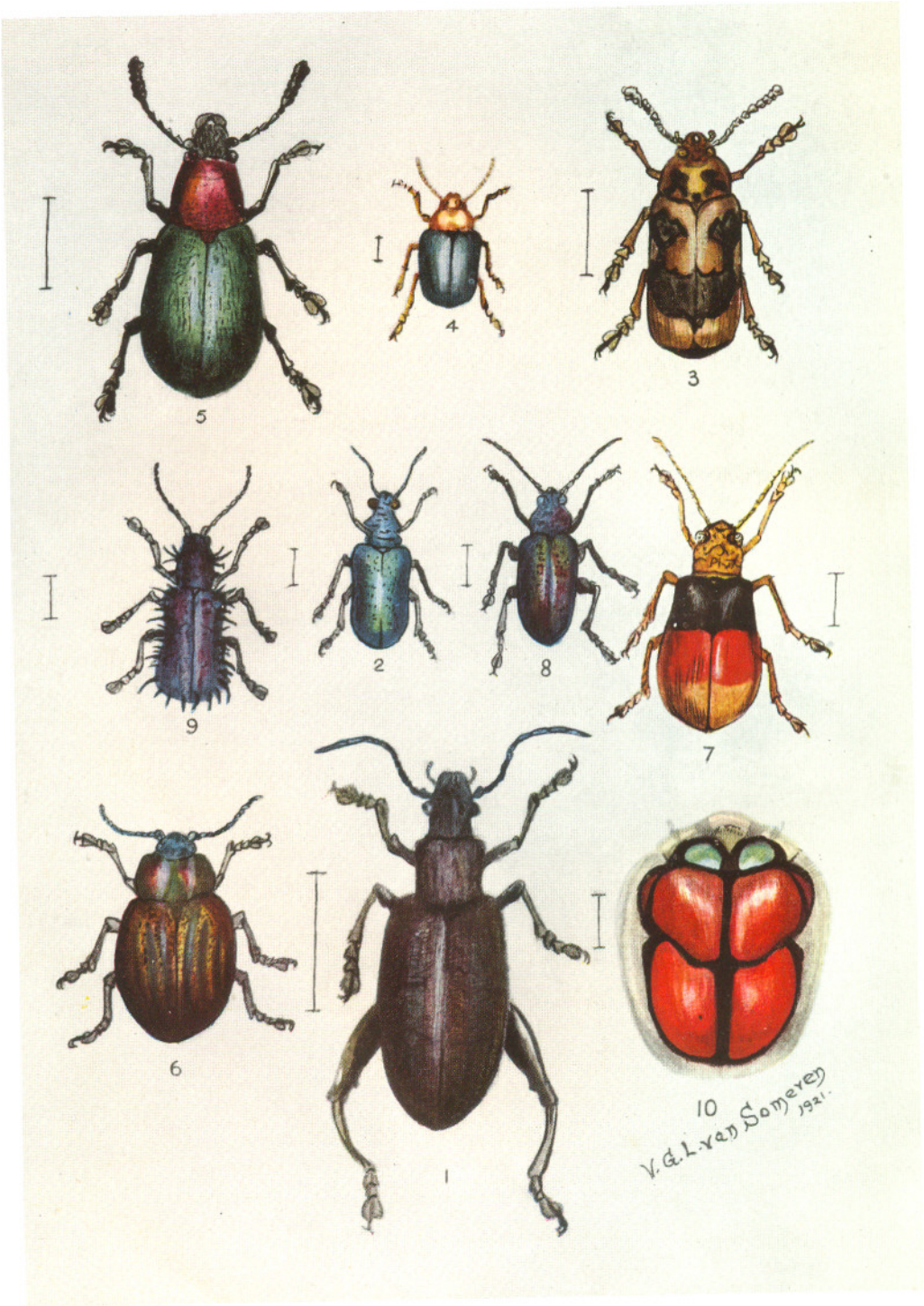
5
4
3
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V. G. L. van Someren
1921.

