definition of the genus be broadened to include some species having transverse gastrocoeli with only a narrow space between, which have previously been placed in *Aoplus* Tischb. The species to be transferred are *speciosus* Wesm. and *cornicula* Wesm., and to these is added a new species, whose description is given below.

The chief characters distinguishing *Platylabops* from *Aoplus* are as follows: clypeus in both sexes weakly but always distinctly convex; scutellum more or less raised above metascutellum, to a greater or lesser extent sharply margined laterally; female flagellum notably slender, setaceous, long and sharply tapering.

The genus is most closely related to *Aoplus* Tischb., yet forms a connecting link with the *Platylabini* in the form of the clypeus and scutellum and in the parasitism of Geometridae.

*Platylabops albinus*, sp. n., ♀♂.

Type: Allgäu, Osterachtal, 1000 m., ♀, 27. vii. 1949; allotype: AUSTRIA, Styria, Pyrgg, 760 m., ♂ ex *Phibulapteryx calligraphata* (Geometridae), Mack. Holotype and allotype in coll. II of G. Heinrich. Further material: Allgäu, 1800 m., 1 ♀; Berchtesgaden, 1600 m., 1 ♀.

Stands very close to *speciosus* Wesm., and has obviously been mixed with that species by previous authors.

♀.—Black. Abdomen from apex of postpetiole, sometimes entirely (Berchtesgaden specimen) red, with the last tergites at most slightly darkened, but never black. Small marks on vertical orbits, and usually frontal orbits narrowly white; inner side at apex of fore and mid femora and of fore tibiae yellowish-white; hind femora vivid red, blackish above at extreme apex; fore and mid tibiae brown to black; hind tibiae red to brown-red, darkened toward apex and sometimes also at extreme base.

Length 10 mm.

Flagellum elongate, setaceous, extraordinarily slender, long and sharply tapering, beyond middle flattened on one side but not the least broadened; 40-segmented, the first segment about three times as long as apically broad, no segment broader than long or even denitely quadrate; black, white-banded on segments 7 to 13.

♂.—The following parts white; marks on vertical orbits, facial orbits and marks on subalar swellings: fore femora and fore and mid tibiae on inner side more extensively ivory-white; flagellum black. Otherwise as in female.

## Diagnostic differences.

<i>alpinus</i> , sp. n.	♀♀.	<i>speciosus</i> Wesm.
Scutellum laterally margined almost to apex, falling gradually and not so far to metascutellum.		Scutellum laterally margined only at base, falling in a steep curve more deeply to metascutellum.
Genal costa weakly curved inwards above mandibular base.		Genal costa much more strongly, almost angularly curved inwards and then sharply raised.
Costae of area superomedia and apices of areae dentiparae sharply raised.		Costae of area superomedia weak; dentiparae areae not the least produced.
Gastrocoeli as in <i>apricus</i> Grav. very flat, with space between not very narrow.		Gastrocoeli deeper, transverse, with very narrow space between.
Abdomen brownish-red except at base.		Tergites 2-4 a brighter red, 5-7 black.
	♂♂.	
Scutellum margined almost to apex.		Scutellum sharply margined only at base.
Only facial orbits white.		Facial orbits, mark on epistoma, and a frequently broken transverse band of the clypeus white.
Abdomen coloured as in female.		Abdomen coloured as in female.

*Hybophorellus duplicator* Roman, subsp. *montecapitis* Heinr.

1949. *Hybophorellus montecapitis* Heinrich, Mitt. Münchn. ent. Ges., xxxv-xxxix. 50, syn. n.

Of four specimens belonging to this form, two were taken at an altitude of 1100 m. and two at 1600 m. All these have dark red longitudinal stripes on the mesoscutum, and the last two mentioned have dark red femora in addition. One specimen has a partly red scutellum. They differ from the type of *montecapitis* Heinr. simply in the greater extent and darker tone of the red colouring. This evidence indicates that *montecapitis* Heinr. is to be regarded not as a distinct species but as an Alpine subspecies of *duplicator* Roman, which is distinguishable by the red marking of the mesoscutum, and often of the scutellum and femora also.

The males lack the red marking of the female thorax, as always in the Ichneumoninae; so they resemble the type-form in coloration. Consequently, the males from Berchtesgaden recorded as *duplicator* Roman (*loc. cit.*) are to be regarded as belonging also to the subspecies *montecapitis* Heinr.

We have here an analogous case to that of *Cyclolabus nigricollis* Wesm. and *alpinus* Haberm. (*loc. cit.*, pp. 53-4).

*Ctenichneumon divisorius* Grav., ♀♂, var., and *Ctenichneumon edictorius* L.

The vertical distribution of *Ct. divisorius* extends up to the high-mountain meadows (Berchtesgaden district 2300 m., Allgäu 1800 m.); but the high-Alpine population differs, in the majority of specimens,

subtly but more or less clearly from those of the Bavarian and North German plains, in the following respects:—

♀♀.—Basal flagellar segments somewhat more compressed, but this is only appreciable by direct comparison. The third flagellar segment, and it almost seems the second, is quadrate in side view, somewhat longer than broad in the lowland form. Hind tibiae paler, brownish to yellowish beyond base on the inner and also in part on the outer side.

♂♂.—Tergites 2 and 3 tend to be paler, in some cases even to stramineous. Recently Hellén (1946, p. 4)\* has treated *divisorius* Grav. as a "Variation" of *edictorius* L.; but to me there is no doubt that this is erroneous. Despite the great structural similarity, there is a difference in colour, and also a rather sharp ecological separation between the two species. *Ct. divisorius* is attached to dry, warm, particularly sandy slopes with poor-growing vegetation, such as railway embankments, waste and fallow land; whereas *Ct. edictorius* occurs in damper and more shady places with richer vegetation, such as glades and wooded river-valleys. In the course of my life I have found both species in numbers on several occasions, but almost without exception neatly separated.

In the Alps there is also, in part, a difference in the vertical distribution; for that of *edictorius* L. does not surpass the tree limit, whereas *divisorius* Grav. occurs in the high-mountain meadows.

Hellén's mistake is probably to be traced to a mistake of Schmiedeknecht (1930),† who quotes *edictorius* L. as a variation of *divisorius* Grav., whereas Roman (1932)‡ showed that it should refer to the species that, till then, had generally been known as *fossorius* L.

#### *Limerodops fossorius* L.

The single specimen taken in the high-mountain region contrasts with series from the plains. It is significantly smaller, 13 mm. in length against the normal of 16–17 mm., and the scutellum and flagellum are quite black.

#### NEISCHNUS, gen. n.

Type-species *Neischnus oxypygus*, sp. n. (Fig. 3.)

♀.—Flagellum of moderate length, slender, filiform throughout.

Temples and cheeks rather broad, rounded. Face rather flat, with the epistoma slightly convex, weakly separated from the clypeus; the latter normal, with the apical margin almost truncate but very slightly projecting in middle. Mandible normal, with teeth of equal length.

Thorax normal. Notaulices distinct anteriorly, though weakly impressed; no trace of sternaules on the mesosternum. Scutellum flat, unmarginated. Propodeum with areolation complete, similar to that of *Barichneumon* Thoms., i.e. having the area superomedia semi-oval with the

costula emitted behind middle; mid length of horizontal part distinctly shorter than that of vertical; area basalis excavate.

Abdomen narrow, lanceolate. Postpetiole narrow, with median area rather distinct, shining and almost smooth, with weak traces of some longitudinal rugosities. Gastrocoeli shallow but distinct, in outline almost triangular, with slanting hind margin, with the space between considerably broader than either one, longitudinally rugose-punctate. Tergite 2 much longer than broad, tergite 3 almost quadrate, the following transverse. Ovipositor as long as the last abdominal segment.

Fig. 3.



*Neischnus oxypygus*, sp. n., ♀.

