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Zdzisława STEBNICKA

Scarabaeoidea (Coleoptera) of the Democratic People's Republic of Korea

[With 232 text-figs]

***Scarabaeoidea (Coleoptera)* Koreańskiej Republiki Ludowo-Demokratycznej**

Abstract: The author presents a monographic elaboration of the *Scarabaeoidea* of the Democratic People's Republic of Korea. The systematic part of the paper contains a review of 138 species, including redescriptions of five species and description of one new to science. Extensive distributional data and locality records are presented as well as feeding habits and behaviour, where known. Results of a detailed zoogeographical analysis concerning the fauna of *Scarabaeoidea* of the whole Far East, complete the elaboration.

INTRODUCTION

This paper presents a first systematic and faunistic revision of *Scarabaeoidea* of the Democratic People's Republic of Korea (D.P.R.K.). It refers to the bibliographical data which concern the whole Korean Peninsula. The work has been accomplished basing on the materials collected by the participants of six zoological expeditions of Polish Academy of Sciences, who carried out investigations in the Democratic People's Republic of Korea in the years 1959—1974. A great number of specimens has been collected herself by the author of the present study during the 6th „Cracovian" expedition in 1974. Some specimens from Hungarian Museum of Natural History in Budapestand Zoological Institute of the Academy of Sciences of USSR in Leningrad, have also been examined. The systematic review of species with illustrations of their morphological features and redescriptions of the little known or rare species are contained in the systematic part of this study. The discussion of the particular species contains the references from systematic literature, significant titles from faunistic literature and bionomical and distributional data. Also author's own comments and the localities of investigated individuals have been given. Of the total number of 224 species known from the Korean Peninsula, 138 are discussed in the present study. This number contains 29 species which are new to the Korean fauna and one new to science. All the species are listed in Tab. II which also indicates

their general distribution. The localities in Korea mentioned in the text (including the localities taken from the cited literature) are numbered and marked on the schematic map of the Korean Peninsula (Fig. 3) according to index. The geographic names, which are given in the literature in the Japanese language, have been transcribed with the international transliteration applying latin alphabet (MROCZKOWSKI, 1972). Spelling of the majority of the names in the latin transliteration has been included in the index. The identification of North-Chinese and Manchurian localities that are indicated in the Japanese literature was not possible due to lack of the concerning cartographic sources. Following main works have been used for transliteration and identification of localities: The Columbia Lippincott Gazetter of the World, Columbia, 1952; Bolšoj Korejsko-Russkij Slovar, Moscow, 1976; The World Atlas, Moscow, 1967; Atlas of the World, Warszawa, 1962.

Names of the institutions, which the examined specimens were from, are indicated in the text by the abbreviations listed below:

HMNH — Hungarian Museum of Natural History, Budapest
ISEZ — Institute of Systematic and Experimental Zoology of the Polish Academy of Sciences, Kraków
ZIL — Zoological Institute of Academy of Sciences of USSR, Leningrad
ZIW — Zoological Institute of the Polish Academy of Sciences, Warszawa.

The author wishes to express her cordial thanks to the following persons for their valuable help and cooperation: To Dr. hab. M. MROCZKOWSKI from the Zoological Institute of the Polish Academy of Sciences in Warszawa for lending use of the materials collected during previous expeditions and for introduction to his own observations; to Dr. S. ENDRÖDI from Budapest and Dr. O. L. KRYZHANOVSKIJ from Leningrad for their kind making available the comparative materials; to Mr. ČHOI-DE-VŎN and Mr. KIM-HJŎNG-SŎK, the functionaries of the Korean Academy of Sciences, and also to Mr. DŽU-DONG-JUL, Director of the Zoological Institute for their help in the organization of the 6th expedition and contribution in the course of it; to Prof. J. PAWŁOWSKI and Dr. hab. A. SZEPTYCKI, the participants of expedition for their interest and involvement in collecting *Scarabaeoidea*.

HISTORICAL REMARKS ON THE INVESTIGATIONS

Examination of *Scarabaeoidea* of the Korean Peninsula was undertaken already in the 19th century, however, in the European and Japanese systematic-faunistic literature only short notes concerning single species have appeared. The ditributional data were usually limited to a single word „Korea"; in some cases totally disfigured names of provinces or larger towns were exclusively available. Only a few materials were collected coincidentally (mainly by the investigators who were interested in other animal groups) and therefore they are not accompanied by informations concerning the environment of the col-

lected specimens. Up to now, a Japanese coleopterologist Jozo MURAYAMA was the only author who had published in a separate work the results of his many years' investigations on *Scarabaeidae pleurosticti* of Manchuria and Korea. He spent some time at the state agencies in these countries, which were Japanese provinces then. For 24 years he has collected the material and subsequently has published small reports (MURAYAMA, 1931; 1934; 1937; 1938; 1941). Simultaneously he was preparing the edition of a monography. The story of this book is very dramatic: in the war the manuscript and the notes have been burried. The reconstruction of them took some years and finally the book was published in Japan at „Aid of the Department of Education" in 1954. Unfortunately, before his death J. MURAYAMA managed to publish only the first volume of the monography, which covers only part of the collected materials, namely 74 species of *Melolonthinae*. The rest of the MURAYAMA'S collection is probably in China now. His book has been published in Japanese language; it contains descriptions of new species, redescriptions of the known ones, drawings of the male copulatory apparates and color pictures of beetles on which the main morphologic features are emphasized. A list of references to the literature and detailed localities of the species in Manchuria and Korea, also in the southern part of the Korean Peninsula are given. This work is of an extraordinary relevance; it helps to solve many taxonomic problems, since it deals with many local species, which in the previous papers were discussed very superficially.

In the nineteen fifties the Polish Academy of Sciences has undertaken very intensive investigations on the fauna of the northern part of the Peninsula. The arrangement concerning scientific colaboration has been established between us and the Academy of Sciences of the Democratic People's Republic of Korea. Also the Hungarian Museum of Natural History joined the investigations and organized two zoological expeditions in the years 1970—1971. The participants of six Polish zoological expeditions in the years 1959, 1965, 1966, 1970, 1971, 1974 gathered a huge collection of invertebrates, which resulted in numerous papers by Polish and European specialists of various systematic groups. As it has been mentioned at the beginning, the present paper, which is a partial review of the investigations done up to the present, was accomplished thanks to a very abundant collection gathered by the Polish expeditions.

ZOOGEOGRAPHY

1. Methodical part

The analysis of the Korean fauna of *Scarabaeoidea* and its connections with the faunas of the contiguous territories is the subject of the present discuss. It has been done based on the present knowledge of these faunas. The tables

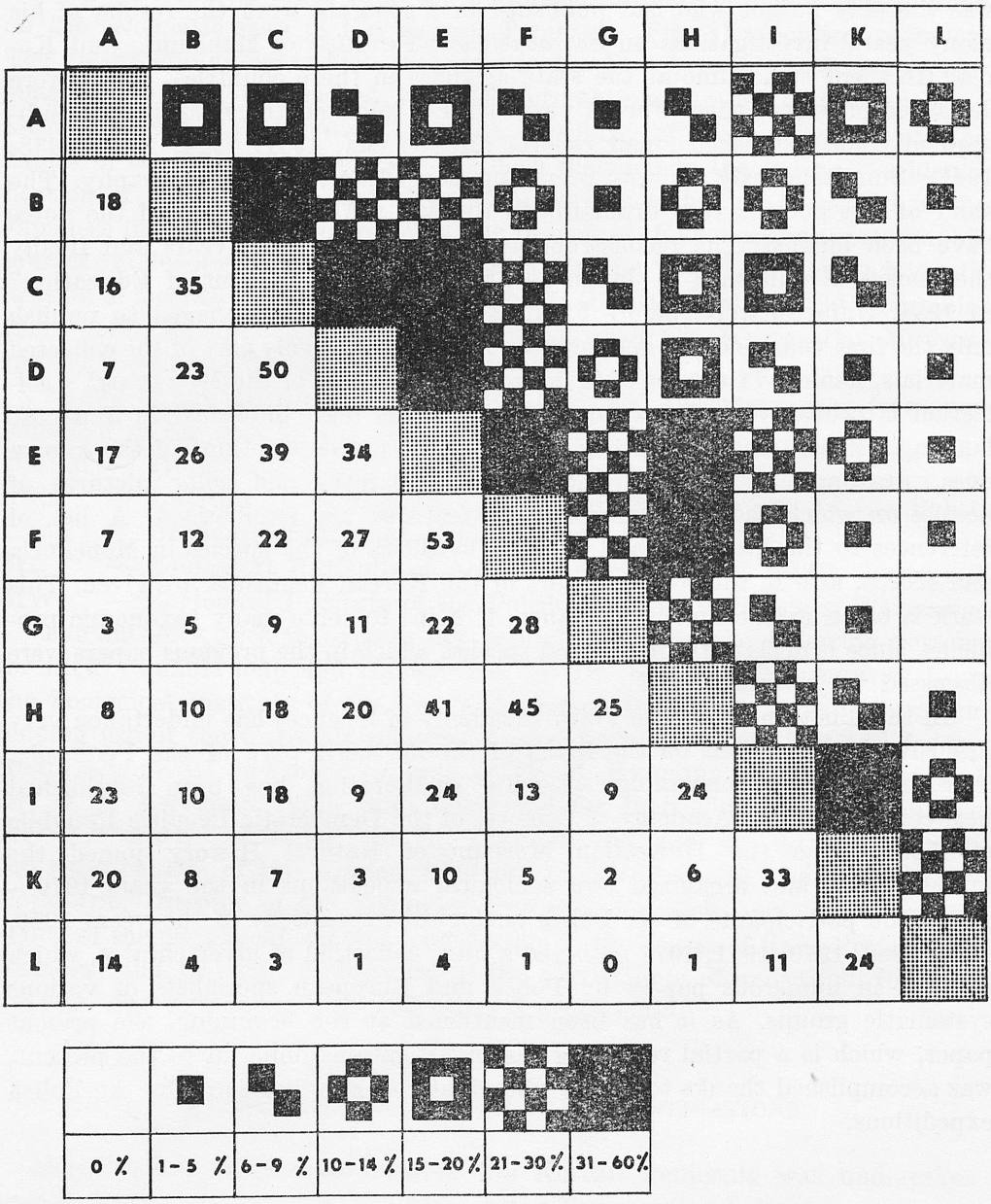


Fig. 1. Diagram of affinities between the faunas of compared territories, A — Taiwan; B — Ryu-kyu, Izu Archipelagos; C — Honshu, Shikoku, Kyushu; D — Hokkaido, Sachalin, Kurile Islands; E — Korean Peninsula; F — Manchuria, Priamurie; G — Mongolia; H — North China; I — Central China; K — South China; L — Indochina. Numbers mark the percentile affinity factors

given include 224 species of the Korean Peninsula recorded in the previous literature as well as new species, which are discussed in the systematic part of the present paper. The tables also contain the data concerning general distribution of particular species; some geographic territories bordered on the schematic map (Fig. 2) and marked with letters were considered. The distribution of the species which occur in the distinguished and compared regions of the Eastern Asia, was obtained from the data contained in the catalogues, monographies and numerous faunistic papers. The affinity criterium has been applied to acquire an objective idea of the similarities among the faunas in the distinguished regions. The percentile version of the SØRENSEN'S formula (1948) was applied to the statistical analysis: $S = 100 \times \frac{2c}{a+b}$, in which S = affinity factor, a, b = number of species in the compared geographic territories, c = number of common species. The faunistic affinity factors obtained are illustrated in the diagram (Fig. 1), which has been plotted according to CZEKANOWSKI (1930). This diagram confirms in general that the classification of the compared regions has been done properly. However, it is not ideal, since as a principle the greatest similarities should be located as close to the diagonal line of the diagram as possible. Nevertheless, fairly objective picture of the differentiation of Scarabaeoidean fauna of this part of Far East was acquired (Fig. 2). The obtained results indicate the importance of the ecological, environmental and historical factors, which have an effect on the systematic group under discussion; they are considered further on.

2. Zoogeographic analysis

The superfamily *Scarabaeoidea* is not uniform as to the role which its elements play in the environment. What is more, both its systematics and chorology are not totally understood. This especially concerns the group of subfamilies *Scarabaeidae laparosticti* which, in contradistinction to the group of *S. pleurosticti* contains species that are not linked to the host plants, have different ecologic preferences and indicate adaptative mechanisms much more difficult to detect. For the above reasons common discussion of both groups could affect the value of the obtained results, which determine not only the affinity of faunas among particular territories, but also indirectly shows the similarity of the landscapes and environments which the discussed faunas are linked to.

In order to illustrate the comparisons of Korean fauna with the faunas of the distinguished territories, the affinity factors for each group separately as well as for both groups together have been calculated and given in the table below:

Table 1

E. Korea / Adjacent territories	Affinity factors (%)		
	S. laparost.	*S. pleurost.*	*Scarabaeoidea*
A. Taiwan	17	17	17
B. Ryu-kyu, Izu Isl.	31	23	26
C. Honshu, Shikoku, Kyushu	46	34	39
D. Hokkaido, Sachalin, Kurile Isl.	44	29	34
F. Manchuria, Priamurie	46	58	53
G. Mongolia	27	19	22
H. North China	42	38	41
I. Central China	19	28	24
K. South China	11	10	10
L. Indochina	7	2	4

The above specification indicates that the affinity factor in the majority of regions compared to Korea is higher in the group of *S. laparosticti* than in the group of *S. pleurosticti*; these differences due to the following reasons. The group of *S. pleurosticti* is in general better known faunistically. Therefore the number of species given in this group is relatively high. The majority of them are, however, local species whose area of distribution is sometimes very narrow. Consequently, the composition of species is different in the compared regions and the number of common species is strikingly low in relation to the total fauna. There is an opposite situation in *S. laparosticti*; the number of endemic species is considerably lower, while numerous given species have very wide distribution. Therefore the number of common elements is higher and the percentage of the faunistic affinity is consequently increased. To some extent, the indicated differences also determine the environmental factors which affect each of the groups, however, detailed discussion of this problem seems untimely. Further faunistic investigations, in particular those carried out in the little known regions as, e. g. China, shall probably change the numeral relationships between both groups. It seems, however, that the general idea of the affinities that join all the *Scarabaeoidea* in the compared regions shall remain unchanged. The numerical data concerning the whole superfamily are given in the diagram (Fig. 1). They illustrate some regularities in the geographic distribution of *Scarabaeoidea* in quite a convincing way. The distribution of this superfamily is fairly similar to the distribution of other groups of entomofauna in this part of Palaearctic and Oriental Realm.

The analysis of the diagram (Fig. 1) leads to the following conclusions for the particular regions:

A. Fauna of Taiwan, which is considered by some authors (KOSTROWICKI, 1965) as a separate region of the Oriental Realm, is characterized by relatively low affinity factors (maximum 23%). This fact indicates a great independence of this fauna, which contains numerous endemic species. Its closest

connections are with the fauna of Central China (23%), South China (20%), the fauna of contiguous islands of the archipelago Ryu-kyu (18%) and Korean Peninsula (17%).

B. Relatively poor fauna of the archipelagos Ryu-kyu and Izu contains few endemic species, some species of wider insular and continental distribution and the subspecies, that were distinguished by Japanese authors based on the variability of populations inhabiting particular islands. It corresponds to the fauna of the islands of Central Japan (35%), Korean Peninsula (26%), northern insular region that contains Hokkaido (23%) and to the fauna of Taiwan (18%). Taking into account the distribution of *Scarabaeoidea* one may consider the archipelago Ryu-kyu as a Palaearctic-Oriental transitional zone of the insular sector. This zone is located more or less between the islands Yakushima and Amami-Ôshima („WATASE-line", Fig. 2) and the islands Miyako and Ishigaki in the southern part of the archipelago („HACHISUKI-line", Fig. 2).

C. The islands of the Central Japan include Honshu, Shikoku, Kyushu and Tsushima (the latter located very close to Korean Peninsula) as well as small neighbouring islands, among others Sado and Oki. Fauna of these islands is most closely related to the faunas of Hokkaido — Sachalin — Kurile Islands (50%), Korean Peninsula (39%), Ryu-kyu Archipelago (23%) and Manchurian-Priamurian fauna (22%). Less close similarities are those to the fauna of North and Central China (18% each). Scarabaeoidean fauna is fairly uniform there. Only in the northern part of Honshu, which extends beyond the subtropical zone, does a slightly different fauna occur; it contains northern elements. According to phytogeographers (GOOD, 1974) and zoogeographers (KURENCOV, 1961), the islands of the Central Japan and Korean Peninsula constitute Korean-Japanese phyto- and zoogeographic region; both flora and fauna of this region is genetically and historically closest to forest formations and to faunas of Manchurian-Priamurian and North-Chinese territories.

D. Fauna of the region that includes Hokkaido, Kurile Islands and Sachalin is closest to the faunas of Central Japan (50%), Korean Peninsula (34%), Manchuria-Priamurie (27%), and Ryu-kyu Islands (23%). It is also closely related to the fauna of Northern China (20%). The island of Hokkaido, which is separated from the northern promontory of Honshu by the narrow, geologically young straits of Tsugaru („BLAKISTON-line", Fig. 2), contains high percent of Central-Japanese species. It also contains boreal elements and its faunistic composition corresponds to those of Manchurian-Priamurian and Korean territories. There is a very poor fauna in Sachalin and Kurile Islands. It is mainly composed of boreal-northern and Manchurian-Priamurian elements.

The numeral data discussed above indicate that the fauna of *Scarabaeoidea* in the regions of the insular sector is characterized by the closest reciprocal relations. Taiwan, the fauna of which is more closely linked to the continental one of Central and South China, is an exception.

E. Korean Peninsula is centrally located in the discussed regions. Thus, their faunas largely contribute to the composition of the Korean fauna; this

is reflected in fairly high values of the indicators. The ordered affinities are as follows: Manchuria-Priamurie (53%), North China (41%), Central Japan (39%), Hokkaido-Sachalin-Kurile Islands (34%), Ryu-kyu, Izu (26%), Central China (24%), Mongolia (22%). These are followed by the faunas of Taiwan (17%), South China (10%) and Indochina (4%).

There are five main types of fauna found in Korean Peninsula:
a) Eurosiberian and Palaearctic species, which are nearly uninterruptedly distributed on the whole territory of Siberia and Europe;
b) less and less common, vanishing in the direction of West, species that inhabit the forests and open areas in Manchuria and South-East Siberia;
c) East-Asiatic species widely distributed in Manchuria and South-East Siberia, Japan and China; they form the most numerous group;
d) species that constitute the local fauna of Korean Peninsula;
e) Oriental species, which are widely distributed in South and Central China, Taiwan and southern Japanese Islands, as well as in Indochinese Peninsula and Philippines.

F. Manchuria, South-Eastern Siberia (Amur-Ussuri Lands and Primorskij Kraj = „Priamurie"). Most complex is the fauna of mixed and leafy forests, described by zoogeographers as „Manchurian-type". It inhabits a separate zoogeographic subregion, whose borders determined by WALLACE (1876) are perpetually changed. Botanists (KOMAROV, 1949; ALECHIN, 1951) have largely contributed to the knowledge of the term „Manchurian elements". They determined the area of Manchurian flora beyond Manchuria down to Amur—Ussuri Lands and North Korea. In the recent years due to the investigation of the distributional areas of various systematic groups of East-Asiatic entomofauna it was discovered, that its main part was concentrated in this very region. It is closely linked to the floristic landscape and is characterized by the occurrence of both endemic species and endemic genera. The fauna of *Scarabaeoidea*, in particular of the group of *S. pleurosticti*, is extremely rich in this region. In the north it borders upon a very poor tundra-taiga (Ochotsk—Kamchatka) fauna, in the west upon Mongolian-Daurian steppe fauna, in the south and south-east upon the North-Chinese and Korean-Japanese faunas connected to plant formations in which the evergreen plants are contained. The highest affinity factors indicate the connections of this fauna with those of Korea (53%), North China (45%), Mongolia (28%), Hokkaido-Sachalin-Kurile Islands (27%) and Central Japan (22%). Its connections with the fauna of Central China are insignificant (13%).

G. Mongolia is one of the regions that are better known faunistically. By zoogeographers (KOSTROWICKI, 1965) it is included into the Central-Asiatic Province, which contains the faunas of the forests and wooded-steppes of the Central Asiatic mountains and also the fauna of dry steppes, half-deserts and deserts of the central part of Palaearctic. Relatively low values of the factors indicate that the Mongolian fauna is separated zoogeographically from the

other discussed regions. It is closest to the faunas of Manchuria-Priamurie (28%), North China (25%) and Korea (22%).

H. North-Chinese territory reaches Huanghe in the south and more or less Sinkiang-region in the west. This region is very little known; based on the present knowledge of the fauna of *Scarabaeoidea*, the highest affinity factors indicate its connections with those of Manchuria-Priamurie (45%), Korean Peninsula (41%), Mongolia (25%) and Central China (24%). Less close similarities are those to the fauna of Hokkaido-Sachalin-Kurile Islands (20%) and Central Japan (18%).

I. Central China extends between Huanghe and Yangzi (Changjiang), in the west it reaches Sichuan excluding Tibet. Kansu, Sichuan Valley and the eastern part which borders upon the Yellow Sea are partially better investigated. Considerable separateness is indicated by the fauna of Sichuan Valley and surrounding mountains, however, precise comparison are not able since the composition of species in Central China is poorly known and exact indicators are lacking. The closest faunas are those of South China (33%), North China and Korean Peninsula (24% each) and of Taiwan (23%). Connections with the fauna of Central Japan are also marked (18%), while the affinity to the Palaearctic-Oriental fauna of Ryu-kyu is very weak (10%). Based on the present knowledge of distribution, the eastern part of the discussed region, which is located between the rivers Huanghe, Yangzi and Weihe, should be recognized as Palaearctic-Oriental transitional zone.

K. The South-Chinese territory, which belongs to Oriental Realm, is situated between the river-basin of Yangzi and the borders of Indochinese Peninsula (Birma, Vietnam); it also includes the island Hainan. This area is little known faunistically. The majority of reports concern the provinces of Yunnan and Fukien as well as Hainan Island, therefore the indicators are not fully realiable. The sequence of affinities with the neighbouring faunas is as follows: Central China (33%), Indochina (24%), Taiwan (20%) and Korean Peninsula (10%). The rest of the factors do not exceed 8% (Ryu-kyu).

L. The Indochinese territory encircled on the map (Fig. 2) has been treated as the example of the faunistic separateness of the typically Oriental zone. It indicates very weak connections with the palaearctic part of Eastern Asia (the indicators do not exceed 4%). Unlike China, this area is better known. Thus it seems that the affinity factor of the closest fauna of South China has a lowered value (24%). More loose connections of this fauna have been found with the faunas of Taiwan (14%) and Central China (11%).

The results of the investigations done up to the present indicate that the fauna of *Scarabaeoidea* in Palaearctic and Palaearctic-Oriental part of Eastern Asia is very complex. It consist of groups that are historically connected to the evolution of the landscape. Depending on the geological basis and on the isolation from the neighbouring forms they indicate autochthony and endemicity of various degrees. The fauna of Korea is one of such complexes; it

has been formed for a very long time. It is particularly interesting because of the geomorphologic features of the territory which is linked to. Unsatisfactory knowledge of the fauna in the southern part of Korean Peninsula, mainly of

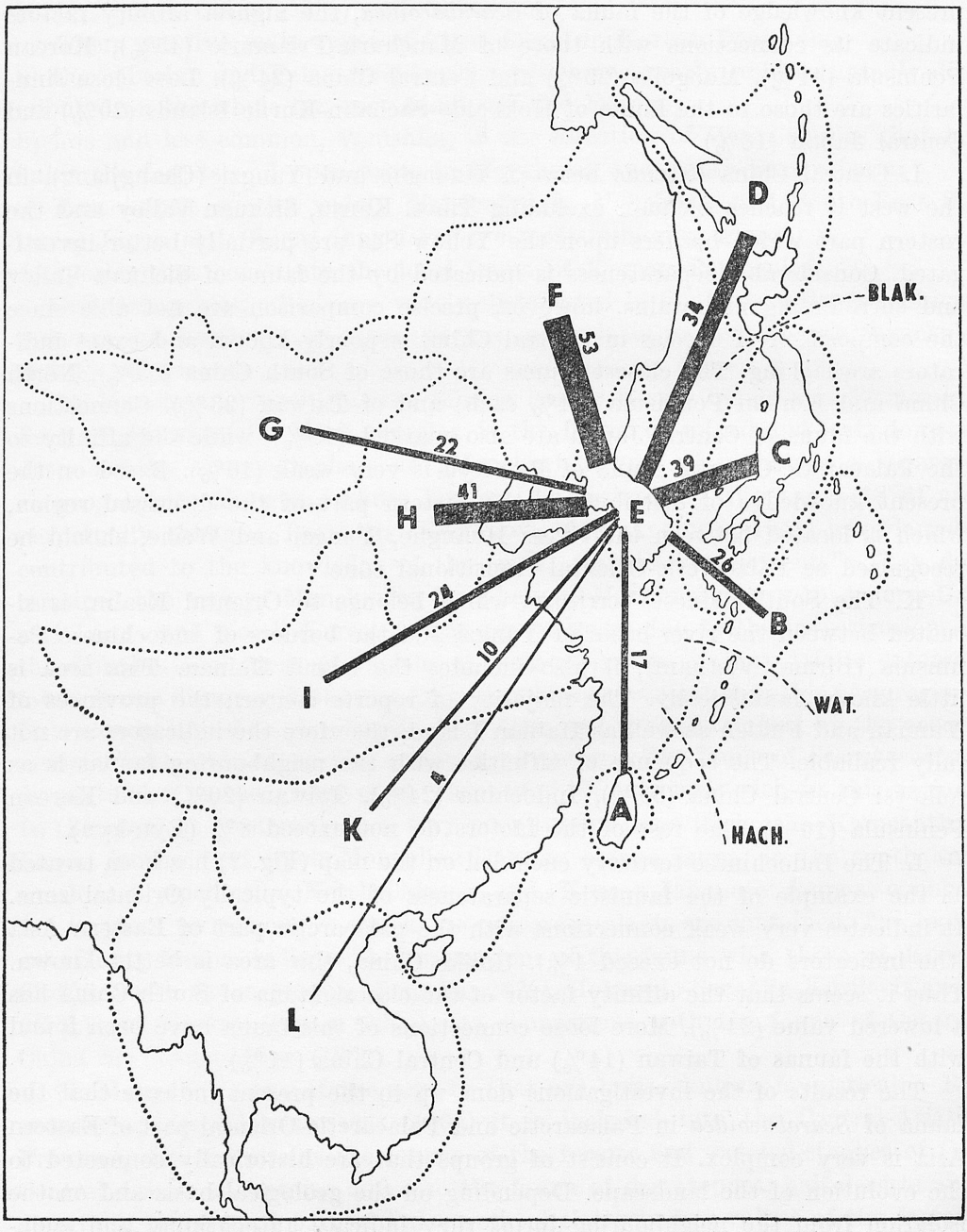


Fig. 2. Division of the studied area into working territories with diagram of affinities of the Korean fauna

its most southern coastal regions, makes the formulation of conclusions extremely difficult. A detailed examination of the whole Korea with contiguous islands would certainly result in many new zoogeographic observations. This is particularly important because the Korean fauna undergoes further transformation, connected among others to human activity.