4
CRYPTOCEPHALINÆ
Cryptocephalus sp.

3
CLYTHRINÆ
Clythra wahlbergi, Lac.

5
EUMOLPHINÆ
Corynodes usambius, Kolbe.

2
CRIOCERINÆ
Lema sp.

8
HALTICINÆ
Haltica pyritosa, Erichs.
var. impyritosa, Weise.

9
HISPINÆ
Chrysispa acanthina, Reiche.

7
GALERUCINÆ
Hyperacantha inæqualis, Chap.
var. semipalliata, Fairm.

6
CHRYSOMELINÆ
Chrysomela superba, Thun.
ab. interversa, Fairm.

1
SAGRINÆ
Sagra murrayi, Baly.

10
CASSIDINÆ
Chirida nigrosepta, Fairm.

EAST AFRICAN CHRYSOMELIDÆ.

(The species of Chrysomelidæ here represented are intended to be typical of the East African sub-families.)

ON PHYTOPHAGOUS COLEOPTERA OF THE FAMILY CHRYSOMELIDÆ

By A. F. J. Gedye, F.E.S., Curator of the Nairobi Museum

Introduction

The *Phytophaga* form an extensive group of beetles, including something like 40,000 species; this, however, must be only a small portion of those existing on the globe.

The term *Phytophaga* is restricted by many taxonomists to the *Chrysomelidæ*, but in the opinion of the majority it is impossible to satisfactorily separate the *Longicornia* from the group. The *Lariidæ* (*Bruchidæ*) are also considered, by some, to form a family of *Phytophaga*, but a study of the nervous system shows it to be more concentrated and altogether more highly specialised than that of the other families of *Phytophaga*. From these considerations it is perhaps advisable to place the *Lariidæ* in the *Rhynchophora*, whose internal morphology is apparently of a more recent and advanced type.

As before stated, the two families of *Longicornia* cannot be separated from the *Chrysomelidæ* on any definite characters, although an acquaintance with the general facies of the families would, in most cases, prove sufficient for mere differentiation.

Jacoby ('Fauna Brit. Ind.: Coleoptera,' II, 1908, p. 3) states that usually, in the *Longicornia*, 'the shape is very elongate, the head projecting and prominent, the eyes oblique and more or less divided, and the antennæ peduncular, these organs at the same time rigid and tapering at the apex. All these structures are not as a rule found in the *Chrysomelidæ*.'

We will therefore consider here the *Phytophaga* as containing three families which may be distinguished, according to Fowler,[1] as follows :—

[1] Fowler, *Fauna Brit. Ind.*, Gen. Introd., p. 177.

I. Antennæ short or moderate, not inserted on frontal prominences; tibial spurs usually absent . .	CHRYSOMELIDÆ.
II. Antennæ usually long or very long, frequently inserted on frontal prominences; tibial spurs distinct.	
(*a*) Head in front oblique or subvertical . . .	CERAMBYCIDÆ.
(*b*) Head in front vertical or bent inwards below the thorax . . .	LAMIIDÆ.

It is proposed, in the present paper, to consider the *Chrysomelidæ*, with general remarks on their habits, structure, and classification, and any notes, that are known or available to the writer, with reference to their occurrence in East Africa and Uganda.

FAMILY CHRYSOMELIDÆ

Form variable; head prominent or moderately so, and inserted in the pronotum as far as the eyes; antennæ moderately long, variable in shape and insertion, usually eleven-jointed and moniliform (shaped as if formed by beads); pronotum with or without lateral margins; elytra usually covering abdomen, but sometimes leaving the pygidium exposed, upper surface usually bare, often brightly coloured and metallic; legs variable, tarsi pseudotetramerous.

The *Chrysomelidæ* form an enormous family of over 20,000 known species, and it is probable that, when the family has been thoroughly worked in the tropics, the above number will not form a fifth of the total existing species.

The beetles are, without exception, plant-feeders both in the larval and perfect states. Many of the species are of considerable economic importance as pests of cultivated trees and shrubs. A notable instance is that of the Colorado Potato Beetle (*Doryphora decemlineata*), which caused so much destruction in North America some years ago.

Chrysomelidæ can best be captured by beating trees and

bushes into a net or umbrella, and by sweeping grasses and any kind of herbage; damp vegetation near the banks of streams being particularly productive.

Very little is known of the life history of the family; altogether about 100 species have been worked out, most of these being European. The special modifications of the different larvæ and pupæ will be alluded to under the different families. The following table of larvæ is that given by Chapuis ('Genres des Coléoptères, Suites à Buffon,' X, 1874, p. 15), with alterations by Sharp ('Cambridge Nat. Hist.,' Vol. VI, p. 279), and quoted by Fowler (*op. cit.*, p. 182).