This genus is on the border-line between the Phaeogenini and the Ichneumonini. The extremely small spiracles of the propodeum seem to place it in the first mentioned; yet they are not absolutely circular but a little longer than broad. Moreover, it has not the impression of the sternaules on the mesosternum, so characteristic of most genera of the true Phaeogenini. For the rest, the structure and form of coloration of the type species are more that of the Ichneumonini, so the genus is perhaps best placed at the end of this tribe.

\* Notul. ent. Helsingf., xxvi. 1–12.

† Opuscula Ichneumonologica, Neubearbeitungen.

‡ Ent. Tidskr., liii. 1–16.

♀.—(Fig. 3.) In the narrow, lanceolate form of the abdomen with clearly exerted ovipositor this genus reminds one of *Ischnopsidea* Viereck, to which it is not related. On the contrary, the general morphology is in agreement with that of *Cratichneumon* Thoms., from which it differs only in the following respects:—

1. The very small, almost round, spiracles of the propodeum, which are several times smaller than in the smallest species of that genus (e.g. *pusillus* Schmied., *varipes* Grav.).
2. The elongate lanceolate build of the abdomen with clearly exerted ovipositor.
3. The form of the gastrocoeli, as already described.

*Neischnus oxygygus*, sp. n.

Type: Allgäu, Osterachtal, 1100 m., ♀, 22. ix. 1949; in coll. II of G. Heinrich.

Black, the head and thorax with sparse yellowish-white marking. Sides of scutellum yellowish-white. Legs including coxæ red, with only hind femora and tibiae at apex and hind tarsi blackish-brown. Hind coxæ with no peculiarity.

Flagellum of moderate length, slender, filiform, somewhat narrowed to base; with 30 segments, the first about 3 times as long as apically broad, about the 12th (in side view) or 14th (seen from above) quadrate, no segment broader than long; white-ringed on segments 11–13, otherwise black.

The following parts are yellowish-white: inner orbits from about middle of face up to level of median ocellus, mark on vertical orbits and an obscure, short mark on outer orbits, marking of pronotal collar, almost whole upper margin of pronotum, sides of scutellum, and tegulae. Clypeus and mandibles reddish.

Length 7.5 mm.

*Mesostenus albinotatus monticola* Heinr., ♀♂.

1949. Mitt. Münchn. Ent. Ges., xxxv–xxxix. 55.

Material: 4 ♀♀, 1 ♂, taken at altitudes from 1100 to 1800 m.

In this material, the leg colour in both sexes is as given in the original diagnosis, except that, in the male, the hind tarsi have only the fourth segment white. The variation in white marking of the female is as follows: mark of prescutellar border, 4 specimens; mark on frontal orbits, 4 specimens; mark on tegulae, 3 specimens; mark on upper margin of pronotum, 1 specimen, and also in the single male.

*Ischnus brachyurus* Grav., var. ♂♂.

Among the numerous males of this species there was found to occur, more commonly than the normally coloured form, a variation with entirely black hind tarsi, with flagellar ring almost or quite lacking, and with reduced white marking of head and thorax. The prevalence of this dark-coloured form of the male might indicate a subspecific difference, yet this is not discernible in the female.

*Caenocryptus alpicola* Haberm., ♂, ? ♀.

I place here two males, which were taken at the same place and time, although they show considerable colour differences.

These specimens have the characteristic white marking of the head, as given by Habermehl, and essentially also that of the thorax and fore legs, as also the lack of white marking of the hind tarsi. The hind femora are in one specimen predominantly black, striped with brown-red, in the other predominantly brown-red. In the first specimen, tergites 1–4 are brown-red at apex; in the other, tergites 2–4 are almost totally so.

The white colouring of the thorax is richer than in the specimen described by Habermehl. Besides the pronotal collar, subalar swellings, scutellum and metascutellum, and a "mark at the end of the metathorax", the following are yellowish-white: narrow upper margin of pronotum, tegulae, and hinder half of propodeum, about from fore costa. The hind coxæ also are white-marked above. The white marking of the propodeum merges at sides into dull red. In the second specimen, this dull red colouring takes exactly the place of the yellowish-white on the propodeum, the mesopleura are marked with it in middle, and the hind coxæ above and below; in other particulars the yellowish-white colouring is as above described.

I have a further male, taken at Bodmann am Bodensee (12. vi. 1949), which agrees in colour-marking almost exactly with the Allgäu specimen that has the propodeum yellowish-white marked; but the red-brown colouring of tergites 2–4 is more extensive.

A female specimen, taken three weeks later than the two males but in the same locality, may also belong here. Head and thorax black, without white marking; clypeus dull reddish; flagellum with white ring on segments 7–9; propodeum towards apex and pleura in part obscurely brownish; abdomen dull brown-red, with petiole and apical segments black-brown; legs including coxæ of the same indefinite brown-red colouring.

Length 6 mm., ovipositor 3 mm.

*Caenocryptus ? pubiventris* Thoms., ♂.

In Schmiedeknecht's key (Opusc. Ichn., Suppl.) this specimen can only run down here, for it has the hind tarsi white-ringed and the clypeus apically produced; yet it differs from the description in the much scantier white marking. The following only are white: mandibles, clypeus, facial orbits, orbital marks on genæ, tegulae, and under side of fore and mid trochanters.

Since I have a specimen from Berchtesgaden (21. v. 1947) with precisely similar colouring, it may well be that we are dealing with some other, perhaps new species. No doubt the genus contains more species than are accepted by Schmiedeknecht; but the variability of the individual species is so great that a synopsis cannot be attained without further study.

*Schenkia rufithorax* Strobl, ♀.

The colouring of the two specimens from the Allgäu is within the limits of variation I have already described (1949, p. 65). As in the Berchtesgaden specimen, there are no red marks on the inner orbits, but by contrast the clypeus is red. The hind femora are red, apically black.

Genus *PSEUDOCRYPTUS* Kriechbaumer.

Type-species: *Cryptus grisescens* Grav., ♂.

It was solely the association, by Kriechbaumer and Schmiedeknecht, of a female form with the genotypic male, that led to the classification of this genus in the Tryphoninae. Schmiedeknecht himself came later to doubt the correctness of the association; this question has not yet been resolved, and I have nothing to add to it. As regards the systematic position of the genus, however, it seems to me that the structure of the male alone is decisive. On the basis of the venation, the form and type of areolation of the propodeum, the build of the first segment of the abdomen, the strong development of the sternaules, in short in all essential characters, the male of *Cryptus grisescens* Grav. is indisputably Cryptine; and on this account the associated female must also be so, as is always the case.

Judging by the male sex, the genus *Pseudocryptus* Kriechb. stands near *Plectocryptus* Thoms. It really differs from the latter only in the weak development of the notaulices, which are not even distinct anteriorly, but only indicated as shallow depressions. Provisionally, this character alone will serve to separate the genus. Perhaps the undiscovered female will show distinctive characters of greater significance. At any rate, the genus belongs to the Phygadeuonini.

*Pseudocryptus grisescens* Grav., ♂.

Material: 7 ♂♂.

It is characteristic that the head and thorax are quite black, including the tegulae. White markings of the hind tarsi and the flagellum vary as follows:—

Hind tarsi with broad white ring—3 specimens,  
with narrow white ring—3 specimens,  
with no white ring—1 specimen.

Flagellum with broad white ring—3 specimens,  
with white mark on one or two segments—3 specimens,  
quite black—one specimen.

The specimens with the greater amount of white marking come from a lower altitude (Immenstadt, 650 m.), the remainder from localities at 1100 to 1400 m.

*Pimpla arctica* Zett., ♀♂.

A female and a male were taken at the same time and place, indeed on the same bushes, at 1500 m. The male conforms exactly with the description. The female agrees in the remarkable coxal coloration—fore and mid black, hind red; yet the hind tibiae are not, as in the male, black but wholly red.

*Ephialtes (Epiurus) punctata* Thoms., ? ♀.

What, above all, leads me to regard this specimen as belonging here and not to *roburator* F. is the leg colouring. This is red, with only the fore and mid coxae black, and the extreme base of all tibiae yellowish-white above.