The reconstruction of the history of the present fauna of the Far East is based on the palaeogeography and history of flora, which were the subject of several studies (ALECHIN, 1951; KOSTROWICKI, 1969; KRIŠTOFOVIČ, 1932, 1958; KURENCOV, 1952, 1960, 1961, 1974; SOLOVEV, 1961). The performance of the history of this fauna is very difficult, since various faunistic groups as, e. g., faunas of leafy forests of the European type, of the coniferous forests, faunas of the open areas and evergreen forests, were formed as soon as in the Tertiary and shifted multidirectionally due to succeeding changes of the landscape and climate.

The marine regression caused by the intense tectonic movements, lasted during almost the entire Palaeogene. The Japanese Sea, which in the Palaeocene and Eocene was only a shallow gulf, completely disappeared in Oligocene, thus nearly whole Japan became connected with the continent. This region was under influence of temperate-warm and wet climate. Hence it was overgrown with the forest of Greenland type (domination of deciduous leafy trees and numerous conifers), only in the south were there mixed forests of the Greenland-subtropical type (with participation of evergreen trees and bushes). The orographic situation at that time was similar to this at present: three landscape types dominated — mountainous (Sichote-Alin, North Korea and Japan), uplands (West China) and lowlands (East China, Amur, Ussuri Land). The faunas of the lowland plains and borders of the fresh-water lakes that expanded out of drying Mongolia were developing parallelly to the development of the forest fauna. Higher in the mountains, formation of an ancient nucleus of Alpine fauna probably took place. Subsequently, strong tectonic movements and volcanic activity considerably affected the configuration of the ground: the massives like Chingan in Manchuria and numerous mountain chains in Korea were formed. The denudated sediments from these mountains covered the whole Yellow Sea, which was land at that time. Due to the processes of Alpine orogenesis and formation of steppes and deserts of Central Asia, on the turn of Palaeogene and Neogene the border of the subtropical flora and fauna shifted to the north. The vegetation of continental China and Mongolia underwent gradual xerophilisation.

Xerophilous brushwoods appeared in Manchuria and Korea as well; they bore down the plants demanding more humidity. Mongolia became covered with xerophilous vegetation and its humidity-demanding fauna mortified with the recession of lakes and lowland plains, which were similar to the former ones near Lower Amur. By drawing off into east this fauna probably sheltered partially in slightly similar environments on the plains of lake Chanka and Amur.

In a short period in Miocene, Sachalin and Japan formed an archipelago of small islands. They were surrounded by a shallow sea, which at the turn of Miocene and Pliocene withdrew behind the line Japan-Kurile Islands-Kamchatka and consequently the islands totally joined the continent again. Probably due to this reason the climate of the islands, as well as of the continental coastal zones that were affected periodically by the pressure of the ocean, was rather cool and wet, while on the rest of the region, temperate-subtropical climate was dominated. The xerophilisation of flora attained the islands only partially. It did not result in impetuous and acute ecological differentiations; in the most favorable refuges the fauna indicated a tendency to conserve the ancient forms. On the contrary, the fauna of the western part of the region remained in less favorable conditions: steppe-desert fauna that originated from Central Asia, assimilated the Tertiary forest fauna of North China. This strongly affected the ecological differentiation of biocenoses in Manchuria and Korea.

The period of older glaciation (Riss) was characterized by cooling of the climate. This was connected to the development of the mountain glaciers, which were strongest in the North-East Siberia and occurred locally in the mountains of Hokkaido and Honshu, Sichote-Alin, Chingan and North Korea. In this period, the wooded-steppe type vegetation, including tundra-growing species, dominated in the north and steppe flora in the south and the west. Forest formations were only locally preserved in the south and in the mountains, among others in Korea. The early glaciation only caused an indirect change in natural conditions of the Far East, through general cooling of the climate and shifting of some groups of thermophilous species to the south. Through dislocation along the present Korean Peninsula these faunas could contact those of Japan and China again.

In the interglacial warm period the seas of Far East gradually appeared; this led to a renewed humidification of the continental climate. Forests dominated in the east and south again; they were slightly less abundant than in the preglacial period. On the other hand in the western part of region, large areas were covered with wooded-steppe, characterized by more abundant vegetation. Manchurian, Priamurian and Korean faunas maintained the connection with the Japanese fauna through a narrow stripe of land, which still occurred instead of the present Korean Straits. This concerned Sachalin as well, which was also connected with the continent then. Thus, the close faunal connections established a long time ago were still sustained.

The last glaciation (Würm) affected more distinctly the natural conditions of Far East and therefore caused considerable disturbances in the biocenoses. Forest-tundra dominated in the north, while in the south — open steppes of the Mongolian type. Forest vegetation, mostly coniferous, occurred locally in the mountains of Sichote-Alin, in South Chingan and in Korea. Some ecologic complexes of the contemporary fauna sheltered themselves in the southern refuges, among others in the south of Primorskij Kraj, in Korea and in the

south of Manchuria. There they formed sort of reservation; it was surrounded in the periphery by a zone of relicts that survived up to the present in the form of extremely impoverished complexes or single species adapted to the ecologic requirements of other faunas. Some elements of the thermophilous, subtropical fauna did not stand the cooling of the climate and perished. Therefore the northern border of the area of this fauna became shifted towards the south, into Central China. This was followed by the parallel succession of the fauna of tundra in the direction of the south. This was accomplished among others along the comb of Kurile Islands, which then served as a bridge to the large Japanese Islands.

Towards the close of Pleistocene, due to tectonic activity of the bottom of the sea, the Japanese Islands and Sachalin became finally separated from the continent. In the same period numerous straits and Kurile Islands were created in their present form; in the whole the Quaternary period the islands were affected by the tectonic movements and consequently their shape and surface configuration were not stable. The vegetation of the forest formations became dominant again, however, these forests were not nearly so rich as those of the early Pleistocene.

During the post-glacial warming up the faunas came back from the south accompanied by the plant formations. They established a biocenotic contact with the faunas of the northern, north-western and western refugia. The process of settlement of islands by the continental species was stopped (in the case of invertebrates was rather strongly limited) at the decline of Pleistocene. The migration pathways leading from the North-Eastern Asia through Sachalin — Hokkaido to Honshu and through Korea to southern part of Honshu were cut by the sea. Although there is no proof that the land bridge in the part of Honshu—Ryu-kyu—Taiwan did exist, the faunistic affinities of these islands support the assumption that the ways of expansion of species as, e. g., mechanical introduction due to typhoons or means of marine transport do occur.

The present period is marked by the limitation of forest grown area by man. In China forests have been almost completely felled over large areas and their habitat turned into farm land. On the huge territories contiguous to Amur there are vast meadows. In the Korean Peninsula large areas of the old forests were burned away with napalm in the war. Some enclaves of the old forests survived still locally in the Chingan mountains, Sichote-Alin and Korea. Most numerous Tertiary plant formations are maintained in Japan and Korea; they represent the refuges of the relicts of numerous faunistic groups.

The determination of which species or groups of species of *Scarabaeoidea* followed particular ways to the Korean Peninsula is very difficult because in the whole period of Tertiary and in main part of Quaternary, the discussed region was the scene of migrations both ways: from the depths of the continent to the present islands and backwards. In the period of Quaternary fluctuation of climate, the Korean pathway was possibly followed by the southern species, which in the warmer periods migrated into north, as well by the north-

Table II

List of *Scarabaeoidea*-species recorded from Korean Peninsula with evidence of general distribution[1]

No	Species	A Taiwan	B Ryu-kyu Izu Archipelagos	C Honshu Shikoku Kyushu	D Hokkaido Sachalin Kurile Islands	E Korea	F Manchuria Priamurie	G Mongolia	H North China	I Central China	K South China	L Indochina	Eurasia
* 1	*Scarabaeus (Scarabaeus) affinis* Br.					●	●		●				●
* 2	*Gymnopleurus (Gymnopleurus) mopsus* (Pall.)					●		●	●	●			●
* 3	*Gymnopleurus (Paragymnopleurus) sinuatus* (Ol.)	●				●				●	●	●	
4	*Gymnopleurus (Paragymnopleurus) singularis* Wat.					●							
* 5	*Sisyphus (Sisyphus) schaefferi* (L.)					●		●	●				●
* 6	*Liatongus (Liatongus) phanaeoides* (Westw.)	●	●	●		●				●	●	●	
* 7	*Copris (Copris) ochus* (Motsch.)		●	●	●	●	●	●	●	●			
* 8	*Copris (Copris) tripartitus* (Waterh.)	●	●	●		●				●	●		
* 9	*Caccobius (Caccophilus) christophi* Har.					●	●		●	●			
* 10	*Caccobius (Caccophilus) sibiricus* Balth.					●	●						
* 11	*Caccobius (Caccophilus) sordidus* Har.					●	●		●				
* 12	*Caccobius (Caccophilus) brevis* Waterh.					●	●		●				
* 13	*Caccobius (Caccophilus) unicornis* (Fabr.)	●	●	●		●				●	●	●	
* 14	*Onthophagus (Digitonthophagus) solivagus* Har.					●			●	●			
* 15	*Onthophagus (Digitonthophagus) hvangheus* Steb.					●							
* 16	*Onthophagus (Strandius) lenzi* Har.	●	●	●	●	●	●		●	●			
* 17	*Onthophagus (Strandius) japonicus* Har.	●		●		●							
* 18	*Onthophagus (Phanaeomorphus) fodiens* Waterh.			●		●	●		●	●			
* 19	*Onthophagus (Phanaeomorphus) ater* Waterh.	●	●	●	●	●	●		●	●			
* 20	*Onthophagus (Gibbonthophagus) viduus* Har.		●	●	●	●	●		●				
* 21	*Onthophagus (Gibbonthophagus) atripennis* Waterh.		●	●		●	●		●	●			
* 22	*Onthophagus (Onthophagus) uniformis* Heyd.					●	●						
* 23	*Onthophagus (Onthophagus) gibbulus* (Pall.)					●	●	●	●				●
* 24	*Onthophagus (Onthophagus) bivertex* Heyd.			●		●	●		●				

[1] The species with asterisk are discussed in the text.

No	Species	A	B	C	D	E	F	G	H	I	K	L	Eurasia
* 25	*Onthophagus (Onthophagus) rugulosus* HAR.	●				●				●	●	●	
* 26	*Onthophagus (Onthophagus) olsoufieffi* BOUC.			●		●	●		●				
* 27	*Onthophagus (Onthophagus) punctator* REITT.					●	●		●				
28	*Onthophagus (Onthophagus) necessarius* REITT.					●							
29	*Onthophagus (Onthophagus) pupillatus* KOLBE					●							
30	*Onthophagus (Onthophagus) trituber* (WIED.)	●				●				●	●	●	
31	*Onthophagus (Onthophagus) koma* MATS.					●							
* 32	*Aphodius (Colobopterus) apicalis* HAR.			●	●	●	●		●				
* 33	*Aphodius (Colobopterus) indagator* MANNRH.					●	●						
* 34	*Aphodius (Colobopterus) subterraneus* (L.)					●	●	●					●
* 35	*Aphodius (Teuchestes) brachysomus* SOLS.			●		●	●		●				
* 36	*Aphodius (Teuchestes) haemorrhoidalis* (L.)			●	●	●	●	●	●				●
* 37	*Aphodius (Teuchestes) dongchariensis* STEB.					●							
* 38	*Aphodius (Pharaphodius) rugosostriatus* WATERH.			●	●	●			●	●			
* 39	*Aphodius (Coptochiroides) subcostatus* KOLBE	●	●	●		●				●	●	●	
* 40	*Aphodius (Acrossus) rufipes* (L.)			●	●	●	●						●
* 41	*Aphodius (Acrossus) binaevulus* HEYD.					●	●						
* 42	*Aphodius (Acrossus) superatratus* NOM. et NAK.			●		●							
* 43	*Aphodius (Paulianellus) maderi* BALTH.			●		●				●			
* 44	*Aphodius (Pleuraphodius) lewisi* WATERH.	●	●	●		●				●	●		
* 45	*Aphodius (Trichaphodius) proclivis* BALTH.					●					●		
46	*Aphodius (Trichaphodius) comatus* A. SCHM.			●		●			●	●	●		
* 47	*Aphodius (Aganocrossus) urostigma* HAR.	●	●	●		●				●	●	●	
48	*Aphodius (Pseudacrossus) juxtus* PETR.					●							
* 49	*Aphodius (Trichonotulus) dzamosanicus* STEB.					●							
* 50	*Aphodius (Trichonotulus) mongolicus* MANNRH.					●	●	●					
* 51	*Aphodius (Aphodius) elegans* ALLIB.	●	●	●	●	●				●	●	●	
* 52	*Aphodius (Orodalus) pusillus* (HBST)			●	●	●	●	●					●
* 53	*Aphodius (Orodalus) naraensis* NAK.			●		●							
54	*Aphodius (Aphodaulacus) nigrotessellatus* MOTSCH.			●		●	●		●				
55	*Aphodius (Volinus) obsoleteguttatus* WATERH.			●		●							
* 56	*Aphodius (Phaeaphodius) rectus* MOTSCH.	●	●	●	●	●	●	●	●	●			
* 57	*Aphodius (Agrilinus) uniformis* WATERH.		●	●	●	●							
* 58	*Aphodius (Agrilinus) putridus* (HBST)					●	●	●					●
* 59	*Aphodius (Agrilinus) breviusculus* (MOTSCH,)			●	●	●							

No	Species	A	B	C	D	E	F	G	H	I	K	L	Eurasia
* 60	*Aphodius (Agrilinus) inexpectatus* BALTH.					●	●						
* 61	*Aphodius (Bodilus) sordidus* (FABR.)		●	●	●	●	●		●	●	●		●
* 62	*Aphodius (Bodilus) languidulus* A. SCHM.			●	●	●			●	●			
* 63	*Aphodius (Nialus) sturmi* HAR.			●		●	●	●					●
* 64	*Aphodius (Calamosternus) uniplagiatus* WATERH.	●	●	●	●	●							
* 65	*Aphodius (Calamosternus) sublimbatus* MOTSCH.	●	●	●	●	●	●		●	●	●		
66	*Aphodius (Calamosternus) prušai* TES.					●							
67	*Aphodius (Pharaphodius) orientalis* HAR.	●	●	●		●				●	●	●	
* 68	*Aegialia (Aegialia) comis* (LEWIS)			●	●	●	●						
* 69	*Aegialia (Psammoporus) kamtschatica* MOTSCH.			●	●	●	●						
* 70	*Rhyssemus koreanus* sp. n.					●							
71	*Saprosites japonicus* WATERH.	●	●	●	●	●						●	
* 72	*Ochodaeus ferrugineus* (ESCH.)					●	●	●					●
73	*Kolbeus koreanus* KOLBE	●	●	●		●				●			
* 74	*Geotrupes (Phelotrupes) auratus* MOTSCH.			●	●	●	●						
* 75	*Geotrupes (Phelotrupes) laevistriatus* MOTSCH.		●	●	●	●	●		●	●			
76	*Bolbocerodema zonatum* NIKOL.					●	●						
77	*Bolbocerosoma nigroplagiatum* (WATERH.)	●	●	●	●	●	●						
* 78	*Gastroserica herzi* (HEYD.)	●				●	●			●			
* 79	*Nipponoserica similis* (LEWIS)			●		●							
* 80	*Trichoserica polita* (GEBL.)					●	●						
* 81	*Sericania fuscolineata* MOTSCH.		●	●		●	●						
82	*Sericania latisutcata* MURAY.					●							
83	*Sericania koryoensis* MURAY.					●							
84	*Sericania hasegawai* MURAY.					●							
85	*Paraserica grisea* (MOTSCH.)					●	●						
* 86	*Serica boops* WATERH.			●	●	●							
87	*Serica brunnea* (L.)		●	●		●							
88	*Serica septentrionalis* MURAY.			●	●	●	●						
89	*Serica elliptica* MURAY.					●							●
* 90	*Maladera (Maladera) castanea* (ARR.)	●	●	●	●	●							
* 91	*Maladera (Maladera) gibbiventris* (BRSKE)	●				●	●		●	●			
* 92	*Maladera (Maladera) formosae* (BRSKE)	●				●				●			
* 93	*Maladera (Maladera) renardi* BALL.			●		●	●		●				

No	Species	A	B	C	D	E	F	G	H	I	K	L	Eurasia
* 94	*Maladera (Maladera) holosericea* (Scop.)					●	●						●
* 95	*Maladera (Maladera) cariniceps* (Mos.)			●		●	●						
96	*Maladera (Maladera) laboriosa* (Brske)	●				●				●			
* 97	*Maladera (Maladera) fusania* Muray.	●				●							
* 98	*Maladera (Maladera) orientalis* (Motsch.)	●	●	●	●	●	●	●	●				
* 99	*Maladera (Maladera) schonfeldti* (Muray.)					●							
100	*Maladera (Maladera) opaciventris* (Mos.)					●							
101	*Maladera (Maladera) thibetana* (Brske)					●			●				
* 102	*Maladera (Maladera) okamotoi* (Muray.)					●	●		●				
103	*Maladera (Maladera) infuscata* (Mos.)	●				●				●			
104	*Maladera (Maladera) stridula* (Brske.)	●				●				●			
105	*Maladera (Maladera) japonica* (Motsch.)	●	●	●	●	●							
106	*Maladera (Maladera) verticalis* (Fairm.)					●	●		●				
107	*Maladera (Maladera) ovatula* (Fairm.)					●	●		●	●			
108	*Maladera (Maladera) aureola* (Muray.)					●							
109	*Maladera (Maladera) koreana* (Muray.)					●							
* 110	*Maladera (Eumaladera) nitidiceps* Nom.		●			●							
* 111	*Hoplia (Euchromoplia) aureola* (Pall.)					●	●	●	●				
* 112	*Hoplia (Decamera) djukini* Jacob.					●	●						
* 113	*Ectinohoplia rufipes* (Motsch.)			●	●	●	●		●	●			
114	*Polyphylla laticollis* Lewis			●		●	●						
115	*Polyphylla chinensis manchurica* Sem.					●	●						
* 116	*Hoplosternus incanus* Motsch.			●		●	●		●				
117	*Hoplosternus japonicus* Har.			●		●	●		●				
* 118	*Hilyotrogus bicoloreus* (Heyd.)					●	●						
119	*Lachnosterna nipponensis* Muray.			●		●							
120	*Heptophylla picea* Motsch.			●	●	●							
* 121	*Apogonia cupreoviridis* Kolbe			●		●	●						
* 122	*Apogonia cribricollis* Burm.					●	●						
123	*Cyphochilus farinosus* Waterh.					●			●	●			
* 124	*Brahmina rubetra* (Fald.)					●	●		●				
125	*Brahmina intermedia* (Mannrh.)					●	●	●					
126	*Brahmina darcisi* Reitt.					●	●						
127	*Brahmina crenicollis* Motsch.					●	●						

No	Species	A	B	C	D	E	F	G	H	I	K	L	Eurasia
128	*Brahmina excissiceps* MURAY.					●				●			
* 129	*Lasiopsis manchuricus* MURAY.					●	●						
130	*Lasiopsis sahlbergi* (MANNRH.)					●	●	●					
131	*Metabolus impressifrons* FAIRM.					●			●				
* 132	*Sophrops heydeni* (BRSKE)					●	●						
* 133	*Sophrops striata* (BRSKE)					●			●				
* 134	*Miridiba koreana* NIIJ. et KIN.					●	●						
135	*Miridiba castanea* (WATERH.)			●		●							
* 136	*Holotrichia diomphalia* (BAT.)			●	●	●	●		●				
* 137	*Holotrichia ernesti* REITT.			●	●	●	●	●	●	●			
* 138	*Holotrichia paralella* (MOTSCH.)			●	●	●	●		●				
* 139	*Holotrichia picea* WATERH.			●	●	●	●						
* 140	*Holotrichia oblita* (FALD.)			●		●	●						
* 141	*Holotrichia inelegans* (LEWIS)			●	●	●	●						
142	*Holotrichia castanea* (WATERH.)			●		●							
143	*Holotrichia sichotana* (BRSKE)					●			●				
144	*Holotrichia kiotoensis* (BRSKE)			●		●	●		●				
145	*Holotrichia reticulata* MURAY.					●			●				
146	*Holotrichia koraiensis* MURAY.					●							
* 147	*Eotrichia titanis* (REITT.)					●	●						
* 148	*Popillia indigonacea* MQTSCH.	●	●			●	●						
* 149	*Popillia atrocoerulea* BAT.	●				●	●		●	●			
150	*Popillia chinensis* FRIV.					●			●	●			
* 151	*Popillia japonica* NEWM.			●	●	●				●			
* 152	*Popillia quadriguttata* (FABR.)	●				●	●		●	●			
* 153	*Popillia ruficollis* KR.					●	●		●	●			
154	*Popillia uchidai* NIIJ. et KIN.					●							
155	*Popillia quelpartiana* OH.					●							
* 156	*Phyllopertha horticola* (L.)					●	●	●	●				
157	*Phyllopertha diversa* WATERH.			●		●	●						●
* 158	*Spilota plagicollis* FAIRM.					●	●		●	●			
* 159	*Proagopertha lucidulla* (FALD.)					●	●		●	●			
* 160	*Mimela splendens* (GYLL.)	●		●		●	●		●	●			
* 161	*Mimela chinensis* KIRBY					●			●	●			

No	Species	A	B	C	D	E	F	G	H	I	K	L	Eurasia
162	*Mimela fusania* BAT.	●				●	●		●	●			
163	*Mimela concolor* BLANCH,	●	●	●		●				●	●		
164	*Mimela pekinensis koreana* MACH.					●							
* 165	*Rhombonyx holosericea* (FABR.)			●	●	●	●	●	●				●
166	*Rhombonyx testaceipes* MOTSCH.			●	●	●	●		●				
167	*Rhombonyx ussuriensis* MEDV.					●	●						
* 168	*Anomala (Chrysoplethisa) sieversi* HEYD.			●		●	●		●	●			
169	*Anomala (Chrysoplethisa) octiescostata* BURM.			●		●							
* 170	*Anomala (Euchronomala) cuprea* (HOPE)			●	●	●	●		●				
* 171	*Anomala (Euchronomala) viridana* KOLBE			●	●	●	●						
172	*Anomala (Euchronomala) mongolica* FALD.					●	●	●	●				
173	*Anomala (Euchronomala) albopilosa* HOPE		●			●							
174	*Anomala (Idiocnema) aulax* WIED.					●			●	●	●		
175	*Anomala (Idiocnema) costifera* REITT.					●	●						
176	*Anomala (Idiocnema) spiloptera* BURM.					●				●	●		
177	*Anomala (Anomala) pleurimargo* REITT.			●		●			●				
* 178	*Anomala (Anomala) corpulenta* MOTSCH.			●		●			●				
* 179	*Anomala (Anomala) luculenta* ER.					●	●	●	●				
180	*Anomala (Anomala) geniculata* MOTSCH.	●	●	●	●	●			●				
181	*Anomala (Anomala) rufocuprea* MOTSCH.				●	●							
182	*Anomala (Emphalena) chamaeleon* FAIRM.					●	●		●				
* 183	*Blitopertha (Exomala) pallidipennis* REITT.					●	●	●	●				
* 184	*Blitopertha (Exomala) orientalis* (WATERH.)		●	●	●	●							
* 185	*Blitopertha (Blitopertha) conspurcata* (HAR.)			●		●	●		●				
* 186	*Adoretus (Lepadoretus) sinicus* BURM.	●	●	●		●				●	●	●	
* 187	*Adoretus (Lepadoretus) tenuimaculatus* WATERH.	●	●	●		●				●	●	●	
* 188	*Rhomborrhina (Rhomborrhina) japonica* HOPE		●	●		●				●	●		
* 189	*Dicranocephalus adamsi* PASC.					●				●	●	●	
* 190	*Cetonia (Eucetonia) magnifica* BALL.					●	●		●				
191	*Cetonia (Eucetonia) viridiopaca* (MOTSCH.)					●	●		●				
192	*Cetonia (Eucetonia) pilifera* (MOTSCH.)			●	●	●	●		●				
193	*Cetonia (Eucetonia) roelofsi* HAR.			●	●	●							
* 194	*Potosia (Liocola) brevitarsis* (LEWIS)	●		●	●	●	●	●	●	●			
195	*Potosia (Liocola) lugubris orientalis* MEDV.					●	●		●				