I. Larvæ with the body uncovered.	
A. Larvæ elongate, subcylindrical, whitish, living on or in the stems of aquatic plants under water; pupæ also subaquatic, contained in cocoons fixed to the roots of the plants . .	DONACIINÆ.
B. Larvæ mining, more or less elongate, sublinear or narrowed at each end, undergoing their metamorphoses on the plants . . .	HISPINÆ and some HALTICINÆ.
C. Larvæ short, oval, very convex above, often more or less brightly coloured, or dark metallic, living exposed on the plants and undergoing their metamorphoses on the plants or in the ground . . .	CYCLICA (most).
II. Larvæ with the body protected by excrement.	
A. Larvæ short, oval, very convex above, dark coloured,	

without any special apparatus for carrying the excrementitious matter, undergoing their metamorphoses in the ground . . .	CRIOCERINÆ (in part).
B. Larvæ short, oval, somewhat depressed, spiny, with the excrement supported and attached by a special apparatus, undergoing their metamorphoses on the leaves .	CASSIDINÆ.
III. Larvæ elongate and whitish, with the abdomen curved, inhabiting portable tubes or cases and undergoing their metamorphoses in these . . .	CLYTHRINÆ (and most CAMPTOSOMES).

The classification of the perfect insects is but little advanced in spite of the large number of forms which have been described. The best arrangement, however, is perhaps that adopted by Jacoby (*op. cit.*, p. 3).

I. Mouth placed anteriorly.	
A. Antennæ widely separated at base; elytra of hard texture.	
*Intermediate ventral segments not medially constricted; pygidium not exposed.	
(*a*) Thorax without distinct lateral margins, head produced, eyes prominent, prosternum exceedingly narrow . .	EUPODES.
(*b*) Thorax with distinct lateral margins (rarely without), head not produced, eyes not prominent, prosternum broad . .	CYCLICA.

*Intermediate ventral segments constricted; pygidium usually exposed . .	CAMPTOSOMES.
B. Antennæ not widely separated at base, generally closely approximate; elytra more or less soft in texture .	TRICHOSTOMES.
II. Mouth not normal, small, hidden or nearly so	CRYPTOSTOMES.

Although the distinguishing features in the above table between the different groups may not in all cases appear very clear, it may be remarked that a practical acquaintance with a few selected types will, in nearly all cases, enable the beginner to relegate his species to the different groups.

Unfortunately all the literature on East African *Chrysomelidæ* that has appeared is widely scattered in odd papers in various publications. However, a fair number are described by Kolbe in 'Deutsch-Ostafrika: Thierreich,' by Jacoby in the *Proc. Zool. Soc.*, and by Weise in various German publications.

I may add that I shall be delighted to give what help I can to any members of the Society who feel inclined to take up the study of this fascinating group of beetles.

DIVISION I. EUPODES

This division of *Chrysomelidæ* contains three sub-families: *Sagrinæ, Donaciinæ,* and *Criocerinæ.* The *Donaciinæ* are remarkable on account of living a semi-aquatic existence, wholly aquatic in the case of the larvæ. The sub-family, however, is characteristic of the temperate zone, and I can find no record of its occurrence in Eastern Africa.

The *Sagrinæ* and *Criocerinæ* are, however, represented in our region, and may be roughly distinguished as follows:—

I. Size large; posterior femora strongly thickened	SAGRINÆ.
II. Size small; posterior femora not strongly thickened . . .	CRIOCERINÆ.

The *Sagrinæ* are moderately large insects, often brightly metallic, with strongly dilated posterior femora. It appears that the use of the latter organs is not for saltatorial purposes, as the insects are frequently found suspended from stems and branches, head downwards, and supported by the hinder femora. Species of *Sagra* are common on the west coast of Africa, and I have taken a bright purple species in Natal, but few seem to be recorded from our territory. A variety of *Sagra murrayi*, Baly, is recorded by Kolbe [1] from Tanganyika Territory, and from Ruwenzori by Gahan,[2] and the Nairobi Museum possesses a brown, slightly metallic species from Ruiru.

The *Criocerinæ*, however, are largely represented in East Africa and Uganda, most of the species belonging to the great genus *Lema*, which contains over 300 species, occurring in most parts of the world. They are small, brightly coloured beetles, of hard integument, usually to be found in damp places.