Mesoscutum and pleura closely and rather coarsely punctate but clearly shining. Notaulices distinct to middle. Propodeum sideways to meta-pleural ridge very coarsely and closely punctate, matt. Head and body 12 mm., ovipositor (from apex of abdomen) 10 mm.

*Ephialtes (Epiurus) lativentris* Ulbr. *altalpium*, subsp. n., ♀.

Type: Allgäu, Österachtal, 1700 m., ♀, beginning August 1949; in coll. II of G. Heinrich. Further material: same locality, 1 ♀, end July; Berchtesgaden, 1 ♀, beginning July.

These specimens possibly represent a distinct new species. However, they agree with *lativentris* Ulbr. in essential characters, above all in the remarkable squat build of the abdomen, which has tergites 1–6 relatively very broad, so I place them provisionally as a subspecies of that species.

Differs from typical *lativentris* Ulbr. as follows: in the Allgäu specimens all coxae and the greatest part of the trochanters black, in the Berchtesgaden specimen fore and mid coxae and trochanters black. Stigma of the typical bright yellow colour in the Allgäu specimens, but black in that from Berchtesgaden. Propodeum with area superomedia almost shining, clearly bordered laterally by parallel costae; beside these rather strongly punctate right to coxal costa.

*Odontocolon thomsoni* Clém., ♀  
(=*quercinus* auctt. non Thoms.).

According to Clément's monograph, the specimen before me can only be placed as this species; nevertheless, its identity does not seem to me quite conclusively settled, especially as I did not previously know the species. Apart from having the mid tibiae not twisted, this specimen possesses two significant specific characters, the extraordinary length of the ovipositor—head and body 15 mm., ovipositor 20 mm., and the extraordinarily depressed form of the thorax, particularly of the propodeum, which makes the latter appear flattened out.

Genus *LEPTACOENITES* Strobl.

Schmiedeknecht had obviously not seen the type of this highly interesting genus, and was very wide of the mark in placing it in synonymy with *Procinetus* Först. *L. tscheki* Strobl which, that author himself

thought, might well be only a melanic variety of *L. frauenfeldi* Tschek, has about as much to do with *Procinetus decimator* Grav., type-species of that genus, as *Tryphon rutilator* L. with *Mesoleius aulicus* Grav.: in other words, the two species belong to different genera and even to different subfamilies.

In striking contrast with *Procinetus* Först., *Leptacoenites* may be distinguished by the following characters:—

1. Epomiae strongly developed.
2. Mesoscutum with notaulices unusually long and deep, so that the mid lobe appears strongly produced.
3. Cheeks unusually long.
4. Clypeus long, at apex broadly rounded, foliaceously thinned, smooth and shining.
5. Mouth-parts produced in a snout-like manner.

The strong development of the epomiae is a typical character of the Tryphonini. The tendency to lengthening of the mouth-parts together with an associated modification of the form of the face also occurs in this tribe, for example in the genus *Cosmoconus* Först. In the development of the epomiae, head form and other characters, *Leptacoenites* resembles *Aphanoroptrum* Först., and it must be placed next that genus in the Tryphoninae, *sensu* Townes & Townes (1949),\* whereas *Procinetus* belongs to the Lissonotinae.

*Lissonota cylindrator* Vill. magna, subsp. n., ♀.

Type: Allgäu, Osterachtal, 1700 m., ♀, 12. ix. 1949; in coll. II of G. Heinrich. Further material: Berchtesgaden, 2300 m., 1 ♂, 2 ♀♀, 28. vii. 1947.

The type agrees in size and in the tendency to darkening of the middle tergites with the other specimens, which have already been mentioned in my paper on Ichneumonidae from the Berchtesgaden district (1949, pp. 72–73). This confirms the presumption I there expressed, that we are concerned with a high-Alpine subspecies.

*Diblastomorpha bicornis* Boie  
(syn. = *Glypta rostrata* Hlgr.).

This species can be locally quite common; and if one collects a large number of specimens, one always finds a few in which the peculiar frontal horns are entirely missing. The Allgäu specimen is one such. What sort of state of affairs this anomaly signifies remains to be discovered. In any case this synonymy seems beyond doubt, for the absence of frontal horns was the only known character separating *Glypta rostrata* from *Diblastomorpha bicornis*; it was already expressed by Hellén, though not fully supported by Schmiedeknecht.

\* Ann. ent. Soc. Amer., xlii. 321–447.

? *Glypta rubicunda* Bridgm.

This Allgäu series of both sexes is characterized by the densely hairy clypeus, the not transverse second and third tergites, the not areolated propodeum, the red legs with quite black coxae and trochanters and the largely (♀♀) or partly (♂♂) red tergites 1–3. It can, therefore, be referred to only one of the known species, namely *rubicunda* Bridgm., though this was previously known only from England.

In the female, tergites 1–3 are red, the third partly darkened; in the male, tergites 1 and 2 are red at apex, and 3 only narrowly so at apical margin. In both sexes the humeral angles and tegulae are yellowish, as also the clypeus in part, and the hind tarsi and apices of hind tibiae are darkened.

Length 10 mm., ovipositor 9 mm.

The species was found in only one place in the high-mountain zone at 1800 m., where it was flying on a slope where *Sphagnum* and *Erica* were growing.

*Conoblasta alpina* Heinr., ♀♂.

1949. Mitt. Münchn. Ent. Ges., xxxv–xxxix. 71–72.

A series of 4 ♀♀, 2 ♂♂ from the Allgäu exhibits the following variability:—

Hind tibiae white at base and dark at apex .....	2 ♀♀, 1 ♂.
Hind tibiae also with dark marking beyond the pale base .....	2 ♀♀, 1 ♂.
Also with hind femora darkened at apex .....	1 ♂.
Tegulae black .....	4 ♀♀.
Also with hind trochanters yellow .....	1 ♀, 1 ♂.
Hind trochanters reddish to reddish-yellow .....	3 ♀♀, 1 ♂.

The specimens correspond in other respects with the original description.

*Cryptopimpla hertrichi*, sp. n., ♀.

Type: Allgäu, Osterachtal, 1800 m., ♀, 24. ix. 1949; in coll. II of G. Heinrich. Further material: 1 ♀, same locality and date.

This species differs from *C. anomala* Hlgr. in the colouring of the coxae and trochanters, and in the weaker sculpture of the abdomen, but in other respects it is so close to that species that it should possibly be interpreted as a variety of it. The two specimens captured agree exactly in colouring.

♀.—Head, the thorax, including flagellum and palpi, black. Mandibular base pale-marked: apical half of clypeus reddish; tegulae whitish. Abdomen bicoloured, with first tergite and greater part of last two black; 2–5 red, with lateral margins of second and fifth darkened in part. Legs dark red, with the following parts black; all trochanters, inner side of mid coxae, and under side of hind coxae in greater part; tarsi, particularly hind ones, darkened. Stigma brown.

Length 7 mm., ovipositor 2 mm.

Flagellum only 32-segmented, shorter and somewhat thicker than in *errabunda* Grav. and *blanda* Grav., the last 8–10 segments about quadrate, whereas they are distinctly longer than broad in those species. This flagellar conformation shows a relationship with *helvetica* Brauns and with the genus *Xenacis* (Först.) Schmied.

Certainly distinct from *helvetica* Brauns\* on account of the different sculpture. Under side of mid and hind coxæ finely, but very clearly and densely punctate (in *helvetica* Brauns without distinct punctation). Meso- and metapleura extraordinarily densely punctate. Propodeum with hinder transverse costa distinct. Tergites with finer, less dense sculpture, not distinctly punctate, weakly shining.

Named in honour of Forstmeister Hertrich of Sonthofen, and in gratitude for his friendship and support during my stay in the Allgäu.

*Leptobatus alpium*, sp. n., ♂♂.

Type: Allgäu, Osterachtal, 1100 m., ♀, 24. ix. 1949; in coll. II of G. Heinrich. Further material: same locality, 1100–1200 m., 4 ♀♀, numerous ♂♂, ix. 1949.