No	Species	A	B	C	D	E	F	G	H	I	K	L	Eurasia
* 196	*Potosia (Calopotosia) aerata* (Er.)			●		●	●		●				
* 197	*Potosia (Potosia) famelica* (Jans.)					●	●		●				
198	*Potosia (Potosia) metallica* (Hbst)				●	●	●	●	●				●
* 199	*Poecilophilides rusticola* (Burm.)			●		●	●	●	●	●			
* 200	*Glycyphana fulvistemma* (Motsch.)	●		●		●	●		●				
* 201	*Oxycetonia jucunda jucunda* (Fald.)		●	●	●	●	●	●	●				
* 202	*Clinterocera mandarina* (Westw.)					●	●		●				
203	*Clinterocera obsoleta* (Fairm.)					●				●			
* 204	*Dasyvalgus angusticollis* (Waterh.)		●	●	●	●							
205	*Allomyrina dichotomus* (L.)			●		●				●	●		
206	*Eophileurus chinensis* (Fald.)	●	●	●	●	●	●		●	●	●	●	
207	*Oryctes rhinoceros* (L.)	●	●			●					●	●	
* 208	*Lasiotrichius succinctus* (Pall.)		●	●	●	●	●	●	●				
* 209	*Gnorimus subopacus* Motsch.			●	●	●	●		●				
210	*Osmoderma barnabita* Motsch.					●	●		●				
* 211	*Trox sabulosus* Oliv.					●	●	●					●
212	*Trox scaber* (L.)		●	●	●	●	●	●					●
213	*Trox opacotuberculatus* Motsch.			●		●	●						
214	*Nigidius miwai* Nag.					●							
215	*Prismognathus dauricus* Motsch.					●	●		●	●			
* 216	*Psalidoremus inclinatus* (Motsch.)	●	●	●	●	●							
* 217	*Macrodorcas rubrofemoratus* (Voll.)	●	●	●	●	●	●		●	●			
218	*Macrodorcas rectus* (M tsch.)	●	●	●	●	●			●	●			
* 219	*Macrodorcas striatipennis* Motsch.	●	●	●	●	●	●		●				
* 220	*Serrognathus titanus* (Boisd.)	●	●	●		●				●	●	●	
* 221	*Dorcus hopei* (Saund.)	●		●		●	●			●	●	●	
* 222	*Dorcus montivagus* (Levis)			●		●				●			
223	*Lucanus maculifemoratus* Motsch.	●	●	●	●	●	●		●	●	●		
224	*Eurytrachellelus haitschunus* Did. et Seg.					●				●			

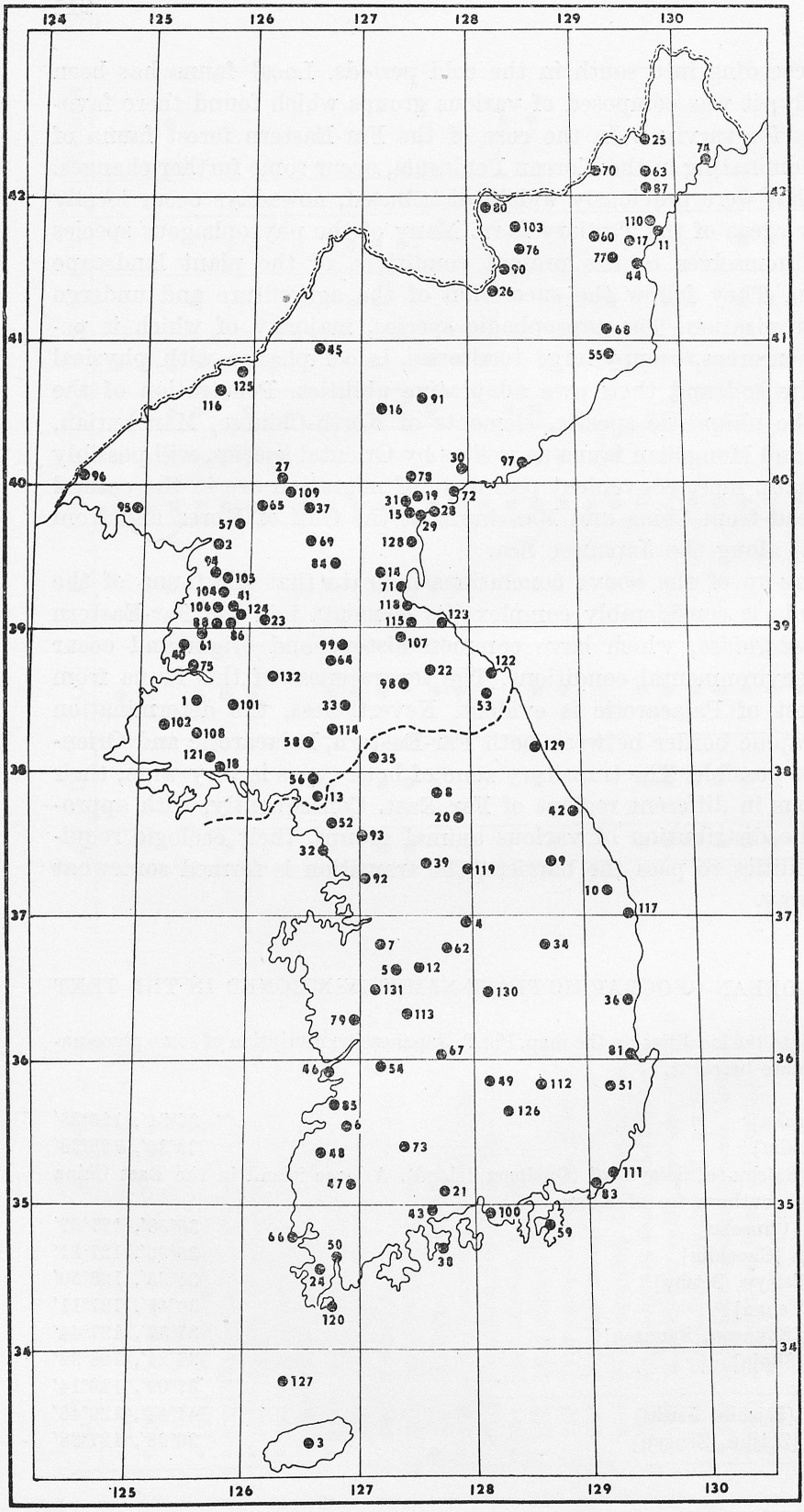
ern species succeeding into south in the cold periods. Local fauna has been formed gradually; it was composed of various groups which found there favorable conditions for survival. In the core of the Far-Eastern forest fauna of *Scarabaeoidea* dominating in the Korean Peninsula, occur some further changes. The elements that were previously widely distributed, nowadays occur locally in the mainstay areas of the Tertiary flora. Many of the phytophagous species have adapted themselves to the present conditions of the plant landscape created by man. They follow the succession of the agriculture and undergo gradual synantropization. The coprophagic species, majority of which is peculiar to the open areas, occupy large territories, in compliance with physical properties of the soil and their own adaptative abilities. Penetration of the Peninsula by the ubiquistic species, elements of North-Chinese, Manchurian, South-Siberian and Mongolian fauna as well as by Oriental species, will possibly develop. The main, most convenient pathways of migration are in the coastal regions; they lead from China and Manchuria at the Gulf of Korea and from Primorskij Kraj along the Japanese Sea.

The summing-up of the above conclusions indicate that the fauna of the Korean Peninsula is considerably complex; its elements join the Far-Eastern faunas of *Scarabaeoidea*, which have common history and origin and occur in the similar environmental conditions. The separateness of this fauna from those of the rest of Palaearctic is evident. Nevertheless, the determination of the zoogeographic border between both Far-Eastern, Palaearctic and Oriental faunas is not possible. The transitory zone of both types is very wide; their overlap is various in different regions of Far East. Consequently, with appropriateness to the distribution of various animal groups, their ecologic requirements and abilities to pass the barriers, the transition is formed somewhat in a different way.

LIST OF THE KOREAN GEOGRAPHIC PLACE-NAMES MENTIONED IN THE TEXT

Numbers indicate the localities on the map, Fig. 3. Japanese transcription of some place-names is given in square brackets.

1 — Anak [Angaku] 38°31′, 125°28′
2 — Andžu [Anshu] 39°35′, 125°38′
3 — Čedžu-do [Saishu-to, Saisyu-to] (Quelpart Island). A large island in the East China Sea off the southern tip of Korea 36°58′, 127°57′
4 — Čhungdžu [Chuschu] 36°36′, 127°21′
5 — Čočhingvŏn [Chochiin] 35°35′, 126°50′
6 — Čongdžu [Seisyu, Seishu] 36°49′, 127°11′
7 — Čhŏngan [Tenan] 37°52′, 127°44′
8 — Čhunčhŏn [Shunsen, Syunsen] 37°24′, 128°39′
9 — Čongsŏng [Shojo] 37°09′, 129°14′
10 — Čongphjŏng 41°47′, 129°48′
11 — Čhŏngdžin [Seishin, Seisin] 36°38′, 127°38′
12 — Čhŏngdžu [Zeishu, Zensyu]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13 — Chonma-san, Pakjŏn — near: 37°51′, 126°35′
14 — Čhŏnne — 39°28′, 127°13′
15 — Čojang — near: 39°50′, 127°30′
16 — Čangdžin-ho [Cho-shin-ko] — 40°25′, 127°09′
Nangnim-sanmek
17 — Džuyr — near: 41°40′, 129°35′
Jonghen
18 — Hedžu [Kaishu, Kaisyu] — 38°03′, 125°46′
Hakhjŏn-čhŏn
19 — Hamhyng [Kanko] — 39°55′, 127°34′
Tŏksan-ri
20 — Hongčhŏn [Kosen] — 37°41′, 127°54′
21 — Hadong [Kato] — 35°05′, 127°44′
22 — Hvengjang — 38°43′, 127°36′
23 — Hvačhŏn — 39°02′, 126°05′
24 — Henam [Kainan] — 34°35′, 126°40′
25 — Hverjŏng [Kaiinji] — 42°27′, 129°41′
26 — Hjesan [Keisanchin, Kaizanchin] — 41°23′, 128°13′
Dŏngha-ri, Džedang-jong
27 — Hjangsan — 40°01′, 126°12′
Mjohjang-san, Manphok-tong, Munsu-tong, Hapiro, Hjangam-ri, Hjangsan-čhŏn
28 — Hyngnam — 39°50′, 127°39′
29 — Hamdžu — near: 39°45′, 127°30′
Hyngpong-ri
30 — Hongvŏn [Kogen] — 40°04′, 127°56′
Jŏnpong-ri
31 — Hyngsang — 39°53′, 127°26′
32 — Inčhŏn (Chemulpo) [Jinsen, Zinsen] — 37°28′, 126°40′
33 — Ičhŏn [Risen] — 38°28′, 126°52′
34 — Jongdžu [Eishu] — 36°50′, 128°37′
35 — Jončhŏn [Eisen] — 38°06′, 127°06′
36 — Jongdŏk [Eido] — 36°24′, 129°24′
37 — Jongvŏn [Neietsu] — 39°49′, 126°34′
38 — Jŏsu [Reisui] — 34°45′, 127°45′
39 — Jodžu [Reishu] — 37°18′, 127°40′
40 — Jongak-san — near: 38°50′, 125°20′
Sunha-gang
41 — Jongsŏng — 39°10′, 125°48′
Maram
42 — Kangnyng [Koryo, Korjo] — 37°45′, 128°53′
43 — Kvangjang — 34°58′, 127°36′
44 — Kjŏngsŏng [Kyojo] — 41°34′, 129°38′
Poro-čhŏn, Mehjang-ri
45 — Kangge [Kokai] — 40°57′, 126°37′
46 — Kunsan [Gunsan, Gunzan] — 35°58′, 126°42′
47 — Kvangdžu [Koshu, Kosyu] — 35°09′, 126°53′
48 — Kočhang [Kyosho] — 35°26′, 126°38′
49 — Kangjasan [Kyokosan] — 35°47′, 127°06′
50 — Kangdžin [Koshin] — 34°38′, 126°44′

Fig. 3. Schematic map of the Korean Peninsula. Numbers mark the localities specified in the list

51 — Kjongdžu [Keishu, Keisyu] 35°49′, 129°14′
52 — Kimpho 37°37′, 126°41′
53 — Kymgang-san 38°37′, 128°07′
Masin-rjŏng
54 — Kosan [Kosen] 35°57′, 127°16′
55 — Kildžu [Kisshu, Kissyu] 40°57′, 129°21′
56 — Kesŏng [Kaijo] 37°56′, 126°33′
57 — Kečhŏn 39°43′, 125°53′
58 — Kymčhŏn 38°09′, 126°27′
59 — Kodže [Kotei] 34°51′, 128°36′
60 — Kvanmo-bong [Kwanboho] 41°42′, 129°15′
61 — Kangsŏ [Kosi, Kosei] 38°58′, 125°29′
Thesŏng
62 — Kvesan [Kwasan] 36°49′, 127°47′
63 — Komusan [Komosan] 42°07′, 129°43′
64 — Koksan [Kokuzan] 38°46′, 126°39′
65 — Kudžang 39°52′, 126°04′
Džosan-ri
66 — Mokpho [Moppo] 34°48′, 126°24′
67 — Mudžu [Moshu, Mosyu] 36°01′, 127°41′
68 — Mjŏngčhŏn [Meisen] 41°04′, 129°28′
69 — Mengsan 39°40′, 126°29′
70 — Musan [Mosan] 42°12′, 129°14′
71 — Munčhŏn [Bunsen] 39°14′, 127°23′
72 — Mačŏn near: 39°55′, 127°50′
73 — Namvŏn [Nangen] 35°24′, 127°22′
74 — Nadžin [Rashin, Rasin] 42°14′, 130°15′
75 — Nampho [Chinnampo, Tinnampo] 38°45′, 125°25′
Tedong-gang, Usan-ri, Vaudo
76 — Namphote-san 41°44′, 128°24′
77 — Onpho-ri near: 41°32′, 129°25′
78 — Oro 40°02′, 127°29′
79 — Pujŏ [Fuyo, Huyo] 36°18′, 126°54′
80 — Pektu-san [Hakuyosan, Hakutosan] 41°56′, 128°08′
81 — Phohang [Hoko] 36°03′, 129°20′
82 — Pegam (Not localized on the map)
83 — Pusan [Fusan, Husan] 35°09′, 129°02′
84 — Peksan 39°30′, 126°42′
85 — Pungan [Hozan] 35°43′, 126°43′
86 — Phjŏngjang [Heijo] 39°00′, 125°45′
Tedong-gang, Mankjŏngde, Mankjŏng-bong, Moran-bong
87 — Purjŏng 42°05′, 129°43′
Thomak-tong, Musu-ri, Hjŏngče-tong
88 — Ponghva-ri near: 39°00′, 125°25′
89 — Pisylsan (Not localized on the map)
90 — Počhŏn 41°32′, 128°20′
Počhŏnbo, Karim-čhŏn, Posŏ-ri
91 — Pučhŏn-gang [Fusen-ko] near: 40°40′, 127°30′
92 — Suvŏn [Suigen] 37°17′, 127°01′
93 — Soul [Keijo, Keizyo] 37°32′, 127°00′
94 — Sunčhŏn [Junten] near: 39°25′, 125°40′
Džamo-ri, Džamo-san

95	— Sŏnčhŏn [Seisen]	39°46′, 124°51′
96	— Sinyidžu [Shingishu, Singisyu]	40°06′, 124°23′
97	— Sičhang	40°08′, 128°28′
98	— Sepho	38°39′, 127°26′
99	— Sinphjŏng	38°53′, 126°44′
100	— Samčhŏnpho [Sanseizan]	34°56′, 128°05′
101	— Sarivŏn [Sharei, Shariin]	38°30′, 125°48′
102	— Sungho [Shoko]	near: 38°17′, 125°22′
103	— Samdžijŏn	41°52′, 128°23′
	Phote-čhŏn, Posŏ-ri	
104	— Sunan	39°14′, 125°40′
	Junha-ri	
105	— Sŏkam-Čŏsudži	near: 39°20′, 125°42′
106	— Samsŏk	near: 39°10′, 125°40′
	Tečhŏn-ri, Sŏngmun-ri	
107	— Sičung-ho	near: 39°05′, 127°24′
108	— Sinčhŏn [Shinsen]	38°20′, 125°30′
109	— Sangvŏn-am	near: 39°55′, 126°20′
110	— Susŏng-čhŏn	near: 41°54′, 129°43′
111	— Tongne [Torai]	35°12′, 129°06′
112	— Tegu [Taikyu]	35°52′, 128°35′
113	— Tedžon [Taisei]	36°18′, 127°26′
114	— Thosan	38°19′, 126°42′
115	— Tongčong-ho	near: 39°00′, 127°30′
116	— Usi	40°40′, 125°40′
117	— Uldžin	37°00′, 129°24′
118	— Vŏnsan [Gensan, Genzan]	39°10′, 127°28′
	Ungčin	
119	— Vondžu [Genshu]	37°20′, 127°59
120	— Vando	34°19′, 126°43
121	— Sujang-san	38°06′, 125°40
122	— Kosŏng [Kojo]	38°45′, 128°12
123	— Sam-il-pho	near: 38°40′, 128°12
124	— Tesŏng-san	near: 39°06′, 125°52
125	— Chosan [Sozan]	40°50′, 125°46
126	— Korjŏng	35°44′, 128°17
127	— Hvado	33°42′, 126°23
128	— Sinsang	39°40′, 127°27
129	— Sokčhŏ	38°15′, 128°38
130	— Sŏnsan	36°15′, 128°09
131	— Kongdžu [Koshu]	36°25′, 127°08
132	— Nungni	38°40′, 126°11′

Scarabaeinae

Scarabaeini

Scarabaeus (Scarabaeus) affinis Brullé, 1832

Distribution. South Europe, Asia Minor, Central Asia, Afghanistan, Tibet, West and North China, Manchuria, Korea (Balthasar, 1963 et all.).

Material examined. 1♂. Prov. Hvanghe-namdo, Hedžu (18), 1 VI 1974, at light, Z. Stebnicka (ISEZ).

Remarks. The specimen collected is a representative of var. *typhon* FISCH., which occurs in the eastern part of the distributional area of this species.

Gymnopleurini

Gymnopleurus (Gymnopleurus) mopsus (PALLAS, 1781)

Distribution. South Europe, North Africa, Transcaucasus, Asia Minor Central Asia, Mongolia, North and Central China (BALTHASAR, 1963; ENDRÖDI 1971 et all.).

Material examined. 21 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, in cow dung, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamhyng-si, distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Palaearctic species, new to the Korean fauna.

Gymnopleurus (Paragymnopleurus) sinuatus (OLIVIER, 1789)

(Fig. 4)

Distribution. Central and South China, Taiwan (Rosen, Nanshanchi, Wushe, Taloko, Lutao Is., Lanyu Is.), India, Indochina (Thailand), Sunda Islands (BALTHASAR, 1963; NOMURA, 1973).

Material examined. 1 ♀. Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Species of the Oriental origin, new to the Korean fauna.

Sisyphini

Sisyphus (Sisyphus) schaefferi (LINNAEUS, 1758)

Distribution. Central and South Europe, North Africa, Asia Minor, Central Asia, Mongolia, North China, Korea (BALTHASAR, 1963 et all.).

Material examined. 6 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Coprinae

Oniticellini

Liatongus (Liatongus) phanaeoides (WESTWOOD, 1840)

(Fig. 5)

Distribution. China, Taiwan (Nanshanchi, Funchiifo), India, Indochina, Korea, Japan — Hokkaido, Honshu, Sado (Oda, Kitauzima, Mt. Kinpoku, Aoneba-goe, Ookura-goe), Shikoku, Kyushu, Ryu-kyu Isl. (NAKANE et BABA, 1960; NAKANE, 1961; BALTHASAR, 1963; NOMURA, 1973).

Material examined. 56 ♂♂ and ♀♀. Japan — Honshu (Chiba, Owada), 8 VII 1937 (HMNH); Korea — Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), 16 VI 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Hongvŏn (30), Jŏnpŏng-ri, 8 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), Onpho-ri (77), mountain valley, 21 VIII 1959, B. Pisarski and J. Prószyński (ZIW), vicinity of Džuyr (17), dry sunny hill, 5 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov.Kangvŏn-do, Kymgang-san (Mts, 53), 16—18 VI 1974, in cow dung, Z. Stebnicka (ISEZ), 34 km W of Vŏnsan (118), mountain pass Masinrjŏng, 16 IX 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. This species occurs exclusively in the mountainous regions and in mountains where it reaches 2500 m above sea level.

Copris (Copris) ochus (Motschulsky, 1860)

Distribution. North- and Central China, Mongolia, Manchuria, Korea (Čedžu-do, 3), Japan — Miyake, Hokkaido, Honshu, Sado (Sawada), Shikoku, Kyushu, Iki (Nakane et Baba, 1960; Balthasar, 1963; Nomura, 1969).

Material examined. 12 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, vicinity of the lake, 24 VIII 1971, collected at light of UV lamps, J. Razowski (ISEZ); Prov. Phjŏngjang-si, Ponghva-ri (88), 36 km W of Phjŏngjang (86), 24 IX 1970, R. Bielawski and M. Mroczkowski (ZIW), Jongak-san (Mt. 40), 20 VIII 1971, collected at light of UV lamps, J. Razowski (ISEZ); Prov. Hvanghe-namdo, Sinčhŏn (108), valley of river, 16 IX 1971, in cow dung, J. Pawłowski (ISEZ), Hedžu (18), 3 VI 1974, at light of UV lamps, Z. Stebnicka (ISEZ).

Copris (Copris) tripartitus Waterhouse, 1875

Distribution. China, Korea (Čedžu-do, 3), Taiwan (Nanshanchi), Japan — Honshu, Kyushu, Tsushima (Balthasar, 1963; Nomura, 1973).

Material examined. 11 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Kangsŏ (61), vicinity of the lake, 13 VI 1974, in cow dung, Z. Stebnicka (ISEZ), 19 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW), 24 VIII 1971, at light of UV lamps, J. Razowski (ISEZ), distr. Sunčhŏn (94), Džamo-san, 27 VIII 1971, at light of UV lamps, J. Pawłowski (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt. 13), 5 VI 1974, in cow dung, Z. Stebnicka (ISEZ).

Caccobius (Caccophilus) christophi Harold, 1879

(Fig. 6)

Distribution. USSR — Amur, Ussuri, Primorskij Kraj; North and Central China, Korea (Balthasar, 1963).

Material examined. 30 ♂♂ and ♀♀. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), Onpho-ri (77), 20 IX 1959, B. Pisarski and J. Prószyński (ZIW);

Prov. Janggang-do, distr. Hjesan (26), Dŏngha-ri, 2 IX 1971, in cow dung, J. Pawłowski (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), valley Hapiro in the Mjohjang-san (Mts), 20—21 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Manchurian species, local and not frequent in D.P.R.K.

Caccobius (Caccophilus) sibiricus Balthasar, 1935

(Fig. 7)

Distribution. USSR — Transbajkal Region, Ussuri, Primorskij Kraj (Vladivostok) (Balthasar, 1963).

Material examined. 26 ♂♂ and ♀♀. Prov. Janggang-do, distr. Samdžijon (103), valley of river Phote-čhŏn, 8 IX 1971, in cow dung, J. Pawłowski (ISEZ), distr. Hjesan (26), Dŏngha-ri, 2 IX 1971, in cow dung, A. Szeptycki (ISEZ).

Remarks. Species new to the Korean fauna, probably local. Single population found in one of the northern Provinces. Occurs in cattle dung.

Caccobius (Caccophilus) sordidus Harold, 1886

(Fig. 10)

Distribution. USSR — Ussuri, Primorskij Kraj; Manchuria (Harbin), North China, Korea (Balthasar, 1963).

Material examined. 36 ♂♂ and ♀♀. Prov. Janggang-do, distr. Hjesan (26), Dŏngha-ri, 2 IX 1971, in cow dung, J. Pawłowski (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 21 V 1974, Z. Stebnicka (ISEZ), distr. Purjŏng (87), 22 V 1974, J. Pawłowski (ISEZ).

Caccobius (Caccophilus) brevis Waterhouse, 1875

(Fig. 9)

Distribution. East Siberia (Ussuri), North China, Manchuria, Korea (Čedžu-do, 3) (Balthasar, 1963).