In the collection of Coleoptera in the Nairobi Museum there are five or six unidentified species of *Lema* from various parts of Kenya Colony ; there is also a specimen of *Lema chalcoptera*, Lac, a small, brightly metallic æneous species from Tanganyika Territory.

Some of the larvæ of the genus *Crioceris* have the power of covering themselves entirely with excrement, which, however, can be cast off at will. According to Sharp (' Cambridge Nat. Hist.,' Vol. VI, p. 281), some of the imagines have the power of stridulating by means of two contiguous areas situated on the last dorsal segment of the abdomen.

Division II. Camptosomes

This division is remarkable on account of the peculiar structure of the abdomen, which appears to be connected with the habit of forming a case to envelop the egg.

The division contains six sub-families—viz., *Megascelinæ*, *Megalopinæ*, *Clythrinæ*, *Cryptocephalinæ*, *Chlamyinæ*, and

[1] *Deutsch-Ostafrika*, IV, 'Coleoptera,' p. 325.
[2] *Trans. Zool. Soc.*, Vol. XIX, pt. ii, p. 216.

Sphaerocarinæ. We will here consider only the *Clythrinæ* and *Cryptocephalinæ,* as they are best represented in our region. They may be roughly distinguished as follows :—

I. Form more elongate, less convex; rarely metallic and iridescent; eyes inserted higher on head . CLYTHRINÆ.
II. Form less elongate, more convex; often metallic and iridescent; eyes inserted lower on head . CRYPTOCEPHALINÆ.

The *Clythrinæ* are often moderately large insects decorated with conspicuous spots and stripes on a lighter background, and can be sometimes beaten from trees in the vicinity of ants' nests.

The beetles comprising the sub-family *Cryptocephalinæ* are often of great beauty, and when seen in the net give one the impression of 'living jewels.' They are exceedingly wary, and often the least sound will cause them to drop from trees and bushes into the long grass, rendering further search futile. Cryptocephaline larvæ are, according to Weise,[1] most remarkable; they inhabit portable cases with the abdomen curled against the sternum. They can only emerge from the cylindrical case as far as the first abdominal segment, and, in consequence, progress with a curious jerky motion. A pretty little *Cryptocephalus* has recently been taken by the Rev. K. St. Aubyn Rogers at Sagalla, and presented by him to the Nairobi Museum.

DIVISION III. CYCLICA

To this division belong the mass of the *Chrysomelidæ*; the species are most permanently brilliant in their colours, although they are surpassed in life by some of the *Cassidinæ.* Three sub-families are contained in this group—viz., *Lamprosominæ, Eumolphinæ,* and *Chrysomelinæ.*

Some of the *Chrysomelinæ* are serious pests of vegetation, such as *Doryphora* (*Leptinotarsa*) *decemlineata,* before mentioned, also the common 'Mustard Beetle' (*Phaedon cochleariæ*);

[1] Weise, *Naturg. Ins. Deutsch.*, VI, p. 139.

the larvæ are, however, in many cases kept down by parasitic Hymenoptera of the family *Braconidæ*.

The *Lamprosominæ* are not, I believe, represented in our fauna. The *Eumolphinæ* and *Chrysomelinæ* may be separated as follows :—

I. Form more elongate, less convex; pronotum narrower; mandibles vertical or sub-vertical . .	EUMOLPHINÆ.
II. Form ovate, very convex; pronotum broader; mandibles rarely vertical or sub-vertical	CHRYSOMELINÆ.

The *Eumolphinæ* constitute a large sub-family of very brilliant species; there is a large amount of individual variation amongst its members, one species sometimes being represented in blue, green, red, gold, and all the intermediate shades. The sub-family is well represented in East Africa and Uganda, although the family is very little worked, and there is no doubt that a large number of new species will yet have to be described. One of the most beautiful genera is *Corynodes*; they love damp places, and I recently took a fine species by the side of a stream on the road between Kampala and Entebbe. Some species affect trees in drier situations, and I recently beat a large number of a pretty red and black species from acacia trees at Thika, near Nairobi. When discovered they are by no means agile, and affect death, although their coloration is so conspicuous that any chance of escape is slight.

The beetles comprising the sub-family *Chrysomelinæ* are typical Chrysomelids, and very numerous in practically all parts of the globe. In many cases different species are severely attached to distinct plants, and to be found must be searched for in their various habitats. I was once collecting at Kimberley, South Africa, in a field in which there were perhaps six species of plants in great abundance growing round a dried-up 'vlei'; five of these plants harboured, respectively, the same number of *Chrysomelinæ*, and in no cases were they found to be infringing on each other's habitat.