This astonishing species is characterized by the slender, setaceous, sharply pointed flagellum, resembling that of *Exetastes*, by the slender ovipositor which is as long as the abdomen, and by the completely black colouring of the body, which is devoid of pale marking.

♀♂.—Deep black, as also flagellum and all coxæ and trochanters; legs otherwise red, but apical third in female and half in male of hind tibiae, and also hind tarsi black.

Length 10–11 mm., ovipositor 6 mm.

Flagellum slender, long and sharply pointed, about body length in male and 7–8 mm. in female. Temples rounded, weakly narrowed behind; cheeks roundedly narrowed below; malar space barely as long as mandibular base. Head and thorax rather closely and elongately hairy, coarsely and closely punctate; entire propodeum densely rugose-punctate, with distinct metapleural costa, but otherwise without any costæ; with spiracles short-oval: in contrast with the thorax, the coxæ are shining and almost smooth beneath, with only scattered shallow punctures. Abdomen in female compressed from fourth segment; first segment, particularly at base and sides, with irregular fine rugosity, the following almost smooth. Fore wings with areolet not petiolate, with ramellus long. Hind legs very long and strong.

The male bears a strong resemblance to that of *Exetastes fornicator* F., but is considerably more slender, and is easily distinguished by the smooth under side of the coxæ, the much shorter spiracles of the propodeum and the more extensive black colouring on the hind tibiae.

Apart from the different conformation of the flagellum, this species is to be distinguished from *L. rufipes* Gmel. as follows:—

1. Scutellum always quite black.
2. Colouring of hind tibiae and tarsi as described.
3. Frons not excavate, and without shallow, shining hollows above the antennæ.
4. Areolet not petiolate.
5. Entire propodeum uniformly coarsely and densely rugose-punctate, with no hinder costa.

\* Based on specimens recorded (1949) from Berchtesgaden.

From *L. degener* Grav. it differs above all in the conformation of the flagellum, and further in the above-described sculpture of the propodeum, which shows no trace of longitudinal costa or longitudinal furrow at the base.

The species was flying on warm, dry slopes surrounded by woodland, near the upper tree limit.

*Exochus incidens* Thoms., ♂.

Two males having the face, tegulæ, and the fore legs in greatest part yellow can only be attributed to this species. Nevertheless, they also have the under side of the hind coxæ and trochanters, and the hind tibiae in greatest part yellow, a colour character not mentioned in the description. The coloration seems to be characteristic for the species before me, for a specimen from the Bayrische Wald is exactly similar in this respect.

*Diplazon annulatus* Grav., ♂.

Two specimens taken at an altitude of 1700 m. differ from the description in having the fore and mid femora yellow, and their tibiae yellow beneath, extensively blackened above. The hind femora have only a red stripe above, and are otherwise in greatest part blackish-brown. In one specimen the face is only black along the clypeo-frontal suture, and the scutellum has a large, white mark narrowed in front; in the other the pale middle area of the face is ringed with black, and the scutellum has only minute white spots near the hind margin.

*Syrphoctonus punctiventris* Thoms., ♀.

The Allgäu specimen agrees with one from Holstein in having the hind trochanterelli, and the narrow hind margin of the mesopleura, yellow. This coloration is not mentioned by Schmiedeknecht, but seems to be characteristic for the species.

*Syrphoctonus ornatus* Grav.

This species varies in having the fore wing with areolet closed or clearly open. In the latter condition, specimens would not run down in Schmiedeknecht's key to species.

*Himerta ihsseni* Bauer, ♀.

1939. Mitt. Münchn. Ent. Ges., xxix, 352.

Two females from the high-mountain region agree with the description of this species in the elongate form of the abdomen; but by contrast the flagellum is not white-marked and the hind femora are not black at apex. I have a female of the Allgäu species also from the Berchtesgaden high-mountain region (1800 m.); it agrees in structural characters, but has a narrow white mark on three flagellar segments, and the hind femora broadly black at apex.

In any case we are dealing with a high-mountain form, and its connection with *defectivus* Grav. and *ihsseni* Bauer requires further investigation.

*Perispuda flavitarsis* Thoms., ♂, ♀ new to science.

I took two females and a whole series of males of this species. Schmiedeknecht, to whom it remained unknown, published an interpretation (p. 2840) that appears ill-founded. On the venation and the mandibular conformation, *flavitarsis* Thoms. is clearly a species of *Perispuda*; but it is certainly specifically distinct from *sulphuratus* Grav., despite the similar general appearance. The name *flavitarsis* was well chosen, for the bright reddish-yellow hind tarsi provide a good field character, by which the species can be distinguished in both sexes from the very similar *Nemesoleius flavipes* Grav., and in the female also from *P. sulphuratus* Grav. A particular character of the species, by which it can be distinguished from all others of the genus and also from *N. flavipes* Grav., is in the sculpture of the mesopleura, which is coarsely rugose as in the genus *Lagarotis* Först.

♂.—Clypeus always, and often also a facial mark above it, bright yellow. Hind margin of postpetiole more or less broadly, and tergites 2-4 reddish-yellow, the fourth sometimes darkened towards apex. Head, body and flagellum otherwise quite black, as also all coxæ and trochanters. Legs mainly reddish-yellow, the tibiae bright yellow, and the following black: fore femora narrowly at base, mid femora more extensively, hind femora entirely, and apical third of hind tibiae.

The previously unknown female agrees almost exactly with the male; but the face and clypeus are quite black, and the fourth tergite entirely or almost entirely black.

*Lagarotis subalpinus*, sp. n., ♀♂. (Figs. 4-6.)

Type ♀ and allotype ♂: Allgäu, Osterachtal, 1400 m., 1. ix. 1949; in coll. II of G. Heinrich. Further material: 4 ♀♀, 1 ♂ from same locality, 1100-1400 m., 1-21. ix. 1949.

This species is very closely related to *semicaligatus* Grav. and *debitor* Thunb., but the female is clearly specifically distinct in the conformation of the clypeus, mandibles and abdomen. In general habit, this is larger and more elongate than those two species.

♀.—Black: clypeus more or less distinctly brownish or yellowish, and second and third tergites generally indistinctly brownish-red marked, in one specimen brownish-red in greater part. Femora, tibiae and tarsi in greatest part red, with the following black: hind tibiae in about apical half and their tarsi, and mid tarsi from apex of first segment.

Mandibles with lower tooth much longer and stronger than upper. Clypeus almost flat, actually sloping slightly to apical margin, where it is broadly emarginate. Temples broad, scarcely narrowed behind; vertical region not falling directly behind ocelli. Mesonotum rather shining, finely but evenly and rather closely punctate; pleura coarsely and closely reticulate-punctate throughout, apart from speculum. Abdomen slender, elongate, the tergites relatively longer than in related species; tergites 2, 3 somewhat less distinctly, and often even 4, longer than broad; tergite 1

elongate,  $2\frac{1}{2}$  times length of its apical breadth, which is scarcely  $2\frac{1}{2}$  times its basal breadth, evenly and rectilinearly broadened from base, with spiracular tubercles prominent, medially more or less distinctly raised from basal excavation.

Length 12 mm.

♂.—Head and thorax black, with the following yellow: face, clypeus, mandibles, cheeks at apex, scape below, tegulae and humeral angles. Abdomen black, with tergites 2-4, except for hind margin of 4, orange-yellow. Legs tricoloured, with the following parts black: fore and mid coxæ at base, hind coxæ except at apex beneath, last segments of mid tarsi, hind femora at apex above, about apical half of hind tibiae with their tarsi; hind femora bright red; legs otherwise yellow, the fore and mid femora lightly tinged with orange-red above.

Fig. 4.



Fig. 5.



Fig. 6.

Fig. 4.—*Lagarotis debitor* Thunb., mandibular teeth.Fig. 5.—*Lagarotis subalpinus*, sp. n., mandibular teeth.Fig. 6.—*Lagarotis subalpinus*, sp. n., abdomen.