Material examined. 89 ♂♂ and ♀♀. Prov. Hamgjŏng-punkto, distr. Kjŏngsŏng (44), Onpho-ri (77), 20 VIII 1959, B. Pisarski and J. Prószyński (ZIW); Prov. Phjŏngjang-si, Ponghva-ri (88), 24 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Janggang-do, distr. Hjesan (26), Dŏngha-ri, 2 IX 1971, J. Pawłowski (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 2 IX 1971, J. Pawłowski (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt. 13), 5 VI 1974, in cow dung and at human excrements, Z. Stebnicka (ISEZ).

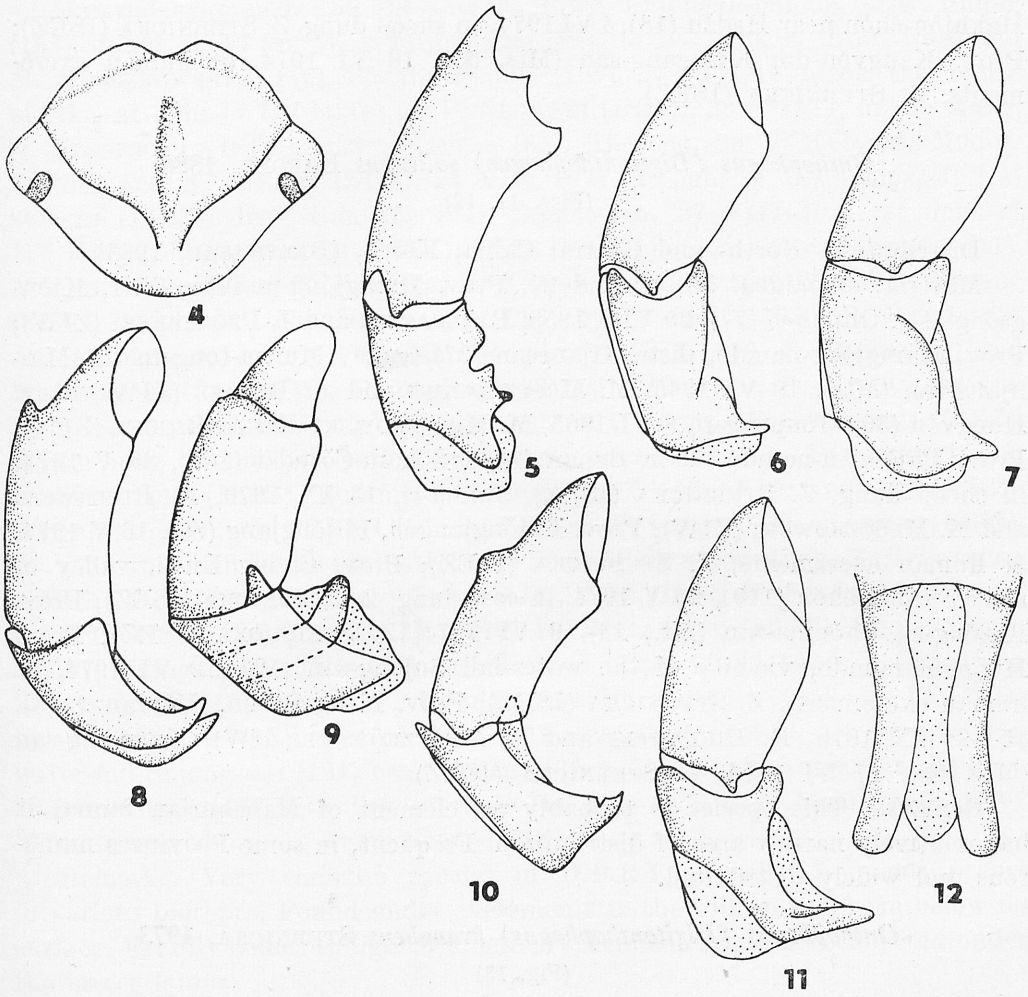


Fig. 4. *Gymnopleurus (Paragymnopleurus) sinuatus* (OLIV.) — female head. Figs. 5—12. Male genitalia, lateral and dorsal view; 5 — *Liatongus (Liatongus) phanaeoides* (WESTW.); 6 — *Caccobius (Caccophilus) christophi* HAR.; 7 — *C. (C.) sibiricus* BALTH.; 8 — *C. (C.) unicornis* (FABR.); 9 — *C. (C.) brevis* WATERH.; 10 — *C. (C.) sordidus* HAR.; 11, 12 — *Onthophagus (Digitonthophagus) solivagus* HAR.

Caccobius (Caccophilus) unicornis (FABRICIUS, 1798)

Syn.: *Caccobius yamauchii* MATSUMURA, 1936.

(Fig. 8)

Distribution, Japan — Honshu, Kyushu, Ryu-kyu Isl.; Korea, China, Taiwan (Liyutan, Roshan, Funchiifo, Chipon, Oulanpi), India, Burma, Indochina, Malaysia, Sunda Isl., Philippines (BALTHASAR, 1963; NOMURA, 1973).

Material examined. 11 ♂♂ and ♀♀. Prov. Hvanghe-namdo, valley of river

Hakhjŏn-čhŏn near Hedžu (18), 4 VI 1974, in sheep dung, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Onthophagus (Digitonthophagus) solivagus HAROLD, 1886

(Figs. 11, 12)

Distribution. North- and Central China, Korea, (BALTHASAR, 1963).

Material examined. 58 ♂♂ and ♀♀. Prov. Hamgjŏng-punkto, distr. Kjŏngsŏng (44). Onpho-ri (77), 20 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), valley Munsu-tong in the Mjohjang-san (Mts), 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 V 1974, in sheep dung, Z. STEBNICKA (ISEZ), Junha-ri, 13 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), 16 V 1974, at human excrements, Z. STEBNICKA (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 25 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, Čhŏnma-san (Mt., 13), 6 VI 1974, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121), 2 VI 1974, at human excrements, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Vŏnsan (118), 15—20 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Kymgang-san (Mts, 53), 17 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. This species is probably an element of Manchurian fauna; it has relatively narrow area of distribution. Frequent, in some Provinces numerous and widely distributed.

Onthophagus (Digitonthophagus) hvangheus STEBNICKA, 1973

(Fig. 13)

Distribution. North Korea — Prov. Hvanghe-namdo, Sinčhŏn (108) (STEBNICKA, 1973).

Material examined. 6 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), valley of river, 29 V 1974, in sheep dung, Z. STEBNICKA (ISEZ).

Remarks. Only one male specimen of this species has been known up to the present. The female differs from the male by the shape of anterior tibia and by strongest and more distinct clypeal punctures, which are transversely wrinkled near anterior margin.

Onthophagus (Strandius) lenzi HAROLD, 1874

(Figs. 14, 15)

Distribution. North- and Central China, Manchuria, Korea, Taiwan, Japan — Hokkaido, Honshu, Sado, Shikoku, Kyushu, Tsushima, Nakanoshima, Tanegashima, Ohshima, Toshima, Miyake, Mikura, Hachijo, Hachijo-Kojima, Aogashima (BALTHASAR, 1963; NOMURA, 1966; 1969).

Material examined. 160 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Sunan (104), Junha-ri, 40 km W of Phjŏngjang (86), 13 IX 1970, R. Bielawski and M. Mroczkowski (ZIW), Sŏkam-Čŏsudži (105), 27 VIII 1971, on the banks of lake, at light of UV lamps, J. Pawłowski (ISEZ), 30 V 1974, in cow dung, Z. Stebnicka (ISEZ), distr. Kangsŏ (61), Thesŏng, 26 V 1965, M. Mroczkowski and A. Riedel (ZIW), 24 VIII 1971, at light of UV lamps, J. Razowski (ISEZ), distr. Sunčhŏn (94), Džamo-san, 27 VIII 1971, at light of UV lamps, J. Pawłowski (ISEZ); Prov. Phjŏngjang-si, distr. Jongsŏng (41), Maram, 20 km NE of Phjŏngjang, 29 V 1965, M. Mroczkowski and A. Riedel (ZIW), Ponghva-ri (88), 36 km E of Phjŏngjang, 24 IX 1970, R. Bielawski and M. Mroczkowski (ZIW), Mankjŏngde, 31 VIII 1970, R. Bielawski and M. Mroczkowski (ZIW), Phjŏngjang (86), 27 VIII 1970, R. Bielawski and M. Mroczkowski (ZIW), 17 V 1974, at light of UV lamps, Z. Stebnicka (ISEZ), Moran-bong (municipal park), at human excrements, J. Pawłowski and A. Szeptycki (ISEZ), Botanical Garden, 15 IX 1971, J. Pawłowski (ISEZ), Jongak-san (Mt., 40), 20 VIII 1971, at light of UV lamps, J. Pawłowski (ISEZ), 17 VIII 1971, J. Razowski (ISEZ), 29 V 1974, in sheep dung, Z. Stebnicka (ISEZ); Prov. Kangvŏn-do, Vŏnsan (118), 1 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW), 15—20 IX 1970, R. Bielawski and M. Mroczkowski (ZIW), Kymgang-san (Mts, 53) near Kosŏng (122), 16 VI 1974, in cow dung, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, Sinčhŏn (108), 16 IX 1971, in cow dung on the banks of river, J. Pawłowski (ISEZ), vicinity of the water-fall Sujang-san (121) near Hedžu (18), 2 VI 1974, at human excrements, Z. Stebnicka (ISEZ), valley of river Hakhjŏn-čhŏn near Hedžu (18), 3 VI 1974, in cow dung, Z. Stebnicka (ISEZ).

Remarks. Very common species in D.P.R.K., locally frequent, occurs in various biotopes. Found under excrements in the soil up to 10 cm below its surface. Readily comes to light; numerous specimens have been collected under the street lamps.

Onthophagus (Strandius) japonicus Harold, 1874

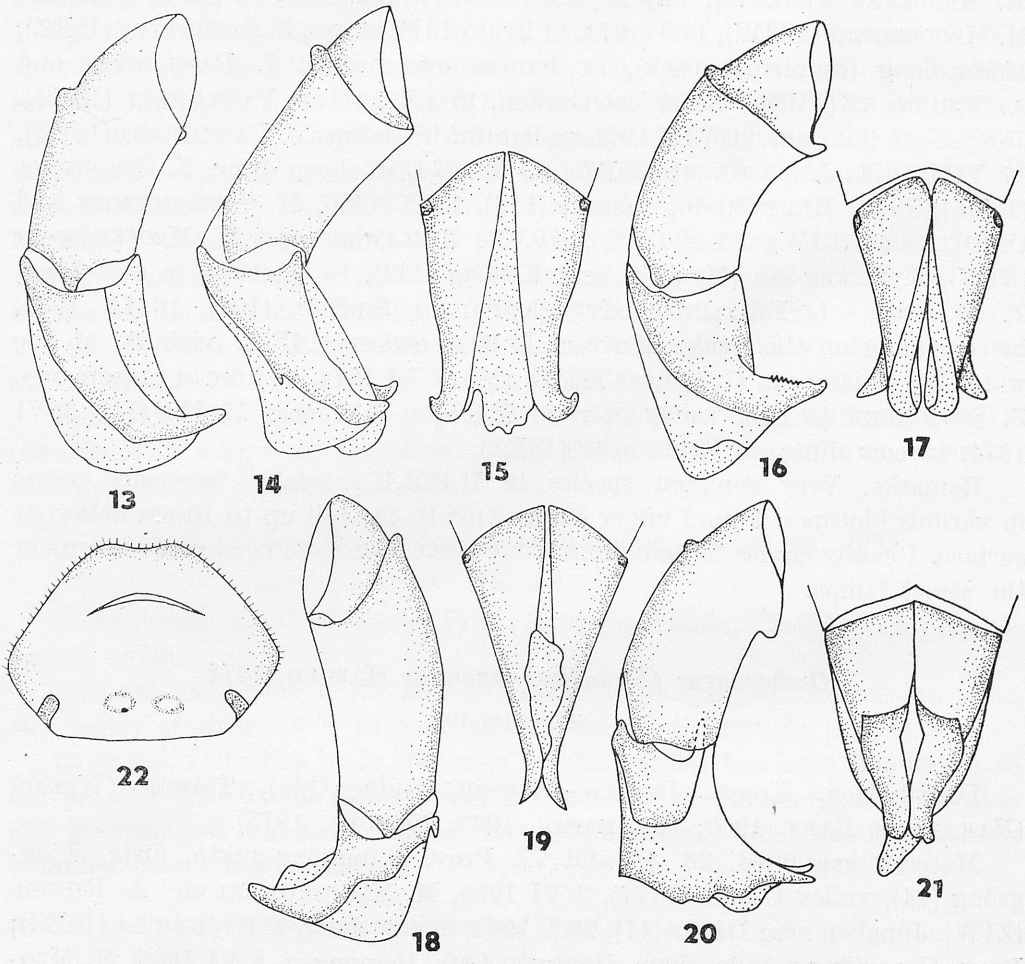
(Figs. 18, 19)

Distribution. Korea, Japan — Honshu, Sado (Oda), Taiwan (Wushe) (Nakane et Baba, 1960; Balthasar, 1963; Nomura, 1973).

Material examined. 28 ♂♂ and ♀♀. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 3 VI 1965, M. Mroczkowski and A. Riedel (ZIW), Jonghen near Džuyr (17), 25 V 1974, in cow dung, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Phjŏngjang-si, distr. Samsŏk (106), Sŏngmun-ri, 22 V 1965, M. Mroczkowski and A. Riedel (ZIW), Poghva-ri (88) 36 km W of Phjŏngjang, 24 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Phjŏngan-namdo, distr. Sunan (104), Junha-ri 40 km W of Phjŏn-

gjang, 13 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Sŏkam-Čŏsudži (105), 30 V 1974, in cow dung on the banks of lake, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, Čhŏnma-san (Mt., 13), 8 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 21 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, valley of river Hakhjŏn-čhŏn near Hedžu (18), 3 VI 1974, in cow dung, Z. STEBNICKA (ISEZ), Sujang-san (Mt., 121), 3 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Remarks. According to BALTHASAR (1963) this species is not frequent but widely distributed in Japan; its similar distribution has been observed in D.P.R.K., where single specimens often occur in various biotopes.



Figs. 13—21. Male genitalia, lateral and dorsal view: 13 — *Onthophagus (Digitonthophagus) hvangheus* STEB.; 14, 15 — *O. (Strandius) lenzi* HAR.; 16, 17 — *O. (Phanaeomorphus) fodiens* WATERH.; 18, 19 — *O. (Strandius) japonicus* HAR.; 20, 21 — *O. (Gibbonthophagus) viduus* HAR. Fig. 22. *O. (Phanaeomorphus) ater* WATERH. — female head

Onthophagus (Phanaeomorphus) fodiens WATERHOUSE, 1875

(Figs. 16, 17)

Distribution. North- and Central China, Manchuria, Korea, Japan — Honshu (Kurokawa, Takada, Mt. Ninooji, Matsunoyama, Nagaoka-Hachibu-se), Sado (Umezu, Futami, Ogura-toge) (NAKANE et BABA, 1960; BALTHASAR, 1963).

Material examined. 30 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 16—18 VI 1974, at human excrements, Z. STEBNICKA (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 21 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, Sujang-san (Mt., 121), 2 VI 1974, at human excrements, Z. STEBNICKA (ISEZ), valley of river Hakhjŏn-čhŏn near Hedžu (18), 3 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 6 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Nampho (75), locality Vaudo at the estuary of the river Tedong-gang, 18 IX 1971, under stone, J. PAWŁOWSKI (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov Phjŏngjang-si, Tesŏng-san (Mts, 124), 18 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Hamhyng-si, Hamhyng (19), 13 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW).

Remarks. Species widely distributed but not frequent, found as single specimens in various biotopes. According to the NOMURA'S data (1973), the other similar species named *O. yubarinus* MATS. (= *Matasha mushana* MATS. sensu NOMURA, 1973) probably occurs in Taiwan; BALTHASAR (1963) considered it as a synonym of *O. fodiens* WATERH.

Onthophagus (Phanaeomorphus) ater WATERHOUSE, 1875

(Fig. 22)

Distribution. East Siberia, North- and Central China (Sichuan), Korea, Taiwan (Sungkang, Funchiifo), Japan — Hokkaido, Honshu (Kurokawa, Matsunoyama, Midama), Awa-shima, Sado (Oda, Hatano, Kitauzima, Mt. Donden, Ogura-toge), Shikoku, Kyushu, Yakushima, Miyake, Mikura, Hachijo (NAKANE et BABA, 1960; BALTHASAR, 1963; NOMURA, 1969; 1973).

Material examined. 1♀. Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (211), 2 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Onthophagus (Gibbonthophagus) viduus HAROLD, 1874

(Figs. 20, 21)

Distribution. North China (Shandong), Manchuria, Korea, Japan — Hokkaido, Honshu (Kurokawa, Niigata, Sakasamaki), Sado (Nakaoku), Shikoku, Kyushu, Yakushima, Tanegashima, Tsushima, Nakanoshima, Takarajima, Ama-

mi-Ôshima, Okinawa, Ishigaki, Iriomote, Ohshima, Niijima, Miyake, Hachijo (NAKANE et BABA, 1960; BALTHASAR, 1963; NOMURA, 1966; 1969).

Material examined. 1 ♂ and 2 ♀♀. Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121), 2 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Onthophagus (Gibbonthophagus) atripennis WATERHOUSE, 1875

(Figs. 23, 24)

Distribution. North- and Central China (Sichuan), Manchuria, Korea, Japan — Honshu (Kurokawa, Hanadate), Sado (Iwakubi, Ookura-goe, Akadomari, Aono-toge), Shikoku, Kyushu, Tsushima, Tanegashima, Mikura (NAKANE et BABA, 1960; BALTHASAR, 1963; NOMURA, 1969).

Material examined. 5 ♂♂ and ♀♀. Prov. Hvanghe-pukto, Sarivŏn (101), 20—28 VIII 1966, M. MAGYAR (HMNH); Prov. Phjŏngjang-si, Phjŏngjang (86), 1 VII 1950, BORCHSENIUS (ZIL); Prov. Hamgjŏng-namdo, Nangnim-sanmek (Mts, 16), 7 VIII 1950, BORCHSENIUS (ZIL).

Onthophagus (Onthophagus) uniformis HEYDEN, 1886

(Figs. 25, 26)

Distribution. East Siberia (Amur, Ussuri), Manchuria (BALTHASAR, 1963).

Material examined. 6 ♂♂ and ♀♀. USSR — Primorskij Kraj (Vladivostok) (HMNH); Korea — Prov. Hamgjŏng-namdo, distr. Hjangsan (27), valley Hapiro in the Mjohjang-san (Mts), 20—21 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Janggang-do, distr. Hjesan (26), Dželang-jong, 31 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ).

Remarks. Manchurian species of probably small area of distribution. New to the Korean fauna.

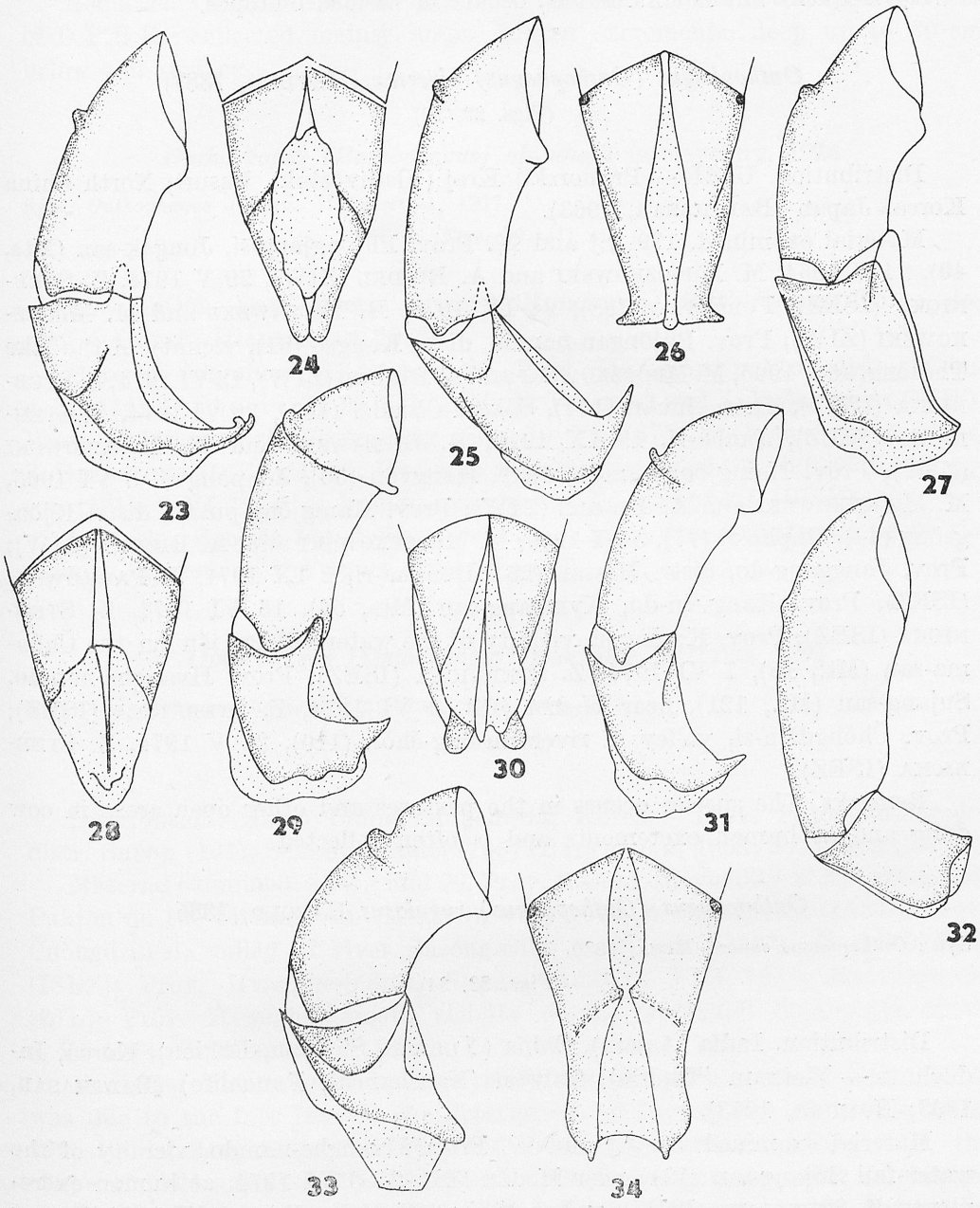
Onthophagus (Onthophagus) gibbulus (PALLAS, 1781)

(Fig. 27)

Distribution. South- and Central Europe, Transcaucasus, Asia Minor, Central Asia, Mongolia, Siberia (Bajkal Lake, Amur, Ussuri), Manchuria, North China (BALTHASAR, 1963; ENDRÖDI 1967; 1968; 1969; 1971; TESAŘ, 1968; MEDVEDEV, 1976).

Material examined. 32 ♂♂ and ♀♀. Prov. Janggang-do, distr. Hjesan (26), valley Dongha-ri, 2 IX 1971, in cow dung, J. PAWŁOWSKI (ISEZ); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 10 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW), 7 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Phjŏngan-namdo, distr. Sunan (104), Junha-ri 40 km W of Phjŏngjang (86), 13 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW);

Prov. Phjŏngjang-si, Ponghva-ri (88), 24 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Čhŏngdžin-si, distr. Purjŏng (87), 22 V 1974, in sheep dung on the banks of river, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo,



Figs. 23—34. Male genitalia, lateral and dorsal view; 23, 24 — *Onthophagus (Gibbonthophagus) atripennis* Waterh.; 25. 26 — *O. (Onthophagus) uniformis* Heyd.; 27 — *O. (O.) gibbulus* (Pall.); 28, 29 — *O. (O.) bivertex* Heyd.; 30, 31 — *O. (O.) olsoufieffi* Bouc,; 32 — *O. (O.) punctator* Reitt.; 33, 34 — *O. (O.) rugulosus* Har.

Sinčhŏn (108), valley of river, 16 IX 1971, in cow dung, A. Szeptycki (ISEZ).

Remarks. Palaearctic species not shown in Korea up to the present; relatively frequent but not numerous, occurs in various biotopes.

Onthophagus (Onthophagus) bivertex (Heyden, 1887)

(Figs. 28, 29)

Distribution. USSR — Primorskij Kraj (Vladivostok), Ussuri; North China Korea, Japan (Balthasar, 1963).

Material examined. 179 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Jongak-san (Mts, 40), 24 V 1964, M. Mroczkowski and A. Riedel (ZIW), 29 V 1974, Z. Stebnicka (ISEZ), Ponghva-ri (88), 24 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Phjŏngan-namdo, distr, Kangsŏ (61), vicinity of the lake Thesŏng, 26 V 1965, M. Mroczkowski and A. Riedel (ZIW), 13 VI 1974, Z. Stebnicka (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 VI 1974, Z. Stebnicka (ISEZ), Junha-ri, 13 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), Onpho-ri (77), 3 VI 1965, M. Mroczkowski and. A. Riedel (ZIW); Prov. Janggang-do, distr. Hjesan (26), Dŏngha-ri, 2 IX 1971, J. Pawłowski (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16 VI 1974, Z. Stebnicka (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 7 VI 1974, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, Sujang-san (Mt., 121), near Hedžu (18), 2 VI 1974, Z. Stebnicka (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 22 V 1974, Z. Stebnicka (ISEZ).

Remarks. The species occurs in the pastures and other open areas in cow dung and at human excrements and is often collected.