The Chrysomeline larvæ feed in most cases on the plant

which the adult frequents; they are very sluggish in their movements, and are generally of a pale and insipid colour.

The genus *Plagiodera* appears to be moderately common in our region. Several species are recorded by Gahan (*op. cit.*, p. 217) from the western portion of Uganda; these are, however, probably absent from Kenya Colony, as it is a well-known fact that the fauna of Uganda bears a closer relationship to that of West Africa than to the eastern portion of the continent. The Nairobi Museum possesses examples of *Plagiodera egregia*, Gerst., from Kilindi in Tanganyika Territory. *Ceralces* is a rather inconspicuous genus of itinerant species occurring throughout our region. The Museum possesses specimens of *Ceralces natalensis*, Baly, from Dar-es-Salaam. This species (as its name implies) was originally recorded from Natal, and it will be found that there is a marked similarity between the coastal faunæ of the whole of the East African coast.

Division IV. Trichostomes

The *Trichostomes* include a vast assemblage of smaller forms comprised by two sub-families, the *Galerucinæ* and *Halticinæ*. Although these two sub-families differ rather greatly in external form, they have several characters in common.

I. Exo-skeleton softer; legs slender, weaker, and feebler, and not adapted for jumping . . . Galerucinæ.

II. Exo-skeleton harder; legs shorter, stouter, and adapted for jumping, posterior femora visibly dilated . Halticinæ.

The *Galerucinæ* are probably the most abundant group of the *Chrysomelidæ*, and generally form a feature of the contents of the sweeping net. It may be well to remark here that it is always advisable to examine the contents of one's net, if possible, in the shade, as the beetles do not then so readily take to the wing or make use of their saltatorial powers; this applies not only to the *Chrysomelidæ*, but to other families of Coleoptera, particularly to the Malacoderms and arboreal Heteromera.

The *Galerucinæ* are well represented in East Africa and Uganda, and much work remains to be done amongst the group.

Among four species of *Galerucinæ* submitted to the British Museum by Sir Harry Johnston, Gahan records two as new to science (Johnston's 'Uganda Protectorate,' Vol. I, p. 464). The sub-family is also of economic importance, and *Idacantha magna*, Weise, is recorded by Dr. Aulmann[1] as a serious pest of coffee in Tanganyika Territory. Out of fourteen *Galerucinæ* captured by the Zoological Expedition to Ruwenzori, Dr. C. J. Gahan describes no less than eight as new.[2] This affords another striking proof of how abundant *Galerucinæ* are, and of the extreme probability that many new forms will yet be discovered by means of careful collecting. Many Galerucine Coleoptera are of dull and inconspicuous coloration. The genera *Oides* and *Cerochroa* are notable in this respect, and females may often be taken with their abdomens enormously distended by eggs; when in this condition they are very clumsy in their movements, and make no effective effort to escape. A very beautiful little Galerucine occurs around Nairobi which might be almost considered the national beetle of Belgium. The head and legs are a pale testaceous, while the elytra consist of three transverse fasciæ alternating in black, red, and yellow. *Agelastica* is a genus of rather uninteresting beetles of an obscure appearance; they are not uncommon in East Africa in damp places. *Monolepta* is a very large genus of small, prettily variegated species occurring throughout Africa; *M. leuce*, Weise, and *M. lineata*, Karsch., are to be taken with ease around Nairobi. Once while sweeping Composite plants at Kampala, Uganda, I was astonished to note that at every sweep myriads of small yellow beetles flew from my net; on examination they proved to be small *Galerucinæ* of the genus *Hyperacantha*.

The *Halticinæ* are a most interesting sub-family of small beetles gifted with extraordinary (for their size) powers of leaping, of which they do not hesitate to make use. They are

[1] Aulmann, *Die Fauna der deutschen Kolonien*, Heft 2: 'Die Schadlinge des Kaffees,' 1911, p. 51.