The sculpture of the mesopleura is much finer than in the female; it is only weakly rugose beneath the speculum, otherwise shining and punctate, so that at first I thought I was dealing with an unknown species of *Alexeter*. The other structural characters, however, particularly the form of the head, mandibles, first segment and elongate tergites 2-4, place the association of the sexes beyond doubt.

The flagellum is black in both sexes.

The description of *L. subalpinus*, sp. n., led to an investigation of the two described species, *debitor* Thunb. and *semicaligatus* Grav. Schmiedeknecht was no better able to separate these than Pfankuch and Morley had been. I have been able to investigate populations of the two species, which in these exceptional cases were occurring separately, from different localities,

and I consider that the two are entirely separable. I give the diagnostic differences of the three species mentioned, and of another new species, in the form of a dichotomous key :

♀♀.

1. Lower mandibular tooth much longer and stronger than upper. Clypeus rather flattened, not sharply depressed at apex. Abdomen remarkably elongate, with tergites 2-3 and sometimes also 4 distinctly longer than broad. [Abdomen black, tergites 2-3 sometimes dull dark-red marked, seldom quite red. Large sp., length 12 mm.] ..... *subalpinus*, sp. n.
- Lower mandibular tooth not or scarcely longer and stronger than upper. Clypeus sharply depressed at apex. Abdomen less elongate, with tergites 2-3 not longer than broad. .... 2.
2. Temples, viewed from above, scarcely narrowed behind. [Tergite 1 evenly and rectilinearly broadened from base, flattened and even above, with no more than an indication of a shallow median longitudinal furrow between the spiracles. Tergites 2-3 almost always red, only exceptionally darkened] ..... *debitor* Thunb.
- Temples, viewed from above, strongly and evenly narrowed behind ..... 3.
3. First tergite with definite moulding, having a more or less distinctly raised median area which arises from basal excavation and generally contains a shallow median furrow, and being weakly depressed to either side next the rather prominent spiracles; also somewhat raised medially and depressed laterally in apical third, so that a sort of post-petiole stands out. Side lobes of mesoscutum at level of tegulae strongly shining and not very distinctly punctate. Abdomen in all my specimens quite black. Hind femora unicolorous yellow-red ..... *semicaligatus* Grav.
- First tergite flattened and even above, as in *debitor* Thunb. Mesoscutum including side lobes evenly and strongly punctate. Tergites 2-3 and base of 4 red. Hind femora narrowly black at apex. [Clypeus yellowish; length 8 mm.] ..... *simulator*, sp. n.

♂♂.

1. Face and clypeus black ..... *debitor* Thunb.
- Face and clypeus yellow ..... 2.
2. Lower mandibular tooth considerably longer than upper. Tergites 2-4 longer than broad. Large species, of 12-13 mm. length. [Hind knees dark; tergites 2-4 bright orange-yellow] ..... *subalpinus*, sp. n.
- Lower mandibular tooth not longer than upper. Fourth tergite transverse. Smaller species ..... 3.
3. First tergite with definite moulding (as described for female). Hind femora not dark at apex ..... *semicaligatus* Grav.
- First tergite without moulding. Hind femora black at apex .. *simulator*, sp. n.

#### *Lagarotis simulator*, sp. n.

This new species, diagnosed in the above key to the females, agrees in almost all respects with *debitor* Thunb., from which it differs in the strongly narrowed temples, the smaller size and the darkened hind knees.

Material: GERMANY, Göttingen, 2 ♀♀, 13 (type) and 16. ix. 1946, R. Hinz: AUSTRIA, Styria, Gesäuse Alps, Unteres Johnsbachtal, 1 ♀, H. Franz. Type in coll. R. Hinz.

G. Heinrich on Ichneumonidae from Austria

#### *Lagarotis debitor* Thunb. *montalpinus*, subsp. n., ♀.

A single female specimen was taken in the high-mountain region (1800 m.). It differs from an extensive series of specimens from the plains (Immenstadt and also north Germany) in the smaller size, the bright yellow colouring of the whole clypeus, the black hind knees and the clearly relatively shorter first tergite. It evidently represents a high-Alpine subspecies.

#### *Alexeter albilabris* Thoms.

The specimen before me agrees exactly with Thomson's description. The principal colour characters, bright yellow clypeus, red scutellum and black hind tarsi, may not suffice as a specific separation from the very variable *sectator* Thunb., as Schmiedeknecht has observed. Nevertheless, there are other differences:

1. The difference mentioned by Thomson in the form of the clypeus, which has not a broadly depressed apical margin as in *sectator* Thunb.
2. The clearly less elongate first tergite, which is only about  $2\frac{1}{2}$  times as long as apically broad.

Judging by this single specimen, I would consider *albilabris* Thoms. as a good species.

#### *Mesoleius ? brachypus* Thoms., ♀.

The specimen agrees well with the description, but the tegulae, humeral angles and fore and mid coxae are pale yellow, which is not mentioned in the diagnosis. The flagellum is extraordinarily long, much more than body length.

#### *Mesoleius ruficollis* Holmgr., ♀.

This species is unmistakable in colour as in structure, and the Allgäu specimen agrees exactly with the colour description. In consequence it seems doubtful whether Schmiedeknecht was right in interpreting the very differently coloured *pseudoliturata* Strobl as a variety of this species.

#### *Mesoleius rugipleuris*, sp. n., ♀♂.

Type: Allgäu, Osterachtal, 1600 m., ♀, 27. viii. 1949; in coll. II of G. Heinrich. Further material: numerous ♀♀, ♂♂ from same locality. August.

This species undoubtedly belongs to the genus *Mesoleius* Holmgr. in the more broadly understood sense of Townes (1945, p. 507). It does not fit Schmiedeknecht's narrower definition of the genus so well, above all on account of the coarse, rough sculpture of the mesopleura; yet on account of this character and the relatively short flagellar segments it can no better be placed in *Scopesis* Först., whose species it most resembles in general habit. It differs from *Lagarotis* Först. in the absence of an areolet and in the relatively shorter first tergite. It is particularly characterized by the strong shine of the mesoscutum and abdomen, and by the coarse, irregular rugose sculpture of the propodeum and pleura, the latter having a polished speculum.

♀♂.—Head, thorax, flagellum, coxæ and trochanters unicolorous black. Abdomen black, with tergites 2-3 and sometimes, especially in male, also 4 vivid light red. Remainder of legs vivid light red, with only hind tibiae broadly at apex and hind tarsi black. Stigma light to dark brown.

Length 7-10 mm.

Flagellum 36- to 38-segmented, the first segment rather less than twice the length of the second. Temples scarcely narrowed behind. Face almost matt, with very fine, shallow punctures. Clypeus smooth and shining, with some scattered coarse punctures, evenly depressed in apical half and with apical margin truncate. Mesoscutum shining; notaulices clearly but shallowly impressed in anterior third. Pleura clearly shining, closely, coarsely and irregularly rugose. Propodeum with pleural costæ distinct, but with longitudinal costæ of area superomedia and posteromedia seldom indicated. First tergite about  $1\frac{1}{2}$  times length of its breadth at apex, with glymmæ and basal excavation distinct, but with no distinct median longitudinal furrow. Abdomen strongly shining, oval and rather squat, not pointed at apex.

*CUBOSCOPEPIS*, gen. n.

Type-species: *C. epachthoides*, sp. n. (Fig. 7.)

This genus agrees with *Epachthes* Först. (type-species *erythropalpus* Grav.) in the almost cubical form of the head, with clearly broadened temples, and in the structure of the clypeus. Both belong to the tribe Mesoleiini Townes, in the neighbourhood of *Scopesis* Först.

It differs from *Epachthes* Först. in the equal, blunt mandibular teeth, the absence of an areolet, the three-lobed mesoscutum with notaulices developed to beyond middle, and the more distinct longitudinal costæ of the propodeum. From *Scopesis* Först. it differs in the cubical form of the head, the clypeus with very dense, irregular and coarse punctures suggesting pock-marks, the opposite nervellus, intercepted far below middle, and the mesopleura, which have coarse, dense and irregularly rugose sculpture and a polished speculum.