Onthophagus (Onthophagus) rugulosus Harold, 1886

Syn.: *Onthophagus sonani* Miwa, 1930.

(Figs. 33, 34)

Distribution. India (Assam), China (Yunnan, Sichuan, Fukien), Korea, Indochina — Vietnam (Tonkin), Taiwan (Nanshanchi, Funchiifo) (Balthasar, 1963; Nomura, 1973).

Material examined. 35 ♂♂ and ♀♀. Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121) near Hedžu (18), 2—3 VI 1974, at human excrements, Z. Stebnicka (ISEZ), valley of river Hakhjŏn-čhŏn, 3 VI 1974, in cow dung, Z. Stebnicka (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn about 20 km SE of Kesŏng (56), 7 VI 1974, in sheep dung, Z. Stebnicka (ISEZ); Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 V 1974,

in cow dung on the banks of the lake, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 16 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Remarks. Oriental species, relatively frequent in the southern Provinces of D.P.R.K.; collected mainly under human excrements, deep up to 30 cm below soil surface.

Onthophagus (Onthophagus) olsoufieffi BOUCOMONT, 1924

Syn.: *Onthophagus uedanus* MATSUMURA, 1937.

(Figs. 30, 31)

Distribution. East Siberia (Ussuri), Manchuria, North China, Korea, Japan — Honshu (BALTHASAR, 1963).

Material examined. 11♂♂ and ♀♀. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), Onpho-ri (77), 21 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), 10 VI 1974, at human excrements, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121), 2 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Remarks. Species found most frequently in human excrements or in the vicinity of them in the upper layer of soil.

Onthophagus (Onthophagus) punctator REITTER, 1892

Syn.: *Onthophagus sunanicus* STEBNICKA, 1973, syn. n.

(Fig. 32)

Distribution. North China, Manchuria, Korea — Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105) (BALTHASAR, 1963; STEBNICKA, 1973).

Material examined. 35 ♂♂ and ♀♀. Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 6 VI 1974, Z. STEBNICKA (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 22 V 1974, Z. STEBNICKA (ISEZ); Prov. Hvanghe-pukto, Nungni (132), 7 VIII 1950, BORCHSENIUS (ZIL); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121), 2 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. The taxonomic error made by the author (STEBNICKA, 1973) was due to the fact that in the descriptions of this species (REITTER, 1892: 179; BALTHASAR, 1963: 233, 489) the most characteristic feature, i. e. the shape of male anterior tibia had been omitted. BALTHASAR (1963) emphasises similar features in the descriptions of the following species: *O. atricapillus* D'ORB. and *O. nigellus* (ILLIG.). *O. punctator* REITT. is frequent and numerous in D.P.R.K.; most frequently found in the vicinity of waters in sandy soil under cow and sheep dung and at human excrements.

Aphodiinae

Aphodiini

Aphodius (Colobopterus) apicalis HAROLD, 1861

Syn.: *Aphodius haroldianus* BALTHASAR, 1932.

(Figs. 35—37)

Distribution. USSR — Transbajkal Region, Ussuri, Primorskij Kraj, Sachalin, Kurile Islands (Alechino, Golovinno), North China, Manchuria, Korea, Japan — Hokkaido, Honshu (Murasugi, Matsunoyama), Sado (Mt. Kinpoku, Mt. Donden), Shikoku, Kyushu (NAKANE et BABA, 1960; BALTHASAR, 1963; PETROVITZ, 1972; KRYVOLUCKAJA, 1973; STEBNICKA, 1978).

Material examined. 62 ♂♂ and ♀♀. Prov. Kesŏng-si, Čhŏnma-san (Mt., 13), 8 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 V 1974, in cow dung on the banks of the lake, Z. STEBNICKA (ISEZ), distr. Kangsŏ (61), Thesŏng, 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 13 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Tesŏng-san (Mts, 124), 17 V 1974, Z. STEBNICKA (ISEZ); Prov. Janggang-do, distr. Hjesan (26), vicinity of the village Dŏngha-ri, 2 IX 1971, J. PAWŁOWSKI (ISEZ); Prov. Čhŏngdžin-si, Purjŏng (87), valley of river, 23 V 1974, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121) near Hedžu (18), 2 VI 1974, Z. STEBNICKA (ISEZ), valley of river Hakhjŏn-čhŏn, 3 VI 1974, in cow dung (imagines and larvae of second and third stage) Z. STEBNICKA (ISEZ).

Description of larva: STEBNICKA, 1978.

Aphodius (Colobopterus) indagator MANNERHEIM, 1849

(Figs. 38—40)

Distribution. USSR — Transbajkal Region (Irkutsk), East Siberia (BALTHASAR, 1964; PETROVITZ, 1972).

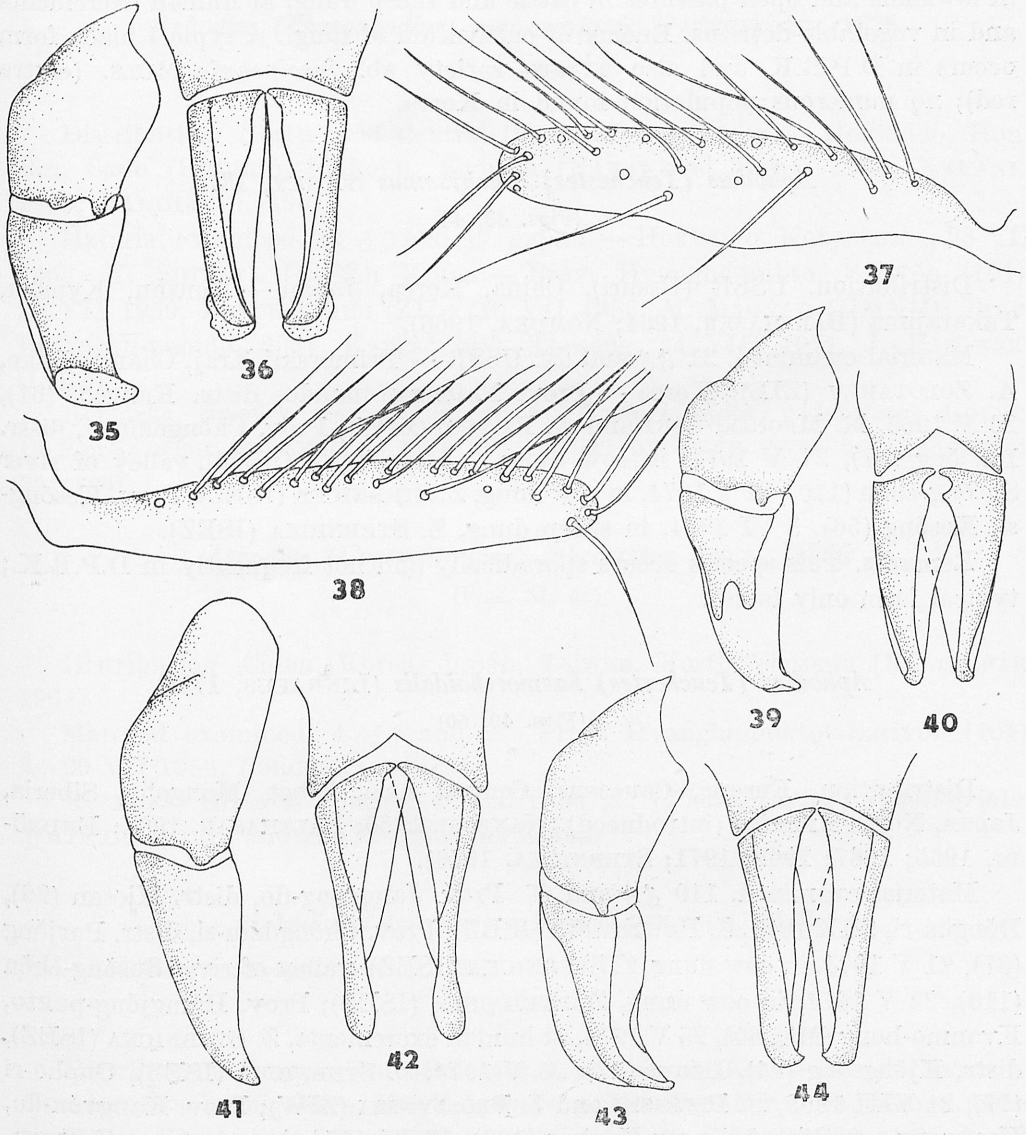
Material examined. 5 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Phjŏngjang (86), 16 V 1974, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), valley of river Hakhjŏn-čhŏn in the Mjohjang-san (Mts), 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 18 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Remarks. This species is very similar to the former one: its distribution is little known. New to the Korean fauna, occurs sporadically and not frequently.

Aphodius (Colobopterus) subterraneus (LINNAEUS, 1758)

(Figs. 41, 42)

Distribution. Europe, North Africa (Algeria), Transcaucasus, Central Asia, Afghanistan, Mongolia, Siberia, Manchuria., North America (introduced) (BALTHASAR, 1964, ENDRÖDI, 1967; MEDVEDEV, 1974; STEBNICKA, 1976).



Figs. 35—37. *Aphodius (Colobopterus) apicalis* HAR. 35, 36 — male genitalia, lateral and dorsal view; 37 — female genitalia, stylus.

Figs. 38—40. *A. (C.) indagator* MANNRH.; 38 — female genitalia, stylus; 39, 40 — male genitalia, lateral and dorsal view. Figs. 41—44. Male genitalia, lateral and dorsal view; 41, 42— *A. (C.) subterraneus* (L.); 43, 44 — *A. (Teuchestes) brachysomus* SOLS.

Material examined. 8 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 28 V 1974, in sheep dung, Z. STEBNICKA (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 25 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 28 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW).

Remarks. Palaearctic species, not shown in Korea up to now. Occurs mainly in lowlands and open pastures in cattle and sheep dung, at human excrements and in vegetable-detritus. Enemy of cultivation of fungi. A typical black form occurs in D P.R.K. and also a rare variety ab. *fuscipennis* MULS. (elytra red); no numerous population found in Korea.

Aphodius (Teuchestes) brachysomus SOLSKY, 1874

(Figs. 43, 44)

Distribution. USSR (Ussuri), China, Korea, Japan — Honshu, Kyushu, Takarajima (BALTHASAR, 1964; NOMURA, 1966).

Material examined. 21 ♂♂ and ♀♀. USSR — Primorskij Kraj, Chanka Lake, A. ZOLOTAREV (ZIL); Korea — Prov. Phjŏngan-namdo, distr. Kangsŏ, (61), 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Čhŏngdžin-si, distr. Purjŏng (87), 21 V 1974, in cow dung, Z. STEBNICKA (ISEZ), valley of river Susŏng-čhŏn (110), 22 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, Kesŏng (56), 5 VI 1974, in sheep dung, Z. STEBNICKA (ISEZ).

Remarks. This species occurs sporadically and not frequently in D.P.R.K.; typical form only found.

Aphodius (Teuchestes) haemorrhoidalis (LINNAEUS, 1758)

(Figs. 49, 50)

Distribution. Europe, Caucasus, Central Asia, Tibet, Mongolia, Siberia, Japan, North America (introduced) (NAKANE, 1960; BALTHASAR, 1964; ENDRÖDI, 1965; 1967; 1968; 1971; STEBNICKA, 1976).

Material examined. 110 ♂♂ and ♀♀. Prov. Janggang-do, distr. Hjesan (26), Dŏngha-ri, 2 IX 1971, J. PAWŁOWSKI (ISEZ); Prov. Čhŏngdžin-si, distr. Purjŏng (87), 21 V 1974, in cow dung, Z. STEBNICKA (ISEZ), valley of river Susŏng-čhŏn (110), 22 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-pukto, Kvanmo-bong (Mt., 60), 25 V 1974, at human excrements, Z. STEBNICKA (ISEZ), distr. Kjŏngsŏng (44), Džuyr (17), 25 V 1974, Z. STEBNICKA (ISEZ), Onpho-ri (77), 21 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 16 VI 1974, in cow dung, Z. STEBNICKA (ISEZ).

Remarks. Ubiquistic, very frequent and numerous species in the whole area of distribution. A typical form occurs in D.P.R.K., and also a very numerous variety ab. *sanguinolentus* Herbst. New to the Korean fauna.

Aphodius (Teuchestes) dongchariensis STEBNICKA, 1973

(Fig. 48)

Distribution. D.P.R.K., Prov. Janggang-do, distr. Hjesan (26), Dŏngha-ri (STEBNICKA, 1973).

Aphodius (Pharaphodius) rugosostriatus WATERHOUSE, 1875

(Figs. 45—47)

Distribution. North- and Central China, Korea, Japan — Hokkaido, Honshu, Sado (Hatano), Shikoku, Kyushu (NAKANE et BABA, 1960; NAKANE, 1960; BALTHASAR, 1964).

Material examined. 11 ♂♂ and ♀♀. Japan — Hokkaido, Kotyohama, 23 VII 1962, Y. SHIBATA (ISEZ); Korea — Prov. Hvanghe-pukto, Sarivŏn (101), 20 VII 1950, BORCHSENIUS (ZIL), 10 VII 1956, M. MAGYAR (HMNH); Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, 24 VIII 1971, J. RAZOWSKI (ISEZ).

Remarks. Species very similar to *A. (Coptochiroides) subcostatus* KOLBE. In Korea occurs sporadically only in summer; probably gives one generation per year.

Aphodius (Coptochiroides) subcostatus KOLBE, 1886

(Figs. 51, 52)

Distribution. China, Korea, Japan, Taiwan, North Vietnam (BALTHASAR, 1964).

Material examined. 4 ♂♂ and ♀♀. Prov. Hvanghe-pukto, Sarivŏn (101), 2—20 VII 1950, BORCHSENIUS (ZIL).

Remarks. Oriental species, similarly as *A. (Pharaphodius) rugosostriatus* WATERH. is rare and not frequent in Korea.

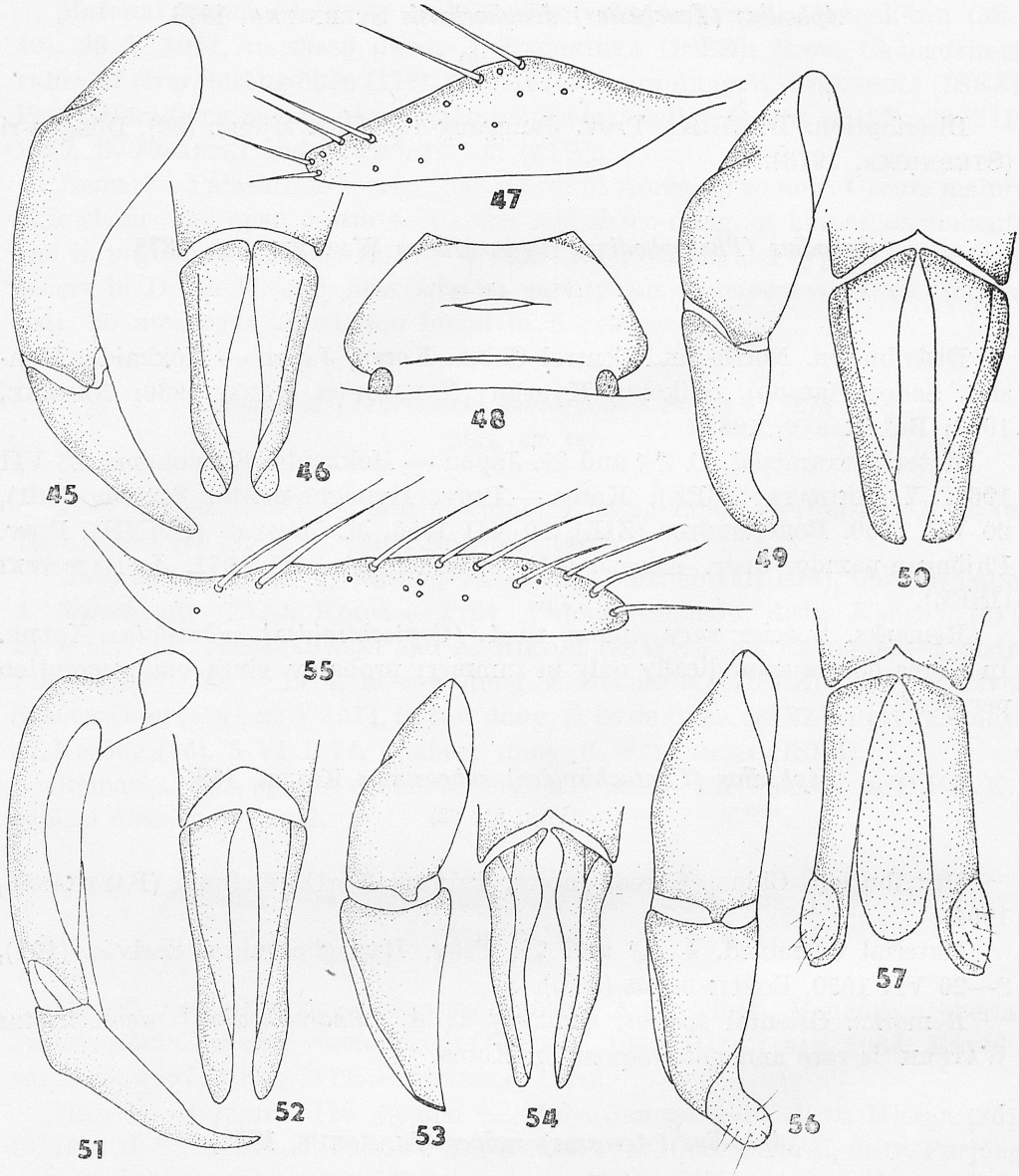
Aphodius (Acrossus) rufipes (LINNAEUS, 1758)

Syn.: *Aphodius matsuzawai* YAWATA, 1942.

(Figs. 53, 54)

Distribution. Europe, Transcaucasus, Iran, Siberia, Kurile Islands, Japan — Honshu (Utsukushigahara, Mt. Yatsugatake, Mt. Tateshima, Mt. Asama, Shinshu-toge), North- and South America (introduced), South Africa (introduced) (BALTHASAR, 1964; NAKANE et MASUMOTO, 1967; MEDVEDEV et ERMOLENKO, 1969; KRYVOLUCKAJA, 1973; STEBNICKA, 1976).

Material examined. 3 ♂♂. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), Onpho-ri (77), 11 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW); Prov,



Figs. 45—47. *Aphodius (Pharaphodius) rugosostriatus* Waterh. 45, 46 — male genitalia, lateral and dorsal view; 47 — female genitalia, stylus.
Fig. 48. *A. (Teuchestes) donghariensis* Steb. — female head. Figs. 49—54. Male genitalia, lateral and dorsal view; 49, 50 — *A. (T.) haemorrhoidalis* (L.); 51, 52 — *A. (Coptochiroides) subcostatus* Kolbe; 53, 54 — *A. (Acrossus) rufipes* (L.). Figs. 55—57. *A. (A.) binaevulus* Heyd. 55 — female genitalia, stylus; 56, 57 — male genitalia, lateral and dorsal view

Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, in cow dung, Z. Stebnicka (ISEZ).

Remarks. The Korean specimens do not differ significantly from the va-

riable individuals of this species known as very common and numerous one in Europe; in D.P.R.K. it occurs seldom, exclusively in the mountains. New to the Korean fauna.

Aphodius (Acrossus) binaevulus Heyden, 1887

(Figs. 55—57)

Distribution. USSR — Primorskij Kraj (Vladivostok), Ussuri (Balthasar, 1964).

Material examined. 30 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, in cow dung, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-pukto, Kvanmo-bong (Mt., 60), 23 V 1974, at human excrements, Z. Stebnicka (ISEZ); Prov. Janggang-do, distr. Samdžijŏn (103), Namphote-san (76), 8 IX 1971, J. Pawłowski (ISEZ); Prov. Čhŏngdžin-si, Purjŏng (87), 24 V 1974, in sheep dung, Z. Stebnicka (ISEZ).

Remarks. New species to the Korean fauna, occurs in the mountains. Several coloured variants found; most frequently is represented the variety ab. *diaphanomaculatus* Heyd. (head and pronotum black, elytra red), less numerous is the variety ab. *niger* Tes. (whole body black), a typical form is seldom (elytra black with yellowish or reddish spots near the apex). This species is very similar to the Euro-Siberian one *A. (A.) depressus* (Kug.) whose area extends as far as to Bajkal. It seems that *A. binaevulus* Heyd. replaces *A. depressus* in the same habitat to the south-east of the latter's range.

Aphodius (Acrossus) superatratus Nomura et Nakane, 1951

(Figs. 58, 59)

Distribution. Japan — Honshu (Buhei-toge, Kyoto, Kibune, Mt. Daibosatsu, Nishi-Tanzawa) (Balthasar, 1964; Nakane et Masumoto, 1967).

Material examined. 13 ♂♂ and ♀♀. Prov. Hamgjŏng-pukto, Kvanmo-bong (Mt., 60), 23 V 1974, at human excrements, Z. Stebnicka (ISEZ).

Description of the Korean specimens. Length 6—7.5 mm. Elongate-oval, rather strongly convex, shining, black. Clypeal margin finely reflexed, broadly rounded each side of very shallow median emargination, sides arcuate to sharply rounded, right-angled genae; surface of head with rather evenly spaced, moderately coarse punctures, generally separated by their diameters over middle disc, finer and closer anteriorly and a little smaller basally. Pronotum moderately convex, sides strongly margined, base without marginal line; surface very minutely alutaceus throughout under high magnification, mixed moderately fine and coarse, quite evenly distributed punctures throughout except for a narrow, impunctate, longitudinal midline; the punctures are larger and closer laterally. Scutellum triangular with a few coarse punctures at base. Elytra convex, oval, humeri distinctly dentate, striae moderately deep, very

finely and indistinctly punctate; intervals slightly convex with moderately fine, close, evenly distributed punctures which practically contiguous the same size as finer punctures of the pronotum; lateral and apical part of elytra shortly piliferous. Ventral surface and femora alutaceous, closely punctate, metasternum flat, midline shallow, metasternal surface distinctly punctate. Apical spur of fore tibia straight and acute; apex of middle and hind tibiae fringed with moderately long, unequal spines; first posterior tarsal segment noticeably shorter than the upper spur, equal to the remaining segments combined.

Male. Pronotum more convex than in female. Aedeagus as in figures 58, 59.

Female. Pronotum less convex than in male.

Remarks. Little known species; as the majority of representatives of the subgenus *Acrossus* MULS. it occurs exclusively in the mountains.

Aphodius (Paulianellus) maderi BALTHASAR, 1938

Syn.: *Aphodius asahinai* NAKANE, 1951.

(Figs. 60, 61)

Distribution. China (Sichuan), Japan — Honshu (Nara), Kyushu (BALTHASAR, 1964; NAKANE et MASUMOTO, 1967).

Material examined. 3 ♂♂. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), vicinity of Kosŏng (122), 18 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. Little known species distinguished by the features given in the diagnosis of the subgenus *Paulianellus* BALTH. It is closely related to the representatives of subgenus *Acrossus* MULS. New to the Korean fauna.

Aphodius (Pleuraphodius) lewisi WATERHOUSE, 1875

(Fig. 64)

Distribution. Ceylon, Java, Lombok, Philippines, India (Assam), China, Taiwan (Liyutan, Kenting Park), Japan — Honshu, Kyushu, Hachijo-Kojima; Korea (BALTHASAR, 1964; NOMURA, 1969; 1973).

Material examined. 42 ♂♂ and ♀♀. Prov. Kesŏng-si, Pakjŏn 20 km SE of Kesŏng (56), 8 VI 1970, S. MAHUNKA and H. STEINMANN (HMNH), 8 VI 1974, at human excrements, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-san, 27 VIII 1971, at light of UV lamps, J. PAWŁOWSKI (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 20 VIII 1971, at light of UV lamps, J. PAWŁOWSKI (ISEZ).

Description of the Korean specimens. Lenght 2—3 mm. Elongate-oblong, moderately convex, shining, dark reddish-brown or brown, posterior part of head and disc of pronotum sometimes darker. Head trapezoid, moderately convex without tubercles, frontal suture feebly marked; clypeal margin finely reflexed, obtusely rounded each side of moderate median emargination; sur-

face punctures fine, evenly distributed, slightly alutaceous within. Pronotum convex, sides slightly arcuate, anterior and posterior angles obtusely rounded, sides finely margined, base with a row of dense, fine punctures, without marginal line; surface alutaceous, densely, moderately coarsely punctate throughout. Scutellum triangular, narrow, impunctate. Elytra oval, humeri not dentate; striae moderately deep, shining, closely and finely punctate, the punctures not crenating inner margins of the intervals, the 8th stria long, approaching the base of elytra; intervals moderately wide, not connected apically, each interval laterally flattened, mat with shining, impunctate carina at middle. Metasternum shining, finely and densely punctate, midline distinctly but not deeply impressed; abdomen shining, finely punctate. Legs slender; apical spur of fore tibia straight, acute; middle and hind tibiae thin, apical fringe with thin setae unequal in length; first posterior tarsal segment long, about half time longer than the upper spur, slightly longer than following three segments combined.

Male. The last abdominal segment slightly shorter than in female. Aedeagus as in figure 64.

Female. The last abdominal segment slightly longer than in male.

Remarks. The subgenus *Pleuraphodius* A. SCHM. contains about 22 species, that inhabit mainly the Ethiopian Region, Oriental Realm and East Palaearctic. *P. lewisi* WATERH. is considered as a rare species (BALTHASAR, 1964); it is relatively frequent but not numerous in the southern Provinces of D.P.R.K.