[2] *Report on the Zoological Expedition to Ruwenzori*, pt. ii, pp. 218–224.

exceedingly common in our region, and may be taken at almost every movement of the net.[1] The ancient genus *Haltica* of Linnæus seems to have a worldwide distribution, and can be taken in profusion by the sides of East African streams. They are very variable, and are of some importance in the study of variation. The Nairobi Museum possesses some interesting series of *Haltica oleracea*, L.: a large number of specimens from Ruiru are, without exception, of a mauve colour; specimens from the Karura Forest, Nairobi, are totally greenish; while I have taken specimens at the Nairobi River of two aberrations—viz., a distinct cyaneous blue and of a reddish purple. As an instance of the wide distribution of this species I may mention that I have taken it commonly in various localities in the south of England; also in eight widely separated localities in South Africa. A thorough study of this remarkable little species would probably be of interest. Many of the sub-family are of an obscure testaceous colour; the Museum possesses specimens of *Aphthona marshalli*, Jac., a minute yellow beetle, from 'German' East Africa. One or two African genera are large and conspicuous, notably the genus *Podagrica*, which contains rather large species of hard and compact integument, usually variegated with black spots or stripes on a yellow background. This genus is widely distributed in Africa, and the Museum possesses specimens from Sagalla, and I have taken the species commonly at Isipingo in Natal.[2] Regarding the economic side of the family, the dreaded 'Turnip Flea' (*Phyllotreta*) belongs to this group, and many others which have not received such euphonious appellations as the former name.

Division V. Cryptostomes

This division contains some very peculiar beetles, on account of the extraordinary structure of the exo-skeleton. It is the smallest division of the *Chrysomelidæ*, and the two sub-families,

[1] The Nairobi Museum will be very glad to receive any specimens of *Halticinæ*, however common, in any number. The Museum will also be pleased to receive other *Chrysomelidæ*.

[2] Dr. van Someren has recently taken a species at Eldoret on the Uasin Gishu Plateau.

the *Hispinæ* and the *Cassidinæ*, may be distinguished as follows :—

I. Form oblong or elongate; head not covered by pronotum; elytra usually armed with spines, or the dorsal surface is at least rugose .	HISPINÆ.
II. Form ovate or hemispherical; head always covered by pronotum; elytra not armed with spines, elytral epipleuræ strongly expanded	CASSIDINÆ.

The *Hispinæ* are a small and remarkable sub-family; the greater portion of the species belong to the genus *Hispa*, the members of which are armed with often long and curious elytral spines. The antennæ are inserted very closely together, and the tarsal claws are very short. Very little is known of Hispine larvæ or of the complete metamorphosis; Perris (*Ann. Soc. Liége*, X, 1855, p. 260) has worked out the life-history of the single European species, *Hispa testacea*. The larvæ feed on the parenchyma of the leaves of *Cistus salvifolius*, and they only rupture the epidermis of the leaves when wishing to remove to a fresh habitat. The habits of some of the large exotic species are probably very different, and, unfortunately, nothing appears to be known as yet, although the recently published volume of Maulik ('Fauna Brit. Ind.: Cassidinæ and Hispinæ') may contain some fresh data. Species of *Hispa* occur freely near Nairobi, in the Ngong Forest, and in other parts of East Africa and Uganda. I have recently taken a beautiful blue metallic species, armed with long black spines, from reeds at the base of the Chania Falls, Thika. It is difficult to speculate as to the function (if any) of the curious armament of the *Hispinæ*. Whether it is formed for protection—for its structure would certainly make it unpalatable, and probably intimidate its enemies—or is the result of some cell stimulus as an example of over-specialisation, is rather difficult to decide in the present state of our knowledge.

The *Cassidinæ* are an interesting sub-family of moderate extent. They are usually shield-shaped or hemispherical,

with greatly expanded elytral margins. While alive they surpass any other *Chrysomelidæ* in beauty and brilliance of colouring; it is deplorable, however, that after death these colours quickly fade, leaving us with a drab, dull yellow insect. These colours would probably be retained if the elytra could be kept moistened with glycerine or spirits of wine; often an old specimen can be rejuvenated for a time by soaking in water.

Cassidinæ, or 'Tortoise Beetles,' are well represented in East Africa, and although the species are not as fine as those of South America, some very gorgeous forms occur. The genus *Aspidimorpha* is perhaps the most extensive in this country, and several species are recorded by L. Ganglbauer ('Insekten aus Deutsch-Ostafrika Kol.,' p. 25) from Tanganyika. The Nairobi Museum possesses one or two fine species from Uganda, and Gahan (*op. cit.*, pp. 224 and 464) records further interesting forms from the same country.