Propodeum rugose throughout, almost matt, with metapleural and supra-spiracular costæ distinct throughout, but middle ones only so in part. First segment formed as in *Scopesis* Först., with glymmæ and basal excavation, and with a narrow median furrow arising from the latter and running to about the last third of the tergite. General habit in other respects as in *Scopesis* Först., notably the form of the abdomen, legs and flagellum, but first flagellar segment not quite twice length of second. Hind trochanters not flattened beneath.

*Cuboscopesis epachthoides*, sp. n., ♀♂.

Type: Allgäu, Osterachtal, 1700 m., ♀, 12. ix. 1949; in coll. II of G. Heinrich. Further material: same locality, 1600 m., ♀, 27. viii. 1949; 1800 m., 3 ♂♂, 27. vii.-15. viii. 1949.

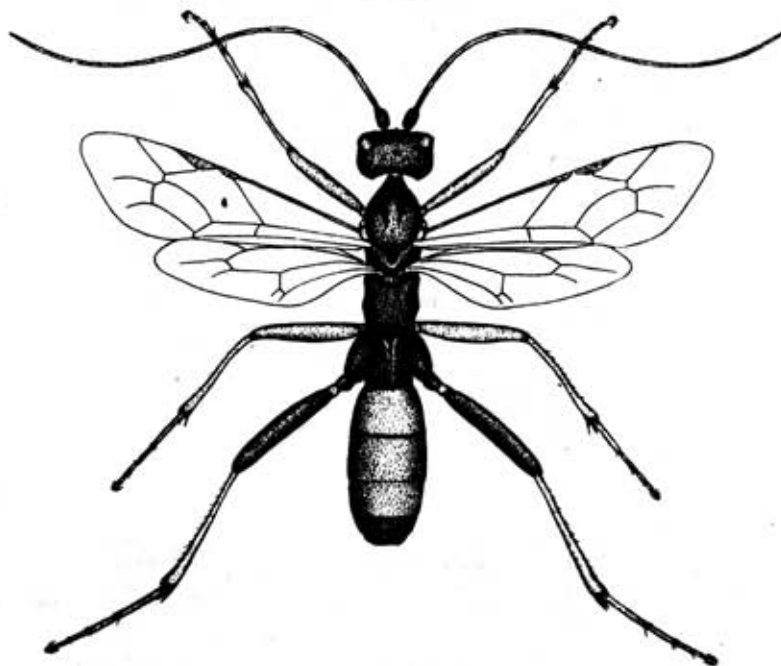
♀.—Head and thorax black, with only the following yellow to reddish-yellow: palpi, mandibles, clypeus, humeral angles and tegulæ. Tergites

1 and 5-7 black, 2-4 brown-red. Fore and mid femora, and all tibiae and tarsi yellow-red; hind femora black, with apical margin dull reddish. Stigma yellow, with darker fore margin.

Flagellum very long, slender and setaceous; 41-segmented, with first segment very long, but not quite twice the length of the second, which also is elongate; brown-red, paler beneath; scape, pedicellus and base of first flagellar segment above, black.

Head almost cubical, the temples from above long, first a little broadened and then narrowed in a short curve; shallowly emarginate behind. Frons and vertical region almost matt, with very fine coriaceous sculpture. Face matt, very finely, closely and shallowly punctate. Clypeus shining,

Fig. 7.



*Cuboscopesis epachthoides*, sp. n.

with lateral angles depressed, thus middle of apical margin rather prominent; by whole of apex very coarsely and irregularly punctate, as if pock-marked, and not sharply margined. Cheeks broad; malar space somewhat shorter than breadth of mandibular base.

Mesoscutum clearly shining, with very fine leathery sculpture; pleura together with propodeum coarsely and irregularly rugose-punctate, but with speculum polished and strongly shining. Lateral costæ of area superomedia diverging and becoming indistinct to apex, those of area posteromedia becoming indistinct to base. Vertical part of propodeum much shorter than horizontal part.

Abdomen short-oval, apically obtuse. Ovipositor very short, not over-reaching hypopygium. Basal tergites with very fine, coriaceous sculpture, weakly shining, the apical tergites rather more strongly shining. Tergite 1 about  $1\frac{1}{2}$  times length of its apical breadth; tergite 2 somewhat broader than long, and the following transverse.

Fore wings without areolet: first recurrent vein about length of its distance from second. Nervellus opposite, intercepted close to its lower end.

Legs, especially tibiae, very long, the latter thickly spiny on outer side. Spurs of hind tibiae a little longer than height of tibial apices.

Length 10 mm.

♂.—Agreeing with the female in structure, but the costae of the areae superomedia and posteromedia are more distinct. Flagellum 38- to 41-segmented. Differing in colour as follows: facial orbits broadly yellow, so that only the median area remains black. Flagellum darkened to brown or blackish brown above. Tergite 4 at apex or even to near base black; tergite 2 sometimes with dark marks in middle. Apices of hind tibiae and tarsi darkened brownish. Apices of trochanters, trochanterelli and marks on underside of scapes yellowish. Otherwise as in female.

Evidently a purely high-Alpine species.

*Meropaches bulsanensis* Schmied., ♀.

This specimen agrees exactly with the original description, except that it lacks the reddish facial markings. The species is new to the German side of the Alps.

*Mesoleptidea prosoleucus* Grav.

In this species, the outer vein of the areolet is often present, so that the principal character given in Schmiedeknecht's key for separating it from *xanthostigma* Grav. is unreliable. The best character is in the form of the head, which is more strongly narrowed behind in *prosoleucus* than in *xanthostigma*.

*Mesoleptidea cingulatus* Grav., ♀.

In the Allgäu specimen the following are quite red, without any yellow marking: mesoscutum, scutellum, meso- and metapleura, and mesosternum. The outer vein of the areolet is wanting. The lower half of the mesopleuron is coarsely and rather closely punctate. The face is black, with only narrow facial orbits, clypeus and mark on the cheeks white.

The sum of all these characters is possessed by a female from Bodmann by Bodensee, so one is tempted to regard this female colouring as to some extent characteristic for the species. But how can one place specimens in which the similarly red-coloured mesoscutum, scutellum and sternum are white marked and the face quite white? Are they varieties of *cingulatus* Grav. or of *stali* Holmgr.? The open or closed areolet is no use for separating the species, and I have been able to find no good difference other than the coarse-punctate sculpture of the lower half of the mesopleura in the former species, compared with the almost smooth sculpture in the latter.

*Euryproctus regenerator* F.?

This specimen is placed here on account of the red hind femora. The head, however, is clearly narrowed behind the eyes. The fore and mid trochanters are white beneath; the white marking of the flagellum is reduced to a narrow longitudinal stripe on segments 12-13, and the white mark of the hind tarsi is narrow.

*Euryproctus alpinus* Holmgr., ♀♂.

Material: Allgäu, 1100 m., 1 ♀; Berchtesgaden, 1200 m., 1 ♀, 2 ♂♂; Austrian Alps, Lunz am See, 2 ♂♂.

Roman considered *alpinus* Holmgr. as a variety of *nemoralis* Geoffr., and Schmiedeknecht also inclined to this view, which I do not think will be borne out. Apart from the striking colour difference, there is, at least in the female, a structural character indicating a specific difference. In *alpinus* Holmgr. the flagellum is shorter than in *nemoralis* Geoffr.; moreover, the individual segments are relatively shorter. As seen from above, segments 8-10 are quadrate and 11-12 broader than long in *alpinus*, whereas in *nemoralis* 8-10 are longer than broad and 11-12 about quadrate. The absence of an areolet is constant in the series before me. The male is sufficiently characterized by the entirely white face.