Aphodius (Trichaphodius) proclivis BALTHASAR, 1933

(Figs. 62, 63)

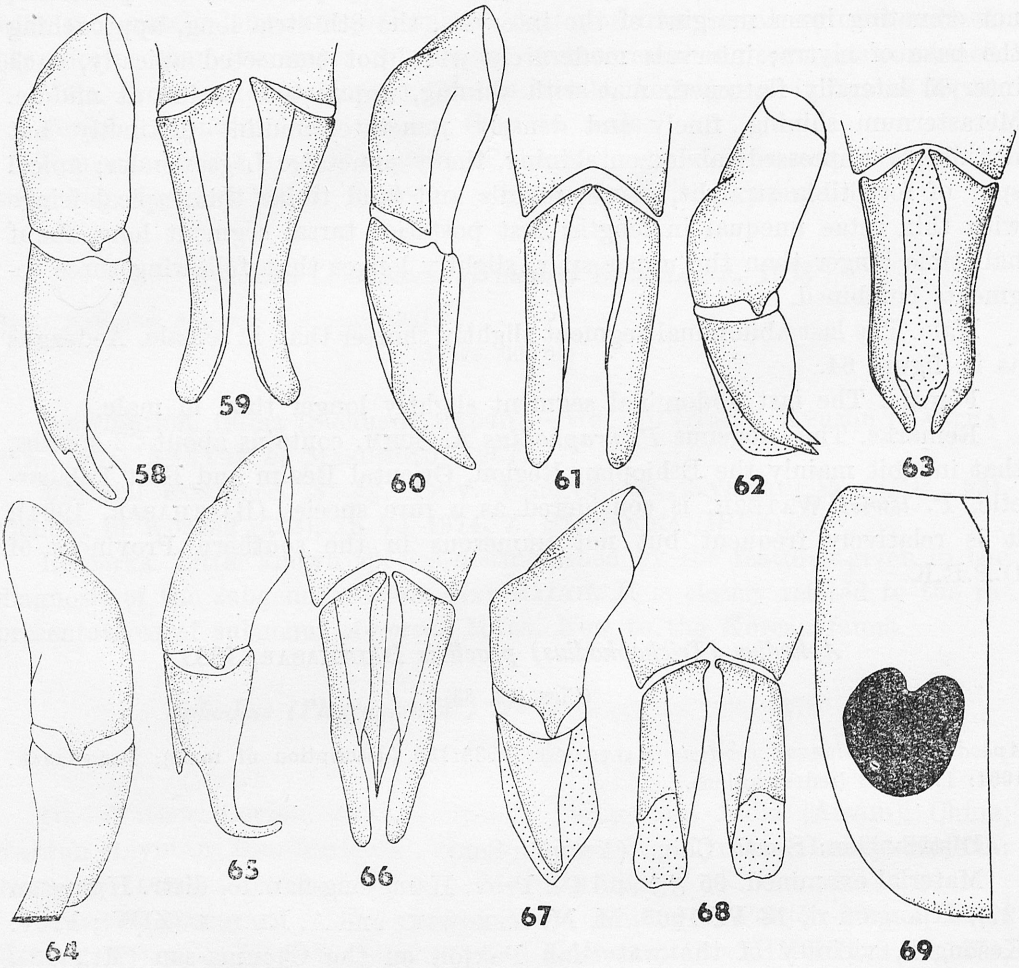
Aphodius (Gilletianus) proclivis BALTHASAR, 1933:139 (description of male); BALTHASAR, 1964: 177—178 (redescription).

Distribution: South China (Yunnan-Sen).

Material examined. 95 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 6—8 VI 1974, numerous specimens found under cow dung and at human excrements, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121) near Hedžu (18), 2 VI 1974, Z. STEBNICKA (ISEZ), valley of river Hakhjŏn-čhŏn below Sujang-san (121) water-fall, 3 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, in cow dung, Z. STEBNICKA (ISEZ).

Description of the Korean specimens. Length 4·3—5·5 mm. Oblong-elongate, moderately convex, shining, dark brown with sides of pronotum, legs and usually base and apical part of elytra partially yellowish. Antennae light yellow, antennal clubs brownish, terminal segment of maxillary palpus cylindrical. Head

broad, very weakly convex, strongly reflexed clypeal margin broadly rounded each side of very shallow median emargination, sides arcuate to sharply rounded right-angled genae; surface very minutely alutaceous with rather evenly spaced, fine punctures. Pronotum rather weakly convex, sides moderately arcuate, anterior angles widely rounded, posterior angles obtuse, sides and base



Figs. 58—68. Male genitalia, lateral and dorsal view; 58, 59 — *Aphodius (Acrossus) superatratus* Nom. et Nak.; 60, 61 — *A. (Paulianellus) maderi* Balth.; 62, 63 — *A. (Trichaphodius) proclivis* Balth.; 64 — *A. (Pleuraphodius) lewisi* Waterh.; 65, 66 — *A. (Aganocrossus) urostigma* Har.; 67, 68 — *A. (Trichonotulus) mongolicus* Mannrh. Fig. 69. *A. (Aphodius) elegans* Allib. — left elytron

finely margined; surface very minutely alutaceous throughout under high magnification, mixed very fine and fine, unevenly distributed punctures a trifle smaller on the disc, larger and closer laterally. Scutellum triangular, narrow, finely punctate. Elytra convex, subparallel with sides and apical part shortly,

distinctly piliferous; striae fine, not deep, very fine strial punctures weakly crenating inner margins of the moderately convex, minutely alutaceous intervals; intervals with very fine punctures, closer and more distinct at apex of elytra. Metasternum minutely alutaceous, impunctate, midline weakly impressed, abdominal sterna alutaceous, finely punctate. Anterior tibia with three lateral teeth, crenate toward the base, the terminal spur straight; middle and hind tibiae long, slender, apical fringe with rather long setae, distinctly unequal in length; first posterior tarsal segment very long, about one-third time longer than the upper spur and clearly longer than following three segments combined.

Male. Apical spur of fore tibia wider than in female, truncate at apex; metasternum slightly concave, pronotal punctures less coarse. Aedeagus as in figures 62, 63.

Female. Apical spur of fore tibia narrower than in male, sharply pointed; metasternum not concave, pronotal punctures more coarse.

Remarks. I have examined the holotype of *A. proclivis* in the BALTHASAR'S collection in Prague. This species has been described by BALTHASAR (1933) in a new subgenus *Gilletianus* BALTH. The establishment of this subgenus was not justified, since the complex of the features of this species indicates its affiliation to the subgenus *Trichaphodius* A. SCHM. New to the Korean fauna, frequent and numerous in various biotopes.

Aphodius (Aganocrossus) urostigma HAROLD, 1862

(Figs. 65, 66)

Distribution. Sunda Islands (Java, Borneo, Sumatra, Celebes), Indochina (Malaya, Thailand, Laos, Vietnam, Burma), India (Assam), Nepal, China (Hainan, Yunnan), South Afghanistan, Taiwan (Liyutan, Nanshanchi, Liukuei Lutao Isl., Lanyu Isl.), Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Yakushima, Kuchinoerabu, Nakanoshima, Takarajima, Amami-Ôshima, Iki, Tsushima, Ishigaki, Iriomote, Ohshima, Toshima, Miyake, Hachijo, Hachijo-Kojima, Aogashima, Tokara; Africa (introduced) (BALTHASAR, 1964; 1965; NOMURA, 1966; 1969; 1973).

Material examined. 95 ♂♂ and ♀♀. Japan — Honshu, Kanagawa Pref., Sagamihara, 13 VII 1967, Y. SHIBATA (ISEZ), Yamanashi Pref., near Gozaishi, 27 VII 1965, Y. SHIBATA (ISEZ), Tokyo, Machida, Tsurukawa, 6 VIII 1968, Y. SHIBATA (ISEZ); Korea — Prov. Hvanghe-namdo, Sinčhŏn (108), 18 IX 1971, J. PAWŁOWSKI (ISEZ), vicinity of the water-fall Sujang-san (Mt., 121) near Hedžu (18), 1—3 VI 1974, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16—18 VI 1974, in cow dung and at human excrements, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, 13 VI 1974, in cow dung, Z. STEBNICKA, 25 VIII 1971, J. RAZOWSKI (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 V 1974, in cow dung, Z. STEB-

NICKA (ISEZ), distr. Sunčhŏn (94), Džamo-san, 28 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ); Prov. Phjŏngjang-si, Phjŏngjang (86), 15 IX 1971, at human excrements, J. PAWŁOWSKI (ISEZ), Ponghva-ri (88), 24 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, Mjohjang-san (Mts), 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Species frequent and numerous in D.P.R.K., occurs in various biotopes.

Aphodius (Trichonotulus) dzamosanicus STEBNICKA, 1973

(Fig. 70)

Distribution. D.P.R.K. Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-san (STEBNICKA, 1973).

Aphodius (Trichonotulus) mongolicus MANNERHEIM, 1852

(Figs. 67, 68)

Distribution. East Siberia, Mongolia (BALTHASAR, 1965; ENDRÖDI, 1971).

Material examined. 5 ♂♂ and ♀♀. Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 21 V 1974, in sheep dung, Z. STEBNICKA (ISEZ).

Remarks. Species very similar to the Euro-Caucasian one *A. (T). scrofa* (F.); slightly differs from it by shape and punctation of the head. According to BALTHASAR (1964) it is probably a subspecies of *A. (T.) scrofa*, however, its distribution is little known as yet.

Aphodius (Aphodius) elegans ALLIBERT, 1847

(Fig. 69)

Distribution. China, Japan — Hokkaido, Honshu, Sado (Kitauzima, Kawaharada, Mt. Kinpoku, Ookura-goe), Shikoku, Kyushu, Takarajima, Amami-Ôshima, Miyake, Okinawa; Taiwan, Korea, Indochina (NAKANE et BABA, 1960; BALTHASAR, 1964; NOMURA, 1966; 1969).

Material examined. 2 ♂♂. Prov. Hamhyng-si, Hyngnam (28), 7 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, distr. Sunan (104), Junha-ri, 3 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW).

Aphodius (Orodalus) pusillus (HERBST, 1789)

(Figs. 71, 72)

Distribution. Europe, Transcaucasus, Siberia, Mongolia, Japan — Hokkaido, Honshu (Niigata, Shibata), Shikoku, Kyushu (NAKANE, 1960; NAKANE et BABA, 1960; BALTHASAR, 1964; ENDRÖDI, 1971 et all.).

Material examined. 82 ♂♂ and ♀♀. Japan — Honshu, Kanagawa Pref., Atsugi, 7 VI 1960, Y. SHIBATA (ISEZ), Mt. Oogusu, 3 VI 1961, Y. SHIBATA (ISEZ), Nagano Pref. Utsukushi, 1 V 1960, Y. SHIBATA (ISEZ); Korea — Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 22 V 1974, numerous specimens in cow dung, Z. STEBNICKA (ISEZ), Purjŏng (87), valley of river, 22 V 1974, in sheep dung, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16 VI 1974, in cow dung, Z. STEBNICKA (ISEZ).

Remarks. In the whole distributional area this species indicates great individual variability; it mainly concerns punctation of head and pronotum, sculpture of elytra, color and body size. The distinction of Far-Eastern subspecies based on the small differences in external morphology by some authors is not sufficiently justified. Species new to the Korean fauna, occurs in some color variants. Locally numerous, collected mainly in cow and sheep dung.

Aphodius (Orodalus) naraensis NAKANE, 1956

(Figs. 73—75)

Distribution. Japan — Honshu (Nara) (NAKANE, 1960; BALTHASAR, 1964).

Material examined. 9 ♂♂ and ♀♀. Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 22 V 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 7 VI 1974, in sheep dung, Z. STEBNICKA (ISEZ).

Description of the Korean specimens. Length 3—3·5 mm. Elongate oblong, moderately convex, black; margin of clypeus, shoulders and apex of elytra reddish, sometimes disc of elytra reddish brown. Head slightly convex, finely reflexed clypeal margin obtusely rounded each side of moderately deep anterior emargination, sides weakly arcuate to small, slightly flattened genae; frontal suture distinctly marked, surface of head everywhere closely, uniformly, moderately punctate, the punctures generally separated by less than their diameters. Pronotum more or less convex, slightly alutaceous, posterior angles obtusely rounded, sides and base margined; surface everywhere very densely punctate, the punctures moderate in size, very slightly smaller and closer toward the sides. Scutellum elongate, slightly convex at apex, finely punctate. Elytra subparallel, striae moderately deep, strial punctures as wide as striae, distinctly crenating edges of the intervals; intervals more or less convex, alutaceous with close, fine punctures. Ventral surface alutaceous, finely punctate, metasternum with moderately deep midline. Apex of middle and hind tibiae fringed with short, unequal spines; first segment of posterior tarsus longer than the upper spur and nearly equal to the following two segments combined.

Male. Apical spur of fore tibia bent inward at apex; aedegus as in figures 74, 75.

Female. Apical spur of fore tibia straight; stylus as in figure 73.

Remarks. The original description of the male holotype of *A. naraensis* is incomplete. The holotype was not examined by the author of the present study. Series od specimens from Korea is characterized by great individual variability; this concerns punctation and color of elytra and shape of pronotum. Body shape of this species is very similar to this of *A. pusillus* (HERBST); both species occur in the same biotopes. New to the Korean fauna.

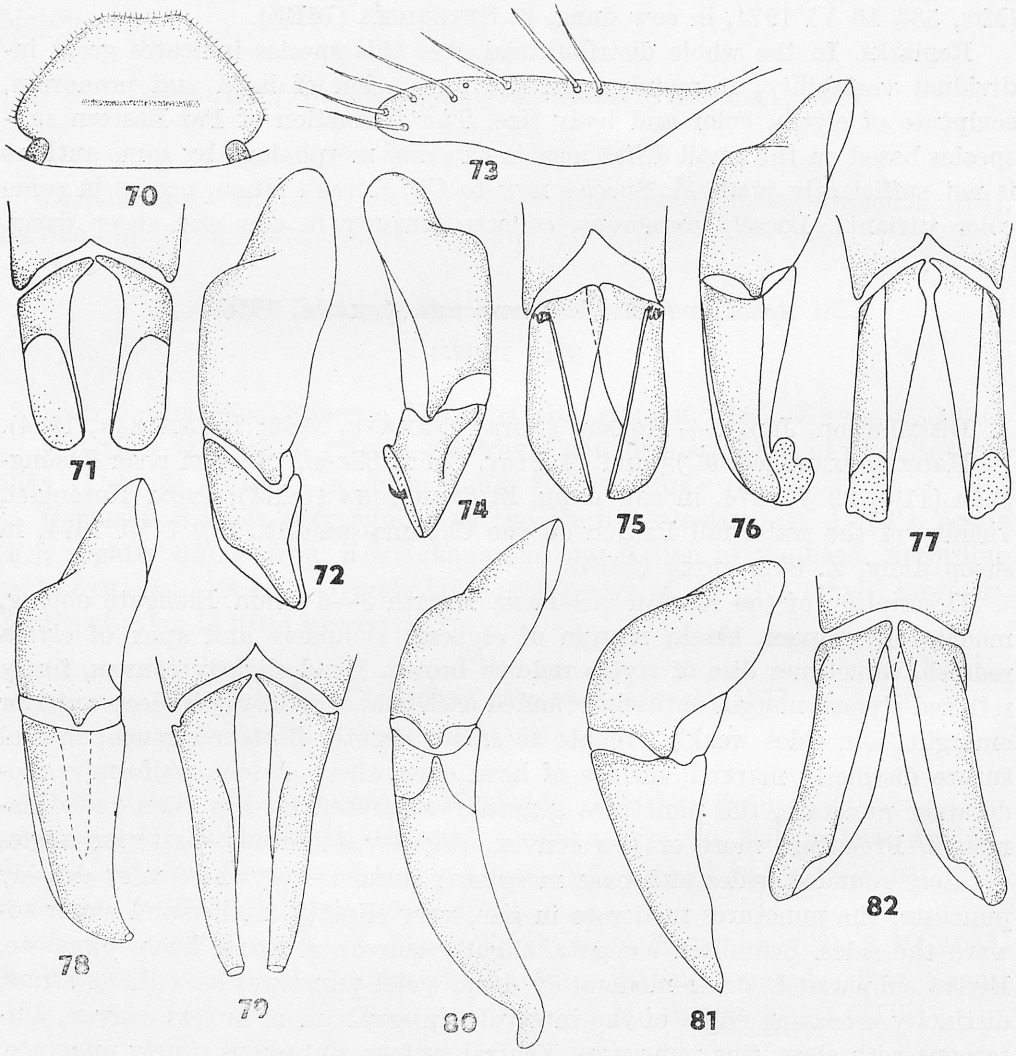


Fig. 70. *Aphodius (Trichonotulus) dzamosanicus* STEB. — female head.
Figs. 71, 72. *A. (Orodalus) pusillus* (HBST) — male genitalia, lateral and dorsal view. Figs. 73—75. *A. (O.) naraensis* NAK. 73 — female genitalia, stylus; 74, 75 — male genitalia, lateral and dorsal view.
Figs. 76—82. Male genitalia, lateral and dorsal view. 76, 77 — *A. (Agrilinus) uniformis* WATERH.; 78, 79 — *A. (A.) breviusculus* (MOTSCH.); 80 — *A. (Phaeaphodius) rectus* MOTSCH.; 81, 82 — *A. (Agrilinus) putridus* (HBST)

Aphodius (Phaeaphodius) rectus Motschulsky, 1866

(Fig. 80)

Distribution. Central Asia (Iran), Mongolia, East Siberia (Bajkal Region), Sachalin, Kurile Islands (Southern Kurilsk, Alechino, basin of Kurilka river), Primorskij Kraj; North- and Central China, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Sado, Ohshima, Miyake, Hachijo, Hachijo-Kojima; Taiwan (Balthasar, 1964; Tesař, 1968; Nomura, 1969; Kryvoluckaja, 1973).

Material examined. 130 ♂♂ and ♀♀. USSR — Bajkal, Listvianka, 26—30 VI 1974, in cow dung, Z. Stebnicka (ISEZ); Japan — Honshu, Yamanashi Pref., Nagasawa, 1 IV 1967, Y. Shibata (ISEZ), Kanagawa Pref., Mt. Oogusu, 3 IV 1961, Y. Shibata (ISEZ), Mt. Ooyama, 23 IX 1967, 25 XII 1966, Y. Shibata (ISEZ), Ibaraki Pref., Watarase, 4 V 1961, Y. Shibata (ISEZ), Tokyo Pref., Mt. Takao, 28 III 1960, Y. Shibata (ISEZ), Tamakyuryo, 18 III 1966, Y. Shibata (ISEZ), Setagaya, 10 II 1961, Y. Shibata (ISEZ); Korea — Prov. Janggang-do, distr. Hjesan (26), valley Dongha-ri, 2 IX 1971, J. Pawłowski (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 21—25 V 1974, in cow and sheep dung, Z. Stebnicka (ISEZ), Purjŏng (87), 21—25 V 1974, in cow dung, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-punkto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 23 V 1974, in sheep dung, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, water-fall Sujang-san (121) near Hedžu (18), 2 VI 1974, Z. Stebnicka (ISEZ), valley of river Hakhjŏn-čhŏn, 3 VI 1974, Z. Stebnicka (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, in sheep dung, Z. Stebnicka (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, Z. Stebnicka (ISEZ).

Remarks. This species is very characteristic representative of Manchurian fauna. In D.P.R.K. locally frequent, mainly in the northern Provinces. Typical black form occurs with the variety ab. *biformis* Reitt.

Aphodius (Agrilinus) uniformis Waterhouse, 1875

Syn.: *Aphodius etorofuensis* Konô, 1937;
Aphodius maritimus Nomura et Nakane, 1951.

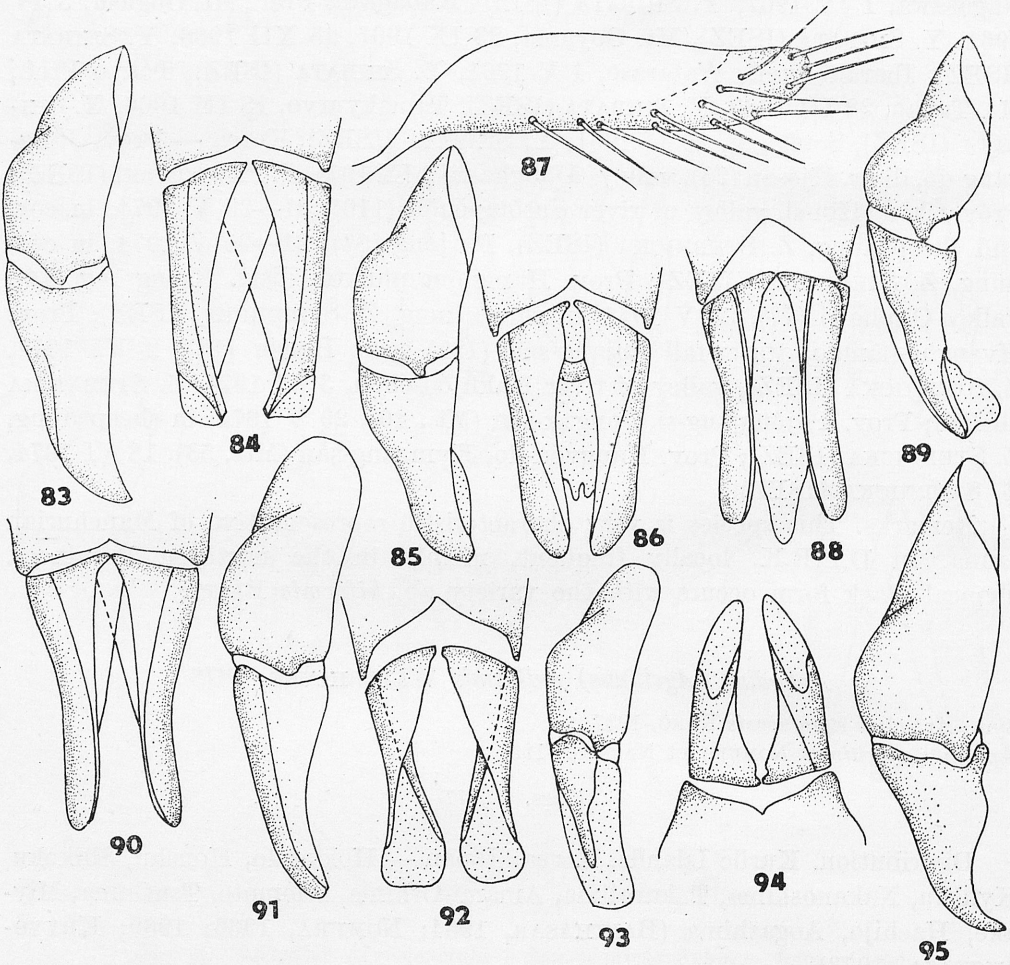
(Figs. 76, 77)

Distribution. Kurile Islands, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Nakanoshima, Takarajima, Amami-Ôshima, Iriomote, Tsushima, Miyake, Hachijo, Aogashima (Balthasar, 1964; Nomura, 1966; 1969; Kryvoluckaja, 1973).

Material examined. 70 ♂♂ and ♀♀. Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 22 V 1974, in cow dung, Z. Stebnicka (ISEZ), Purjŏng (87), 21 V 1974, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121) near Hedžu (18), 3 VI 1974, in sheep dung, Z. Stebnicka (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn, 20 km SE of Kesŏng

(56), 8 VI 1974, at human excrements, Z. STEBNICKA (ISEZ); Prov. Phjŏngannamdo, distr. Sunčhŏn (94) , Džamo-san, 27 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 V 1974, in cow dung, Z. STEBNICKA (ISEZ), Junha-ri, 40 km W of Phjŏngjang (86), 13 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), distr. Kangsŏ (61), Thesŏng, 24 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ), 13 VI 1974, in cow dung, Z. STEBNICKA (ISEZ), 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Frequent and relatively numerous species in D.P.R.K., occurs in various biotopes, in cattle dung and human excrements.



Figs. 83—86. Male genitalia, lateral and dorsal view; 83, 84 — *Aphodius (Bodilus) languidulus* A. SCHM.; 85, 86 — *A. (Calamosternus) uniplagiatus* WATERH. Figs. 87—89, *A. (Agrilinus) inexpectatus* BALTH. 87 — female genitalia, stylus; 88, 89 — male genitalia, lateral and dorsal view. Figs. 90—95. Male genitalia, lateral and dorsal view; 90, 91 — *A. (Bodilus) sordidus* (FABR.); 92, 93 — *A. (Calamosternus) sublimbatus* (MOTSCH.); 94, 95 — *A. (Nialus) sturmi* HAR.

Aphodius (Agrilinus) putridus (Herbst, 1789)

(Figs. 81, 82)

Distribution. North- and Central Europe, Caucasus, North Siberia, Mongolia, North America (introduced) (Balthasar, 1964; Endrödi, 1967; 1971; Stebnicka, 1976 et all.).

Material examined. 1 ♂ and 2 ♀♀. Prov. Janggang-do, distr. Samdžijon (103), vicinity of the village Posŏ-ri, 8 IX 1971, in cow dung, J. Pawłowski, (ISEZ).

Remarks. Euro-Siberian species, new to the Korean fauna. In D.P.R.K. variety ab. *transitus* found, which differs from the typical form by color of elytra (black with reddish spots on shoulders and at apex) and strongest punctation.