The larvæ and pupæ of the *Cassidinæ* are some of the most wonderful of Coleopterous forms. The larvæ have the peculiar habit of covering themselves with their excrement; this is not free as in the *Criocerinæ*, but held firmly by a forked appendage arising from the posterior extremity of the abdomen. The excrement can in some species be raised and feebly waved with a vertical motion, perhaps with the intention of frightening its enemies. While recently collecting on the shores of Lake Victoria, at Kisumu, I came across a small patch of arid ground on which were growing some small shrubs with broad, thick, light-green leaves.[1] On examining these plants I noticed a species of *Aspidimorpha* (?) in all stages of its development; the most minute larvæ seen were entirely of a bright yellow colour, with a small portion of excrement on the dorsal surface, which, as soon as I advanced my hand, the insect waved slowly in a vertical plane. Further advanced larvæ had, naturally, a larger piece of excrement which assumed a definite pattern, and the bright yellow of the body had given place to a darker brown. The pupæ were also situated on the leaves, and bore no resemblance to an insect: they appeared as merely dry spots of excrement, dark grey in colour, only the whole formed into a fantastic pattern. The imagines were also present; they appeared very restless,

[1] Probably a species of *Solanum?*

and took to the wing at the least opportunity. They were bright little oblong-ovate insects, the elytra being decorated with red spots surrounded by black rings.

Conclusion

This concludes a very brief survey of the Coleopterous family *Chrysomelidæ*. Our knowledge of the group is as yet so little advanced that any further details with reference to distribution, etc., are impossible.

Perhaps it will not be correct to conclude this paper without a few words upon the subjects of mimicry and 'warning coloration,' which seem to so agitate the scientific world at the present time. It is a well-known fact that the *Coccinellidæ* or 'Ladybirds' are furnished with a very conspicuous scheme of coloration—*pro exemplo*, bright elytra often adorned with striking spots and stripes. It has, I believe, been proved that the *Coccinellidæ* are decidedly distasteful to birds or other animals, in the same way that Acræine butterflies are ignored after a primary taste. In the case of the *Coccinellidæ* our knowledge is perhaps a little more definite: anyone who is accustomed to handling the beetles knows that very often the insect exudes a yellowish fluid from between the bases of the pronotum and elytra. Exudations of this kind have been definitely proved to be distasteful to other animals (notably in the large Orthoptera and 'ground-beetles' (*Carabidæ*)).

Certain *Chrysomelinæ* of the genera *Chrysomela, Doryphora,* and others are coloured in a very conspicuous manner, such as spots and stripes in the same way as the *Coccinellidæ*; in many cases *Chrysomelinæ* marked in this way can be separated from the *Coccinellidæ* only by a careful examination of the legs and antennæ. Therefore it is not difficult to imagine that marauding enemies are also mistaken, and, in consequence, the innocent *Chrysomelinæ* are left quietly alone, free from the horrible prospect of sudden death! Therefore, according to Professor Poulton and other advocates of the theory, the *Chrysomelinæ* mimic the *Coccinellidæ* for the sake of preservation, and adopt the 'warning coloration' of the latter family. We do not wish to discuss the validity or otherwise of this

interesting question, but will refer our readers to the writings of Poulton, Marshall, Beddard, and particularly to Wallace's chapters in 'Darwinism.'

I would like to mention one adverse but interesting fact with reference to this theory, which is recorded by W. L. McAtee in a paper written in 1912.[1] A specimen of the Chrysomeline, *Diabrotica* 12-*punctata*, a very conspicuous beetle, black with yellow bands, was accepted by a Blue Jay (*Cyanocitta cristata*), whereas a sombre-coloured Carabid, *Scarites subterraneus*, was rejected!

In extenuation of the inadequacy of the present paper I would mention the very small amount of material that I have been able to examine, and the paucity of the literature to which I have had access. However, I hope that the paper will be of some small assistance to those who, stranded in the 'wilds' of Africa, may desire to take up the study of this fascinating group of beetles.

Those who in studying Coleoptera find delight and solace are well entitled to echo the words :—

> 'O wunderschön ist Gottes Erde
> Und wert, darauf vergnügt zu sein.'

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[1] *Proc. Acad. Nat. Sci. Philadelphia*, Vol. LXIV, pt. ii, p. 281 *et seq.*