The extensive pale red colouring of the base of the flagellum in the females before me is shared by the majority of males. As stated by Thomson, the hind tarsi are brownish, with no trace of white marking, and tergites 1-4 are red. Thomson's female was undoubtedly correctly associated.

*Euryproctus plantator* Thunb. (= *albipes* Holmgr.).

This species is known from the male sex, which is distinguished by the white colour of the clypeus, sides of face and fore trochanters, but some uncertainty persists on its taxonomic position and status. I cannot regard it as a mutant variety of *nemoralis* Geoffr., for I never took it in north Poland or the north German plains, though I found it in numbers in the Berchtesgaden and Allgäu Alps and in the Bayrische Wald. Although I looked especially for the female in these localities and took a long series of *Euryproctus* females, I found none that I could distinguish as a good species different from *nemoralis* Geoffr., and associate with the male *plantator* Thunb.

The Allgäu females all have a yellowish stigma, and the first segment almost entirely black (*nemoralis* Geoffr.) to entirely red (var. *tuberculatus* Holmgr.). The areolation of the propodeum is rather sharp, but the areae superomedia and posteromedia are not separated from each other.

This series of about twelve specimens was taken at the same time and place as the not rare *plantator* males, and I should have been inclined to associate them, had not Strobl described a female with the corresponding white facial marking. Such specimen as that I have never taken.

*Euryproctus crassicornis* Thoms., ♀♂.

The short, rather thick flagellum with stout segments and the broader head characterize this series of specimens as a distinct species, previously unknown to me, and having nothing to do with *nemoralis* Geoffr. On account of these characters, I must regard it as *crassicornis* Thoms.; and if this be the case, then Roman erred in placing that species as a race of *nemoralis* Geoffr.

The series differs uniformly from the description of *crassicornis* in the following respects:—

♀♂.—Nervulus not received before basalis, but exactly interstitial.

♀.—Hind legs, except white ring on tarsal segments 3–4, almost entirely black, just narrowly dark brown before base of tibiae. Postpetiole at apex, tergites 2–4, and in two specimens also 5 in greater part, red.

♂.—Hind tarsi with white ring on segments 3–4, not 2. Flagellum in two specimens with very narrow white ring on only one or two segments, in one specimen quite black. Fore and mid femora and tibiae pale red, not yellowish. Hind femora in two specimens black, in one red.

These differences may indicate a subspecific Alpine form of the species, but this cannot yet be decided with certainty.

The species is sharply separated ecologically from *nemoralis* Geoffr. and has different habits. It flies, not in woodland shade, but in the open, on poor-growing pasture slopes near the tree limit. The females are much livelier than *nemoralis* Geoffr.: they run and search the ground, and resemble a *Goniocryptus* in behaviour.

*Trichocalymna propinquus* Grav., ♂.

The specimen corresponds exactly with the information given by Pfankuch on the male type. The reddish-yellow colouring of the under side of the antennae at base seems especially characteristic.

*Scopiorus bipustulatus* Holmgr., ♂.

This species was described from a single female, and Schmiedeknecht denotes it as problematical. Nevertheless, it seems to be good, for the description fits almost exactly this male, which shows in particular the yellow facial marks to either side of the clypeus.

*Scopiorus* sp. near *pastoralis* Grav., ♂.

These two specimens are near *pastoralis* Grav., which they resemble in general habit; but the flagellum is somewhat longer, and the fore and mid femora are black at base and the hind femora wholly so. The tegulae and mandibles are yellow, as is the clypeus, at least in greater part, so that the species resembles *angustatus* Roman in colour. The species may be new, but this cannot be decided on two males.

*Diaborus* sp.

This is the species that is being described as new by Kerrieh in Bull. Brit. Mus. Nat. Hist. I took it also in the Austrian Alps.

*Agrypon opaculum*, sp. n., ♀.

? 1950. *Agrypon anxium* Hellén, Notul. ent. Helsingf., xxx. 32–34 (non Wesm.).

Type: Allgäu, Osterachtal, 1100 m., ♀, 16. viii. 1949; in coll. II of G. Heinrich.

This species agrees with *anxium* Wesm. in having the mesoscutum very densely rugose-punctate and fully matt, the fore coxae with a transverse keel, and in the colouring of the head. It differs in being notably smaller in size, and in having the hind tarsi shorter, with the segments relatively much shorter. The hind tarsi have the second segment thrice, the third twice, and the fourth as long as broad (in *anxium* Wesm. the second five times, the third fully three times, and the fourth almost twice as long as broad. The hind metatarsi have, symmetrically on the outer side in basal third, a small deep emargination, which is probably abnormal.

Head in greater part yellow, with temples more reddish, and above cheeks indistinctly blackish-brown, and with only the following black: occiput, and mark from antennal bases to occiput. Thorax black. Abdomen in greater part brown-red, but with all segments dull black-brown above. Legs red, with the following yellow: fore coxae in greater part, fore and mid trochanters, and hind tarsi except the reddish basal half of the metatarsi and the black claws; with the following parts black to black-brown: hind trochanters and trochanterelli in greater part, hind femora basally above, and apical third of hind tibiae. Tegulae reddish-yellow. Flagellum black-brown, basally black; scape black, yellow-marked beneath.

Length 10 mm.

This species seems to be *anxium* Wesm. according to Hellén (1950). It does not, however, agree with my interpretation of *anxium*, based on a specimen compared with the type by J. Leclercq. *A. anxium* sec Hellén is a small species, whereas *anxium* det. Leclercq is constant in being one of the largest species of the genus.

## ZOO-GEOGRAPHICAL OBSERVATIONS.

The expedition yielded the following records of species that are new to Germany or to Bavaria, and are otherwise of special interest:—

1. *Asthenolabus mesoleucus* Heinr.—This species was described from the Marmaros mountains of Rumania and the eastern Carpathians in Poland, and has since been taken only in the valley of the Elbe near Aussig by Th. Kupka. It is clearly a south-easterly species, like *Spilichneumon podolicus* Heinr. which I recently took in the Berchtesgaden district.

2. *Meropaches bulsanensis* Schmied.—Was found near Bozen (Bolzano), and not hitherto on the northern side of the Alps. It must belong to the warmer valleys of the southern Alps, and have advanced in small numbers to the north.

3. *Eclytus praeclarus* Schmied.—Was described from a male from Thuringia, and recorded in the female sex from Sweden by A. Roman. It had not since been found.

4. *Perispoda flavitarsis* Thoms.—Was described from France. There is insufficient evidence on its distribution, the more so since it can so easily be confused with its nearest relatives.

The following records are mostly new, and the species are to be ranked as having a boreo-alpine distribution:—

Species.	Previous known distribution.
1. <i>Pimpla arctica</i> Zett. ....	Scandinavia, Scotland. As stated by Perkins (1941)*, the English records are based on misdeterminations, and the same undoubtedly applies to those from the middle-European plains.
2. <i>Glypta ? rubicunda</i> Bridgm. ....	England.
3. <i>Diplazon annulatus</i> Grav. ....	Sweden, England.
4. <i>Euryproctus crassicornis</i> Thoms. ....	Sweden.
5. <i>Mesoleius fuscipes</i> Holmgr. ....	Sweden.
6. <i>Mesoleius ? brachypus</i> Thoms. ....	Northern Sweden.

#### SUBSPECIFIC DIFFERENTIATION IN THE HIGH-ALPINE REGION.

The more deeply one studies high-Alpine animals, the stronger becomes the impression of a different world, where particular animal forms have developed in the particular ecological conditions, and in much greater measure than appears at first sight.

We know that the distribution of many animal species of different families is confined to the high-Alpine zone, and this is scarcely surprising, in view of the sharply contrasting conditions in the high mountains and in the plains. On the other hand we can take it as an established fact that this habitat of species with a narrow vertical distribution is shared by many other species whose wider distribution includes the middle-European plains. In the latter cases it would be astonishing if one and the same species showed the same adaptations to two habitats so strongly contrasting in climate and solar radiation.