Aphodius (Agrilinus) breviusculus (Motschulsky, 1866)

Syn.: *Aphodius nigerrimus* Waterhouse, 1875.

(Figs. 78, 79)

Distribution. Kurile Islands (Kurilsk), Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu (Nakane, 1961; Balthasar, 1964; Kryvoluckaja, 1973).

Material examined. 72 ♂♂ and ♀♀. Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 22 V 1974, numerous specimens collected in cow dung, Z. Stebnicka (ISEZ), Purjŏng (87), valley of river, 22 V 1974, Z. Stebnicka (ISEZ).

Remarks. Probably local species, sometimes numerous, collected in D.P.R.K. only in one of northern Provinces.

Aphodius (Agrilinus) inexpectatus Balthasar, 1935

(Figs. 87—89)

Distribution. USSR — Primorskij Kraj (Vladivostok) (Balthasar, 1964).

Material examined. 5 ♂♂ and ♀♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, in sheep dung, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 21 VIII 1959, B. Pisarski and J. Prószyński (ZIW).

Description of the Korean specimens. Length 4·5—5·5 mm. Oblong, subparallel, moderately convex, shining, dark red-brown, sometimes disc of pronotum and lateral part of elytra darker. Head moderately convex, edge finely reflexed, clypeus slightly angulate each side of moderate median emargination, sides nearly straight to small, obtusely rounded genae; surface of head finely punctate, frontal suture with three more or less distinct tubercles. Pronotum moderately convex, posterior angles obtusely rounded, sides straight or weakly emarginated over anterior three-fifths then weakly arcuate to posterior angles, side and base finely margined; surface densely punctate with mixed fine and

moderately coarse punctures, closer and larger laterally. Scutellum triangular, distinctly punctate. Elytra convex, sides weakly arcuate, humeri not dentate; striae deep, rather wide, strial punctures slightly crenating inner margins of the narrow, strongly convex, not connected at apex intervals; surface of intervals impunctate, shining. Ventral surface shining; metasternum finely punctate, midline shallow. Apical spur of fore tibia straight and acute; apex of middle and hind tibiae fringed with short, equal spines; first segment of posterior tarsus shorter than upper spur and slightly longer than the next two segments combined.

Male. Frontal tubercles distinctly marked, shorter spur of middle tibia slightly truncate at apex. Aedeagus as in figures 88, 89.

Female. Frontal tubercules less distinctly marked than in male, shorter spur of middle tibia sharply pointed. Stylus as in figure 87.

Remarks. Species new to the Korean fauna. The holotype (only one male specimen known) belongs to the private collection of V. BALTHASAR in Prague.

Aphodius (Bodilus) sordidus (FABRICIUS, 1775)

(Figs. 90, 91)

Distribution. North- and Central Europe, Transcaucasia, Siberia (Omsk), China (Yunnan), Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Ohshima, Hachijo, Yakushima (BALTHASAR, 1964; TESAŘ, 1968; NOMURA, 1969; STEBNICKA, 1976; MEDVEDEV, 1976 et all.).

Material examined. 45 ♂♂ and ♀♀. Prov. Kesŏng-si, Pakjŏn, 20 km SE of Kesŏng (56), 8 VI 1970, S. MAHUNKA and H. STEINMANN (HMNH), vicinity of the water-fall Pakjŏn, 6—8 VI 1974, in sheep dung, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, vicinity of Sinčhŏn (108), 16 IX 1971, J. PAWŁOWSKI (ISEZ), Sujang-san (Mt., 121) near Hedžu (18), 3 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Janggang-do, distr. Hjesan (26), valley Dongha-ri, 2 IX 1971, in cow dung, J. PAWŁOWSKI (ISEZ), Hjesan (26), 11 IX 1971, at light of UV lamps, J. RAZOWSKI (ISEZ); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 21 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW); Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Euro-Asiatic species; occurs in various biotopes, in particular in the regions rich in limestone. In the D.P.R.K. frequent but not very numerous.

Aphodius (Bodilus) languidulus A. SCHMIDT, 1922

(Figs. 83, 84)

Distribution. North- and East China, Korea, Japan — Honshu (Kurokawa), Shikoku, Kyushu (NAKANE et BABA, 1960; NAKANE, 1961; BALTHASAR, 1964).

Material examined. 9 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Kangsŏ

(61), Thesŏng, 24 VIII 1971, at light of UV lamps, J. Razowski (ISEZ); Prov. Janggang-do, distr. Hjesan (26), 1 IX 1971, at light of UV lamps, J. Pawłowski (ISEZ); Prov. Hvanghe-namdo, Sinčhŏn (108), 16 IX 1971, in cow dung, J. Pawłowski (ISEZ); Prov. Hvanghe-pukto, Sarivŏn (101), 19 VII 1950, Borchsenius (ZIL).

Remarks. Not frequent and not numerous species. It is probably an element of the Manchurian fauna of narrow area of distribution. In Korea collected mainly at light.

Aphodius (Nialus) sturmi Harold, 1870

Syn.: *Aphodius inouei* Nomura, 1942.

(Figs. 94, 95)

Distribution. South- and South-Eastern Europe, North Africa, Asia Minor, Central Asia, Mongolia, Manchuria, Korea, Japan (Balthasar, 1964; Endrödi, 1965; Medvedev, 1976).

Material examined. 120 ♂♂ and ♀♀. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77) 21 VIII 1959, B. Pisarski and J. Prószyński (ZIW); Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, 24 VIII 1971, J. Razowski (ISEZ), distr. Sunčhŏn (94), Džamo-san, 27 VIII 1971, collected at light of UV lamps, J. Pawłowski (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 VIII 1971, at light, J. Pawłowski (ISEZ), 30 V 1974, in cow and sheep dung, Z. Stebnicka (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 16—20 VIII 1971, at light of UV lamps, J. Razowski (ISEZ); Prov. Hvanghe-namdo, vicinity of Sinčhŏn (108), 16 IX 1971, in cow dung, J. Pawłowski (ISEZ), Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, at human excrements, Z. Stebnicka (ISEZ), valley of river Hakhjŏn-čhŏn, 3 VI 1974, in cow dung, Z. Stebnicka (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 21 V 1974, in cow and sheep dung, Z. Stebnicka (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 6—8 VI 1974, Z. Stebnicka (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, in cow dung, Z. Stebnicka (ISEZ).

Remarks. Palaearctic species, rather frequent in D.P.R.K., locally numerous. Collected primarily at light.

Aphodius (Calamosternus) uniplagiatus Waterhouse, 1875

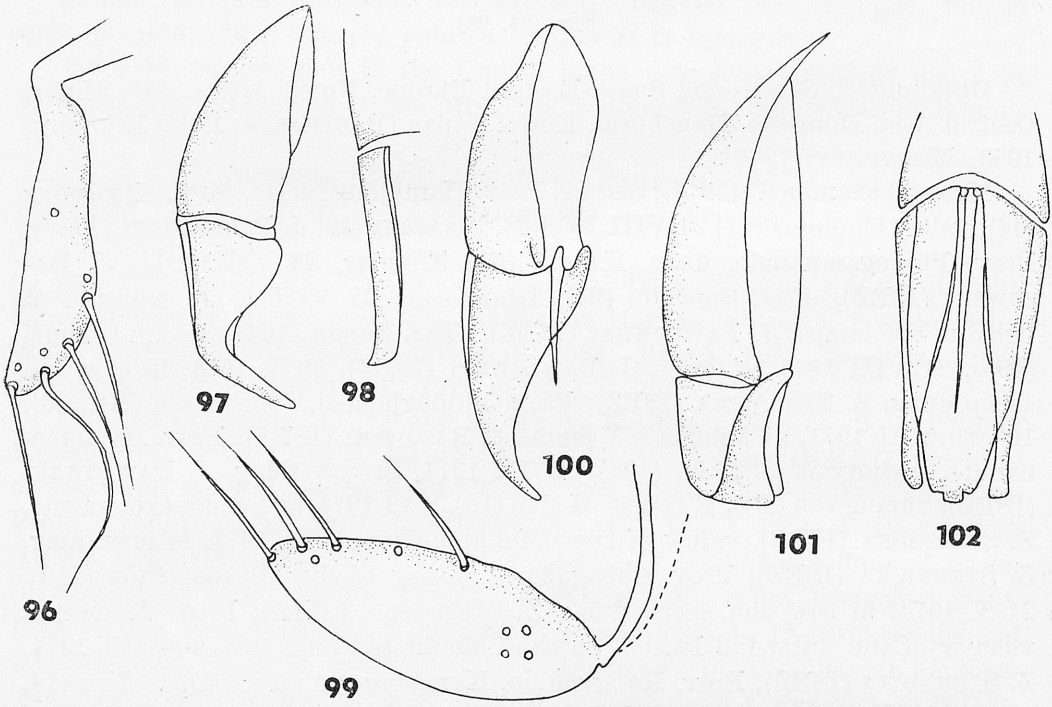
(Figs. 85, 86)

Distribution. Taiwan, Korea, Japan — Hokkaido, Honshu (Echigo), Shikoku, Kyushu, Hachijo, Toshima, Kuchinoerabu, Nakanoshima, Takarajima, Iriomote (Nakane et Baba, 1960; Balthasar, 1964; Nomura, 1966; 1969).

Material examined. 79 ♂♂ and ♀♀. Prov. Kangvŏn-do, Vŏnsan (118), 1 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW), Kymgang-san (Mts, 53),

16—18 VI 1974, in cow dung, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (121) near Hedžu (18), 2 VI 1974, at human excrements, Z. STEBNICKA (ISEZ), valley of river Hakhjŏn-čhŏn, 3 VI 1974, in sheep dung, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), vicinity of the lake, 30 V 1974, in cow dung, Z. STEBNICKA (ISEZ), Nampho (75), Vaudo, 21 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, in sheep dung, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 7 VI 1974, in cow dung, Z. STEBNICKA (ISEZ).

Remarks. Common species, in Korea frequent and numerous in various biotopes.



Figs. 96—98. *Aegialia (Psammoporus) kamtschatica* MOTSCH. 96 — female genitalia, stylus; 97 — aedeagus, lateral view; 98 — paramera, dorsal view. Fig. 99. *A. (Aegialia) comis* (LEWIS) — female genitalia, stylus. Figs. 100—102. Male genitalia, lateral and dorsal view; 100 — *Rhyssemus koreanus* sp. n.; 101 — *Ochodaeus ferrugineus* ESCH.; 102 — *Trox sabulosus* (L.)

Aphodius (Calamosternus) sublimbatus (MOTSCHULSKY, 1860)

Syn.: *Aphodius ussuriensis* PETROVITZ, 1961.

(Figs. 92, 93)

Distribution. East Siberia (Ussuri, Amur), Manchuria, China, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Tsushima, Kuchinoerabu, Takarajima, Minami-Daitôjima, Toshima, Miyake, Hachijo, Hachijo-Kojima,

Aogashima, Tokara, Amami-Ôshima, Okinawa; Taiwan (Liyutan, Nanshanschi, Liukuei, Lutao Isl., Lanyu Isl.) (BALTHASAR, 1964; NOMURA, 1966; 1969; 1970; 1973).

Material examined. 56 ♂♂ and ♀♀. Japan — Tokyo, Machida, Tsurukawa, 6 VIII 1968, Y. SHIBATA (ISEZ), Yamanashi Pref., near Gozaishi, 27 VII 1967, Y. SHIBATA (ISEZ), Nagano Pref., Kiso Onsen, 1000 m, 19 VI 1970, J. RAZOWSKI (ISEZ); Korea — Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, 24 VIII 1971, at light, J. RAZOWSKI (ISEZ), 13 VI 1974, in cow dung, Z. STEBNICKA (ISEZ), distr. Sunčhŏn (94), Džamo-san, 27 VIII 1971, at light of UV lamps, J. PAWŁOWSKI (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 V 1974, in cow dung on the banks of the lake, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, valley of river Hakhjŏn-čhŏn near Hedžu (18), 1—3 VI 1974, in cow dung, Z. STEBNICKA (ISEZ), Sinčhŏn (108), 16 IX 1971, in cow dung, J. PAWŁOWSKI (ISEZ); Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110), 21—25 V 1974, in cow and sheep dung, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, in cow dung on the banks of river, Z. STEBNICKA (ISEZ), 16—20 VIII 1971, at light, J. RAZOWSKI (ISEZ), Phjŏngjang (86), 17 V 1974, at light, A. SZEPTYCKI (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16—18 VI 1974, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 21 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mhohjang-san (Mts), Hjangam-ri, 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. East-Asiatic species inhabitating large area. Forms numerous not distinctly bordered local races, which slightly differ by color and sometimes by shape. Frequent but not numerous in D.P.R.K.

Aegialiini

Aegialia (Aegialia) comis (LEWIS, 1895)

(Fig. 99)

Distribution. USSR — Primorskij Kraj (Suputinka), Japan — Honshu (Nikko), Hokkaido (Sapporo, Kotoni, Bankei, Tokachi, Abashiri); North Korea — Prov. Čhŏngdžin-si, valley of river Susŏng-čhŏn (110) (STEBNICKA, 1977).

Aegialia (Psammoporus) kamtschatica MOTSCHULSKY, 1860

(Figs. 96—98)

Distribution. USSR — Bajkal and Transbajkal Region, Siberia (Daurija), basin of Ussuri river (Birskoje), Kamchatka, Sachalin, Kurile Islands; Japan — Hokkaido, Honshu; North Korea — Prov. Hamgjŏng-pukto, Kvanmo-bong (Mt., 60) (STEBNICKA, 1977).

Material examined. 1 ♀. Prov. Hamgjŏng-pukto, distr, Kjŏngsŏng (44), Mehjang-ri, 4 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Psammodiini

Rhyssemus koreanus sp. n.

(Fig. 100)

Holotype ♂: North Korea, Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), 3 VIII 1959, B. Pisarski and J. Prószyński; Paratype ♀, the same data as holotype, in coll. ISEZ.

Description. Length 2·8—3 mm. Elongate-oblong, moderately convex, shining-black; legs, clypeal margin and ventral side reddish. Head strongly convex at middle, edge finely reflexed, clypeus sharply angled each side of broad, moderately deep median emargination, sides weakly arcuate to small genae; front with rounded median convexity, occipital area with two weakly marked carinae and two small tubercles on each side; surface of head everywhere granulated. Pronotum transverse, sides and base margined, setaceous, weakly crenate, marginal setae yellow, short; disc with five transverse, moderately convex carinae and granulated convexity placed on each side near middle of lateral declivity; grooves wide with dense, coarse punctures, surface of carina impunctate. Scutellum small, triangular, alutaceous. Elytra subparallel, humeri sharply dentate; elytral striae moderately deep, intervals slightly convex with a row of moderately large tubercles along outside margin and a row of small tubercles along inner margin. Ventral surface shining; metasternum slightly concave, midline distinct; abdominal segments distinctly delimited by deep, finely and closely punctated transverse grooves; femora with a few punctures bearing yellow hairs. Middle and hind tibiae slender; first segment of posterior tarsus longer than the upper spur and subequal to following three segments combined.

Male. Apical spur of fore tibia bent inward at apex. Aedeagus as in figure 100.

Female. Apical spur of fore tibia straight.

Remarks. *R. koreanus* sp. n. resembles *R. lunatus* Petr. (described from Taiwan) very closely, but these species are separated by differences in the sculpture of pronotum.

Ochodaeinae

Ochodaeus ferrugineus (Eschscholtz, 1818)

(Fig. 101)

Distribution. Europe, Caucasus, Siberia, Mongolia, Korea (Nomura, 1942; Horion, 1958; Stebnicka 1976 et all.).

Material examined. 1 ♂. Prov. Čhŏngdžin-si, Čhŏngdžin (11), 29 VII 1956, M. Magyar (HMNH).

Geotrupinae

Geotrupes (Phelotrupes) auratus MOTSCHULSKY, 1857

Distribution. USSR — Primorskij Kraj, Kurile Islands (Alechino, Sernovodsk, Kunašir), Japan — Hokkaido, Honshu (Kurokawa, Matsunoyama), Shikoku, Kyushu; Korea (NAKANE et BABA, 1960; MEDVEDEV et ERMOLENKO, 1969; KRYVOLUCKAJA, 1973).

Material examined. 20 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Hjangsan (27), Mjohjang-san (Mts), 24 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW); Prov. Čhŏngdžin-si, distr. Purjŏng (87), Thomak-tong 20 km N of Čhŏngdžin (11), 8 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Phjŏngan-namdo, distr. Sunan (104), Junha-ri 40 km W of Phjŏngjang (86), 13 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), distr. Sunčhŏn (94), Džamo-san and a vicinity of the village Džamo-ri, 27 VIII 1971, J. PAWŁOWSKI (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), valley of river Sunha-gang, 29 V 1974, under cow dung, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-pukto, locality 20 km NE of Čhŏngdžin (11), 5 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kangvŏn-do, distr. Vŏnsan (18), mountain pass Masin-rjŏng, 16 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 7—8 VI 1974, in sheep dung, Z. STEBNICKA (ISEZ), 3 IX 1956, M. MAGYAR (HMNH).

Remarks. Belongs to the group of Manchurian species of rather narrow area of distribution. Fairly common in D.P.R.K.; occurs in the woodland, beetles fly during the day.

Geotrupes (Phelotrupes) laevistriatus MOTSCHULSKY, 1857

Distribution. USSR — Primorskij Kraj, Sachalin, Kurile Islands (Alechino, Goriače lake, Lesnoj river, Lesozavodsk, Kunašir, Sernovodsk, Šikotan, Malokurilskoje), North- and Central China, Manchuria, Korea, Japan — Hokkaido, Honshu (Kurokawa, Mt. Hishigatake, Mt. Futatsumine, Momogawatoge, Mt. Kazakura, Mt. Amakazari), Sado (Suizu, Aoneba-goe, Mt. Donden, Mt. Kinpoku), Shikoku, Kyushu, Okinawa, Yakushima, Iki, Tsushima, Amami-Ôshima, Toshima, Niijima (NAKANE et BABA, 1960; NOMURA, 1966, 1969; MEDVEDEV et ERMOLENKO, 1969; KRYVOLUCKAJA, 1973).

Material examined. 8 ♂♂ and ♀♀. Prov. Janggang-do, distr. Samdžijon (103), Namphote-san (76), 8 IX 1971, in cow dung, J. PAWŁOWSKI (ISEZ).

Remarks. An element of Manchurian-fauna. Occurs in the areas with mixed forests in mountainous regions and mountains. Feeds probably in vegetable detritus, sometimes found in cattle excrements. Beetles fly during the day.

Melolonthinae

Sericini

Gastroserica herzi (HEYDEN, **1887**)

(Figs. 103, 104)

Distribution. China, Manchuria, Taiwan (Hori), Korea — Chosan (125), Usi (116), Kočhang (48), Hverjŏng (25), Kangjasan (49), Andžu (2), Suvŏn (92), Kangnyng (42), Pegam (82), Vŏnsan (118), Pusan (83) (MURAYAMA, 1938; MEDVEDEV, 1952; MURAYAMA, 1954; NAKANE, 1973; NOMURA, 1973).

Material examined. 1 ♂. Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Sangvŏn-am (109), 17 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. The occurrence of this species in Japan reported by MURAYAMA (1938, 1954) was not confirmed in the subsequent literature. In the islands of Central Japan occurs very similar species *G. higonia* (LEWIS); the shape of its male copulatory organ is different from this of *G. herzi* (HEYD.) (NOMURA, 1973).

Nipponoserica similis (LEWIS, **1895**)

(Figs. 105, 106)

Distribution. Japan — Honshu (Echigo: Sakasamaki), Shikoku (Ehime: Matsuyama), Kyushu (Nagasaki: Nagasaki, Suwanoike; Kumamoto: Nishikoshi), Korea — Čedžu-do (Isl., 3) (MURAYAMA, 1954; NAKANE et BABA, 1960; NOMURA, 1976).

Material examined. 2 ♂♂. Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, under vegetation, Z. STEBNICKA (ISEZ).

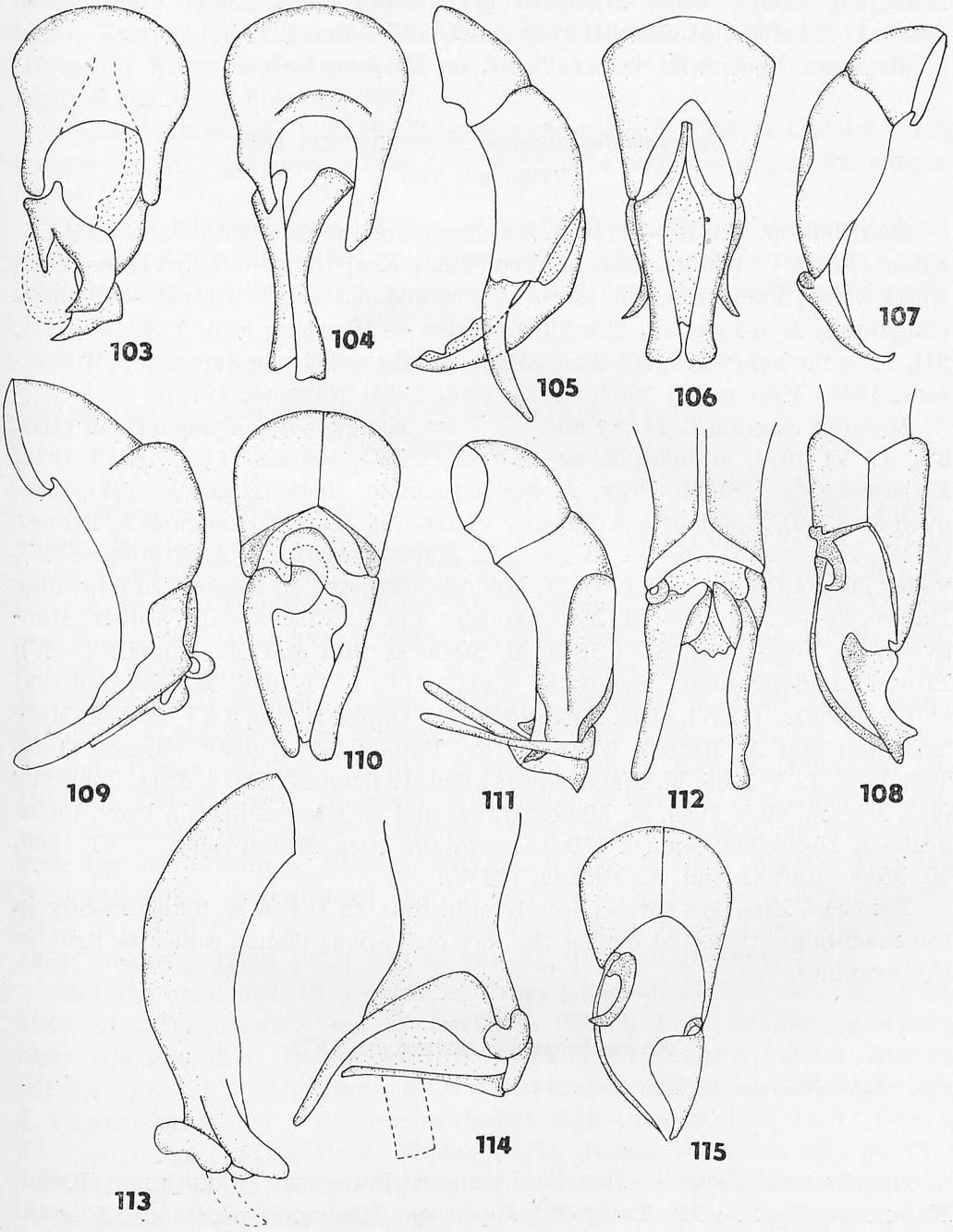
Remarks. Species collected in the central part of Peninsula, on the southern slope of the mountain covered with xerophilous vegetation.

Trichoserica polita (GEBLER, **1832**)

(Fig. 107, 108)

Distribution. USSR — Bajkal and Transbajkal Region (Čitinskaja Obl.), Bur'atskaja ASSR (Nerčinsk), Primorskij Kraj (Blagoveščensk, Chabarovsk, Askol'd Isl.), Manchuria, Korea — Hverjŏng (25), Sungho (102), Sarivŏn (101), Kangjasan (49) (MURAYAMA, 1938; MEDVEDEV, 1952; MURAYAMA, 1954; NOMURA, 1971).

Material examined. 1 ♂ and 2 ♀♀. Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 8 VI 1974, Z. STEBNICKA (ISEZ); Prov.



Figs. 103—115. Male genitalia, lateral and dorsal view; 103 — *Gastroserica herzi* (Heyd.); 104 — *G. higonia* (Lewis); 105, 106 — *Nipponoserica similis* (Lewis); 107, 108 — *Trichoserica polita* (Gebl.); 109, 110 — *Sericania fuscolineata* Motsch,; 111, 112 — *Maladera (Maladera) gibbiventris* (Brske); 113, 114 — *M. (M.) castanea* (Arrow); 115 — *Serica boops* Waterh.

Hamgjŏng-namdo, distr. Hjangsan (27), Sangvŏn-am (109), Mjohjang-san (Mts), 17 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Specimens were collected on *Rosaceae* bushes.