In point of fact a closer study of the high-Alpine Ichneumonids reveals that only rarely has this adaptation developed without any recognizable change in the external characters. Such change is, indeed, a general rule, and in many cases it is sufficiently advanced for one to be able to recognize and designate the forms as vertical subspecies. In others the impression is given of an originating development, but the character changes appear too insignificant a basis for subspecific classification, or are merely of the nature of an enhanced mutability. An apparently complete agreement between the populations of the plains and of the high-Alpine region in one and the same species is rather the exception. This state of affairs seems especially noteworthy in the Ichneumonidae, of which only the minority are ectoparasites; most pass the greater part of their life span as endoparasitic larvæ, more sheltered from external influences than are other insects.

\* Trans. R. ent. Soc. Lond., xci. 637-59.

The number of Ichneumonid species whose vertical distribution extends from the plains to the high-Alpine meadows between 1500 and 2000 m. is naturally not large. The tree limit is an insurmountable barrier for woodland species, which the vast majority of Ichneumonids are. It is necessarily only the meadow-land species, understanding this term in its widest sense, which can pass this barrier and find suitable conditions of life above it.

Before considering the differences in individual species due to vertical distribution, one must try to exclude all those species that do not dwell there, but which fly up from the valleys to the peaks on fine days, perhaps in some cases on mating flights, or which sometimes get blown up by the wind. One cannot at present be sure of the status of every species in the high-mountain zone, but by prolonged observation one can get to know a good number of species that really are at home there. Only such species are included in the following table, but, though these may represent only a small part of the whole, yet they may suffice to throw a ray of light on the state of affairs.

Allgäu range.	Ichneumoninae.	Cryptinae.	Pimplinae.	Lissonotinae.	Tryphoninae.	Mesoleptinae.	Total Ichneumonidae.
Total of species recognized as dwelling in the high-Alpine zone Of which are endemic high-Alpine spp. ....	12	6	5	4	4	12	43
Boreo-Alpine spp. ....	4	1	—	1?	1	3	9+1?
Also distributed in the middle-European plains ....	4	1	2	1	—	2	10
Of these last are subspecifically differentiated ....	4	4	3	2	3	7	23
Not recognized subspecifically yet subtly differentiated ..	—	1	1	2	1	1	6
Not recognizably different in plains and high-Alpine region ....	2	2	—	—	1	4	9
	2	1	2	—	1	2	8

From the above table it is seen that, of the 43 species known as high-Alpine denizens, 23 are also distributed in the German plains, and of these last, only a third appear externally identical in the two habitats. Though the species tabulated cannot be more than a fraction of the whole high-mountain fauna, and though the categories "subspecies" and "subtle differentiation" require further verification in individual cases, a clear enough general picture is apparent: on the one hand, the paucity of species not recognizably differentiated in the high mountains and the plains, and on the other, the relatively large number, part quite clearly differentiated, part in which subtler differences have arisen and which probably represent nascent vertical subspecies.

A parallel phenomenon is the differentiation of alpine and boreal populations of boreo-alpine species, and into two similar categories. The two kinds of high-Alpine differentiation are tabulated below, from observations on Ichneumonidae in the Berchtesgaden and Allgäu districts; dividing the species concerned into those with defined subspecies and those with differences of lower grade which cannot yet be designated.

## Boreo-alpine species.

	High-Alpine subspecies.	High-Alpine undesignated differentiation.
<i>Hybophorellus duplicator</i> Roman ..	<i>montecapitis</i> Heinr.	
<i>Ichneumon ruficollis</i> Holmgr. ....		+
<i>Ichneumon versutus</i> Holmgr. ....		+
<i>Euryproctus crassicornis</i> Thoms. ..		+
<i>Diplazon annulatus</i> Grav. ....		+

## Species occurring in the high Alps and the plains.

	High-Alpine subspecies.	High-Alpine undesignated differentiation.
<i>Anisobas hostilis</i> Grav. ....	<i>jugorum</i> Heinr.	
<i>Ctenichneumon divisorius</i> Grav. ..		+
<i>Limerodops fossorius</i> L. ....		+
<i>Mesostenus albinotatus</i> Grav. ....	<i>monticola</i> Heinr.	
<i>Ichnus brachyurus</i> Grav. ....		+
<i>Ephialtes lativentris</i> Ulbr. ....	<i>altalpinum</i> Heinr.	
<i>Lissonota cylindratior</i> Vill. ....	<i>magna</i> Heinr.	
<i>Exetastes laevigator</i> Vill. ....	<i>alpinus</i> Kriechb.	
<i>Lagarotis debitor</i> Thunb. ....	<i>montalpina</i> Heinr.	

## BIOLOGICAL NOTES.

## A. Concentration points.

The thistle, *Cirsium spinosissimum*, is to be found in numbers in the high pastures, flowering in the late summer, and from August it was in many places infested with aphides. Such plants provided points of attraction for all sorts of high-Alpine Ichneumonids, which sat in numbers on the stems and leaves. On one plant in particular, one could sometimes observe up to twenty specimens, but the majority were of the subfamily Diplazoninae.

## B. A probable host.

In general, the species of *Metopius* are rare, as is stated by Clément who, in his excellent monograph, recorded that in almost 40 years' collecting he had not taken more than about four or five specimens.

In a high-mountain locality between Nicken and Feldalpe, the species *Metopius* (*Ceratopius*) *dissectorius* Panz. appeared in extraordinarily large numbers, so that I was able to take about forty specimens in August

and September. At the same time there was an abundance of *Biston alpinus* Sulz., normally a really rare species. One is led to suppose that it was the host of the *Metopius*, especially as *M. dissectorius* Panz. had previously been bred from two related Geometridae, *Ennomos alniaria* L. and *Gonodontis bidentata* Cl.

ADDITIONS AND CORRECTIONS TO  
"ICHNEUMONIDAE OF THE BERCHTESGADEN DISTRICT".

## Additions.

<i>Cratichneumon pratincola</i> Heinr. (see above p. 1062)	♂♂, 1400 m., 26 May.
<i>Ichneumon latrator</i> Fabr. ....	♀♀, 600 m., hibernating in October.
<i>Epiurus lativentris</i> Ulbr. subsp. <i>altalpinum</i> Heinr. (see above p. 1071) .....	♀♀, 1600 m., beginning July.

## Corrections.

Pp. 12, 73. *Cylloceria*—this generic name was used in error for *Xenacis* Först. The type species of *Cylloceria* Schiedte is not *Lissonota caligata* Grav. (= *Xenacis* c. Grav. in Schmeideknecht) but *Phytodietus caligatus* Grav. (= *Lampronota* c. Grav. in Schmeideknecht) (cf. Townes 1945, p. 537). *Cylloceria* therefore replaces *Lampronota* auctt. *Xenacis* Först. is quite different; it is scarcely separable generically from *Cryptopimpla* Tasch., of which I have treated it as a synonym in the present paper.

P. 14. *Mesoleptidea xanthostigma* Grav., ♀—probably only an aberrant specimen of *prosoleucus* Grav. with a closed areolet.

Pp. 39–41. *Cratichneumon vulpecula* Kriechb. = *pseudogracilentus* Strobl, syn. n. = *hemerythrus* Heinr., syn. n.

I was able to establish the identity of my species with that of Strobl by examination of the type of the latter. It would scarcely have been possible to attain this result from the original description, for Strobl compared his species with *Ichneumon gracilentus* Wesm. which it does not in the least resemble.

On the basis of Dutch material, kindly sent by Dr. H. G. M. Teunissen, I have come to the further conclusion that the species is *vulpecula* Kriechb.

P. 47. *Coelichneumon bistrigosus* Holmgr.—through the kindness of Dr. René Malaise, I have been able to see some Holmgren types. From this it appears that the female specimen recorded under the above name from the Berchtesgaden district is actually *C. funebris* Holmgr.

*C. bistrigosus* Holmgr. is to be regarded as a synonym of *nobilis* Wesm., as accepted by myself (*Polskie Pismo Ent.* 1928) and later confirmed in a letter by A. Roman.