Sericania fuscolineata Motschulsky, 1860

(Figs. 109, 110)

Distribution. USSR — Transbajkal Region (Čitinskaja Obl.), Šantarskij Isl., Amur (Nižne-V'atskoje), Daurija, Primorskij Kraj (Askol'd Isl., Vladivostok), North China, Manchuria (four localities recorded in Japanese), Japan — Kyushu (Nagasaki), Ryu-kyu Isl., Tsushima; Korea — Hverjŏng (25), Pučhŏn (river, 91), Kvanmo-bong (Mt., 60) (and 13 not called localities in Japanese) (Murayama, 1938; Medvedev, 1952; Murayama, 1954; Nomura, 1976).

Material examined. 24 ♂♂ and ♀♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 17 VI 1974, at light, Z. Stebnicka (ISEZ), Vŏnsan (118), 18 VI 1974, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Sangvŏn-am (109), Mjohjang-san (Mts), 17 VI 1965, M. Mroczkowski and A. Riedel (ZIW), Hjangam-ri, 16—19 VI 1965, M. Mroczkowski and A. Riedel (ZIW), valley Munsu-tong, 18 VI 1965, M. Mroczkowski and A. Riedel (ZIW), valley Hapiro, 20—21 VI 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamgjŏng-pukto, vicinity of Nadžin (74), 5 VI 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Kjŏngsŏng (44), Onpho-ri (77), 3 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Phjŏngjang-si, distr. Samsŏk (106), Tečhŏn-ri, 22 V 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Jongsŏng (41), Maram, 29 V 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Čhŏngdžin-si, Hamgjŏng-sanmek (Mts), mountain pass Musan-rjŏng, 2 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Frequent species, locally numerous. In D.P.R.K. found mainly in the mountains. Collected during the day on various plants, comes to light in the evenings.

Serica boops Waterhouse, 1875

Syn.: *Ophthalmoserica niijimai* Kontkanen, 1956.

(Fig. 115)

Distribution. Japan — Honshu (Aomori: Tsuta spa; Fukushima: Kashi, Hutamata; Gunma: Mt. Tanigawa, Hoshi spa, Kiruzumi spa, Odaira; Niigata: Motohashi, Niitsu, Ikenotaira, Shiori-toge, Sakasamaki, Kurokawa, Kanamaru; Nagano: Kuruizawa, Tobira spa, Kiso-Fukushima; Yamanashi: Kiyosato, Ina, Yamanakako, Sagashio spa; Tokyo: Okutama, Mt. Takamizu, Mt. Mitake, Mt. Takao; Kanagawa: Hakone; Shizuoka: Odaru spa, Mt. Fuji; Aichi: Mt. Dando; Gifu: Hirayu; Kyoto: Mt. Hiei; Mie: Misugi; Wakayama: Mt. Koya,

Mt. Ryujin; Hyogo: Maiyasan, Mt. Hyonosen), Shikoku (Ehime: Mt. Narabara), Kyushu (Fukuoka: Mt. Wakasugi, Mt. Hikosan, Mt. Shaka), Izu Isl. (Hachijo); Korea — Čedžu-do (Isl., 3) (MURAYAMA, 1938; MEDVEDEV, 1952; MURAYAMA, 1954; NOMURA, 1972).

Material examined. 1 ♂. Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, under stone, Z. STEBNICKA (ISEZ).

Remarks. The occurrence of this species in Manchuria and Primorskij Kraj reported by MURAYAMA (1954) and MEDVEDEV (1952) probably concern a very similar species *S. rosinae* (PIC), whose area of distribution lies more to the north.

Maladera (Maladera) castanea (ARROW, 1913)

Syn.: *Maladera japonica*: MEDVEDEV, 1953 (nec MOTSCHULSKY, 1860).

(Figs. 113, 114)

Distribution. USSR — Primorskij Kraj, Kurile Islands, Caucasus (introduced); North America (introduced); North- and Central China, Japan — Hokkaido (Ishikari), Honshu (Aomori; Akita; Yamagata: Yonezawa; Miyagi: Sendai; Tochigi: Ohtawara; Chiba: Mt. Kiyosumi; Tokyo: Kunitachi, Okutama; Kanagawa: Hiratsuka; Niigata: Kurokawa, Senami, Nakajo, Hirabayashi, Shibata, Kaji, Kama, Yuzawa spa, Maoroshi, Niitsu, Gosen-shi, Gamohara spa, Momozaki-hama, Sasaguchi-hama; Ishikawa: Tsurugi; Nagano: Suwa, Kiso; Shizuoka: Akiba; Gifu; Mie: Misugi; Kyoto; Hyogo: Kobe), Sado (Mt. Kinpoku, Futami, Tassha), Shikoku (Ehime: Sawatani, Ichiu), Kyushu (Fukuoka: Mt. Hikosan, Kokura; Saga; Nagasaki: Kuchinotsu, Tsushima; Kumamoto; Miyazaki: Takanabe; Kagoshima: Kirishima), Ryu-kyu Isl. (Yakushima, Tanegashima), Izu Isl. (Toshima, Niijima, Shikine, Kouzu, Mikura, Miyake, Hachijo, Hachijo-kojima, Aogashima); Taiwan; Korea — Suvŏn (92), Kymgang-san (Mts, 53), Sŏul (93) (MURAYAMA, 1938; NAKANE et BABA, 1960; MURAYAMA, 1954; NOMURA, 1969; 1973; KRYVOLUCKAJA, 1973; MEDVEDEV, 1974).

Material examined. 19 ♂♂ and ♀♀. Prov. Kangvŏn-do, Vŏnsan (118), 1 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-san, 27 VIII 1971, J. PAWŁOWSKI (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 VIII 1971, J. PAWŁOWSKI (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 20 VIII 1971, J. PAWŁOWSKI (ISEZ), Phjŏngjang (86), 1 VII 1950, BORCHSENIUS (ZIL).

Remarks. MEDVEDEV (1952) considered *M. castanea* as a synonym of *M. japonica* (MOTSCH.), however, they are two different species. The distributional data of *M. castanea* are given above; according to NOMURA (1973), *M. japonica japonica* (MOTSCH.) inhabits Japan exclusively. Both species are enemies of tea and vegetable cultivations and also of orchards; larva gnaws roots of various plants including cultivated ones. One generation per year.

Maladera (Maladera) gibbiventris (Brenske, 1897)

(Figs. 111, 112)

Distribution. Central China (Changyang), Taiwan (Wushe, Nanshanchi), Korea — Čhungdžu (4), Pujŏ (79), Čhŏngdžu (12), Hedžu (18), Kangnyng (42), Čočhingvŏn (5), Suvŏn (92), Sŏul (93), Kvangjang (43), Kjŏngsŏng (44), Inčhŏn (33), Kangge (45) (Murayama, 1938; 1954; Nomura, 1974).

Material examined. 9 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, 26 V 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Sunan (104), Sŏkam-Čŏsudži (105), 30 V 1974, under stones, Z. Stebnicka (ISEZ); Prov. Phjŏngjang-si, distr. Jŏngsŏng (41), Maram, 26 VI 1965, M. Mroczkowski and A. Riedel (ZIW), Jongak-san (Mt., 40), 29 V 1974, under stone, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 20 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hvanghe-namdo, Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, collected under stones and on the young oak, Z. Stebnicka (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 16 VI 1974, at light, Z. Stebnicka (ISEZ).

Maladera (Maladera) formosae (Brenske, 1897)

(Figs. 116, 117)

Distribution. Taiwan (Wushe, Nanshanchi, Lyutan, Liukuei, Taitsung, Jenai, Tainan, Kenting Park), Korea — Mokpho (66), Suvŏn (92), Kjŏngsŏng (44), Sŏul (93) (Murayama, 1938; 1954; Nomura, 1974).

Material examined. 6 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 VIII 1971, at light of UV lamps, J. Pawłowski (ISEZ); Prov. Kangvŏn-do, Vŏnsan (118), 1 V 1966, H. Szelęgiewicz and C. Dziadosz (ZIW).

Maladera (Maladera) renardi (Ballion, 1871)

Syn.: *Serica spissigrada* Brenske, 1897;
Serica motschulskyi Brenske, 1897;
Serica nakayamai Murayama, 1938.

(Fig. 118)

Distribution. USSR — Primorskij Kraj (Chabarovsk, Vladivostok), Manchuria, North China, Japan — Honshu (Yamagata: Atsumi spa; Fukushima: Wakamatsu; Ibaragi: Tone; Tokyo: Tamagawa; Kanagawa: Oiso, Kuneguma; Niigata: Shibata, Kurokawa, Sasaguchi-hama, Nakajo, Murakami, Niitsu, Nagaoka; Shimane: Enya), Sado, Shikoku (Tokushima: Kamiryo), Kyushu (Fukuoka: Mt. Hikosan; Nagasaki), Korea — Sŏul (93), Mudžu (67), Kvesan (62), Kosan (54), Kodže (59), Hongčhŏn (20), Hedžu (18), Hamhyng (19), Kangge (45), Kildžu (55), Kymčhŏn (58), Anak (1), Ičhŏn (33), Kjŏngsŏng

(44), Purjŏng (87) (MURAYAMA, 1938; MEDVEDEV, 1952; MURAYAMA, 1954; NOMURA, 1973; MEDVEDEV, 1974).

Material examined. 1 ♂ and 1 ♀. Prov. Phjŏngjang-si, Phjŏngjang (86), 26 VIII 1970, at light, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Beetles are enemies of orchards and cultivations, among others, of broad been and soia. One generation per year.

Maladera (Maladera) holosericea (SCOPOLI, 1772)

(Figs. 119, 120)

Distribution. Europe, Caucasus, Siberia, Manchuria (numerous localities recorded in Japanese), Korea — Kjŏngsŏng (44), Suvŏn (92), Kesŏng (56), Hamhyng (19), Kangge (45), Kodže (59), Hedžu (18), Hjesan (26), Hverjŏng (25), Kvesan (62), Sŏul (53), Kangnyng (42) (MURAYAMA, 1938; MEDVEDEV, 1952; MURAYAMA, 1954; MEDVEDEV, 1974; STEBNICKA, 1978 et all.).

Material examined. 5 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Phjŏngjang (86), 27 VII 1970, at light, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Palaearctic species. Beetles are enemies of vegetable cultivations, orchards and field cultivations. Imagines feed on young sprouts, leaves and stamens. One generation per year.

Maladera (Maladera) cariniceps (MOSER, 1915)

(Figs. 121, 122)

Distribution. Manchuria, Japan — Kyushu (Nagasaki), Tsushima; Korea — Mokpho (66), Namvŏn (73), Korjŏng (126), Čhungdžu (4), Hverjŏng (25), Kesŏng (56), Jongdžu (34), Hedžu (18), Čočhingvŏn (5), Pujŏ (79), Sŏul (93), Kvesan (62), Inčhŏn (32), Čhŏngdžu (12), Suvŏn (92), Kangnyng (42), Kjŏngsŏng (44), Kvangjang (43), Vŏnsan (118), Čedžu-do (Isl., 3) (MURAYAMA, 1938; 1954; NOMURA, 1973).

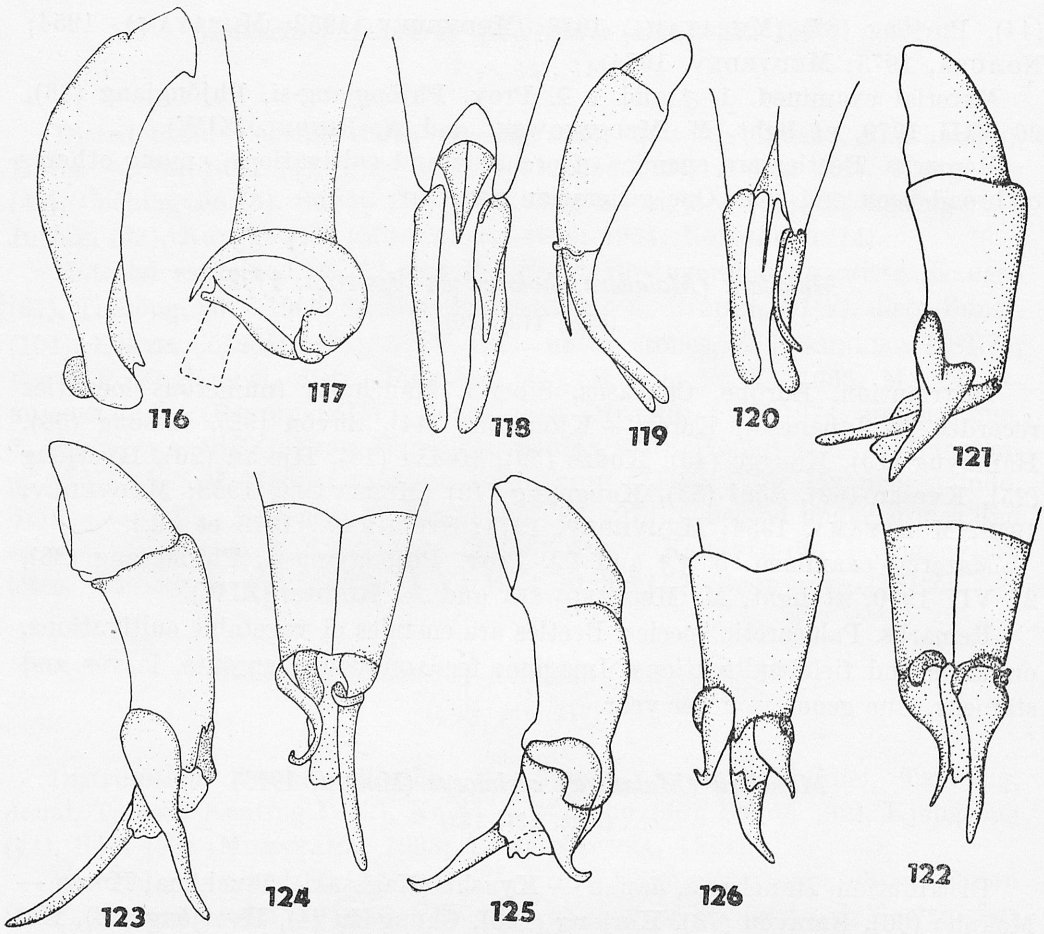
Material examined. 6 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Phjŏngjang (86), 17—28 V 1974, under stones on the banks of Tedong-gang (river), Z. STEBNICKA (ISEZ), Jongak-san (Mt., 40) 29 V 1974, valley of river, Z. STEBNICKA (ISEZ).

Maladera (Maladera) fusania (MURAYAMA, 1934)

(Figs. 123, 124)

Distribution. Taiwan (Chihpen), Korea — Mokpho (66), Kvangjang (43), Kunsan (46), Kvangdžu (47), Hedžu (18), Kodže (59), Tongne (111), Mudžu (67), Tegu (112), Čočhingvŏn (5), Suvŏn (92), Phohang (81), Sŏul (93), Kangnyng (42), Kjŏngsŏng (44), Hamhyng (19) (MURAYAMA, 1938; 1954; NOMURA, 1974).

Material examined. 16 ♂♂ and ♀♀. Prov. Kangvŏn-do, Vŏnsan (118), 15 VI



Figs. 116—126. Male genitalia, lateral and dorsal view; 116, 117 — *Maladera (Maladera) formosae* (Brske); 118 — *M. (M.) renardi* (Ball.); 119, 120 — *M. (M.) holosericea* (Scop.); 121, 122 — *M. (M.) cariniceps* (Mos.); 123, 124 — *M. (M.) fusania* (Muray.); 125, 126 — *M. (M.) orientalis* (Motsch).

1974, on the sandy coast of sea, Z. Stebnicka (ISEZ), 1 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), 14 VI 1974, at light, Z. Stebnicka (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 7 VI 1974, under stone, Z. Stebnicka (ISEZ); Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), vicinity of the lake, 30 V 1974, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall on the Sujang-san (Mt., 121), 2 VI 1974, under stones, Z. Stebnicka (ISEZ).

Remarks. Similarly as *M. cariniceps* (Mos.) this species has been collected exclusively in the vicinity of water, most frequently under stones and on the ground, where it spends the day. Active at dusk, comes to light.

Maladera (Maladera) orientalis (MOTSCHULSKY, 1857)

Syn.: *Serica salebrosa* BRENSKE, 1897.

(Figs. 125, 126)

Distribution. USSR — Primorskij Kraj, Sachalin; North China (Pekin, Alashan), Mongolia, Manchuria (numerous localities recorded in Japanese), Japan — Hokkaido (Otaru), Honshu (Iwate: Kuji; Miyagi: Sendai; Yamagata: Sendai, Atsumi; Tochigi: Nasu, Ohtawara; Gunma: Yokogawa, Kirizumi; Ibaragi: Mt. Tsukuba; Tokyo: Mt. Takao, Kunitachi, Takamizu, Mt. Kumotori, Tamagawa; Kanagawa: Kamakura, Fujisawa, Tsujido, Hakone; Niigata: Kurokawa, Sasaguchi-hama, Kakuda-hama, Kamiishikawa, Shidai-hama, Mimote, Sakasamaki, Shiunji, Dainichihara, Yoshigahira, Momozaki-hama, Imakawa, Murakami, Senami, Kanamaru, Tsunagi, Yoneyama, Okutadami, Tsuchitaru, Nagaoka, Asagai, Ooyu spa, Agekawa, Shiori-toge; Awa-shima Isl.; Nagano: Mt. Yatsugatake; Shizuoka: Kunozan; Aichi: Nagoya; Gifu; Ishikawa: Tsurugi; Nara: Yamakita; Tokushima: Mt. Tsurugi, Kamiryo), Sado (Umezu, Ogura-toge, Mt. Donden), Shikoku (Ehime: Omogo), Kyushu (Fukuoka; Nagasaki), Izu Isl. (Toshima, Niijima); Taiwan; Korea — Hedžu (18) Mokpho (66), Kvangdžu (47), Tongne (111), Čongdžu (6), Henam (24), Jŏsu (38), Sŏul (93), Kangnyng (42), Kosan (54), Kesŏng (56), Samčhŏnpho (100), Kodže (59), Hamhyng (19), Nadžin (74), Kangge (45), Kvanmo-bong (60), Phohang (81), Mudžu (67), Tegu (112), Čočhingvŏn (5), Čhŏngdžin (11), Vŏndžu (119), Suvŏn (92), Jŏdžu (39), Inčhŏn (32), Kjŏngsŏng (44), Jŏnčhŏn (35), Hongčhŏn (20), Čedžu-do (Isl., 3) (MURAYAMA, 1938; MEDVEDEV, 1952; MURAYAMA, 1954; NAKANE et BABA, 1960; NOMURA, 1969; 1973; MEDVEDEV, 1974).

Material examined. 34 ♂♂ and ♀♀. Prov. Hamhyng-si, distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Hyngnam (28), 7—11 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngannamdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Sunčhŏn (94), Džamo-ri, 27 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Nampho (75), Usan-ri, 28 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kangvŏn-do, Čhŏnne (14), 10 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Kymgang-san (Mts, 53), 16 VI 1974, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 6 VI 1974, Z. STEBNICKA (ISEZ); Prov. Hamgjŏngnamdo, distr. Hjangsan (27), Mjohjang-san (Mts), 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), vicinity of Džuyr (17), 25 V 1974, under stones, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 24 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 29 V 1974, Z. STEBNICKA (ISEZ), Tesŏng-san (Mts, 124), 21 V 1974, at light, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, Sinčhŏn (108), 25 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. This is one of most numerous, widely distributed species of the genus *Maladera* MULS. that occur in Far East. Inhabits mountainous regions. Collected at waters and higher rice fields under stones or directly on the ground; comes to light in the evenings. Beetles are enemies of orchards; imagines destroy young sprouts and leaves, larvae — roots of various trees and shrubs. One generation per year.

Maladera (Maladera) schonfeldti (MURAYAMA, 1937)

(Figs. 127, 128)

Distribution. Korea — Mokpho (66), Suvŏn (92), Korjŏng (126), Kesŏng (56), Kangsŏ (61), Hamhyng (19) (MURAYAMA, 1938; 1954).

Material examined. 45 ♂♂ and ♀♀. Prov. Čhŏngdžin-si, Čhŏngdžin (11), 21 V 1974, at light, Z. STEBNICKA (ISEZ); Prov. Hamhyng-si, Hyngnam (28), 7 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), 20 V 1974, at light, Z. STEBNICKA (ISEZ).

Remarks. This species has been known up to now only from Korea. Local, relatively numerous, collected at light. Body surface of the beetles brown, brownish-black or black, covered by a characteristic grey coating. Description of this species is not contained in the present paper since the representatives of the genus *Maladera* MULS. are very similar externally and indicate a great individual variability; the difference in the structure of their male copulatory apparates is the only criterium on which they are properly determinable.

Maladera (Maladera) okamotoi (MURAYAMA, 1938)

(Figs. 129, 130)

Distribution. China, Manchuria (two localities recorded in Japanese), Korea — Namvŏn (73), Jongdžu (34), Čhŏngdžu (12), Čhungdžu (4), Čočhingvŏn (5), Suvŏn (92) (MURAYAMA, 1938; 1954).

Material examined. 5 ♂♂ and ♀♀. Prov. Janggang-do, distr. Hjesan (26), vicinity of the village Dŏngha-ri, 31 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ); Prov. Phjŏngjang-namdo, distr. Sunan (104), Junha-ri, 3 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW).

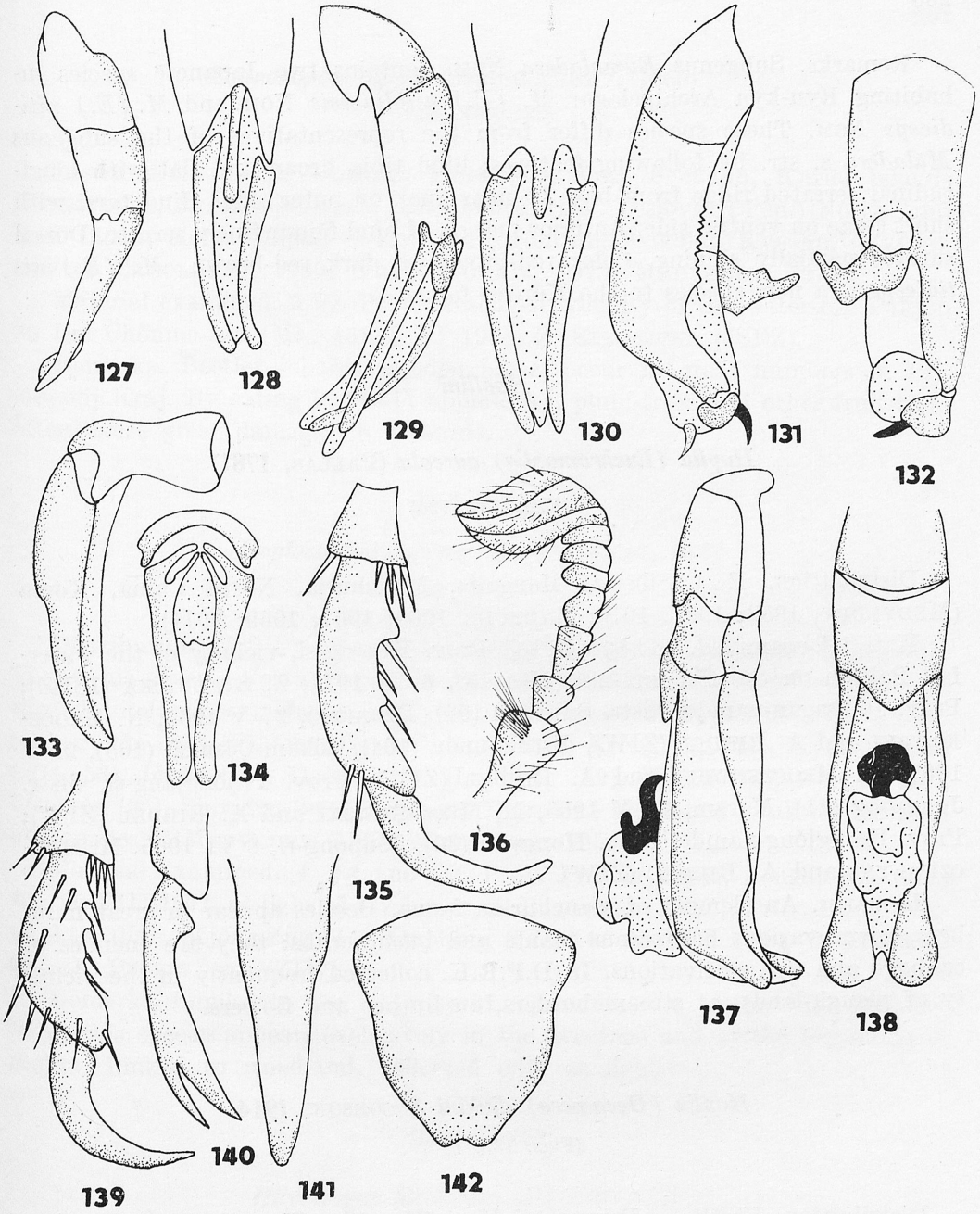
Remarks. This species was collected only at light.

Maladera (Eumaladera) nitidiceps NOMURA, 1967

(Figs. 131, 132)

Distribution. Japan — Ryu-kyu (Iriomote-jima) (NOMURA, 1973).

Material examined. 2 ♂♂ and 1 ♀. Prov. Phjŏngjang-si, Phjŏngjang (86), 17 IX 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 20 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).



Figs. 127—134. Male genitalia, lateral and dorsal view; 127, 128 — *Maladera (Maladera) schonfeldti* (Muray.); 129, 130 — *M. (M.) okamotoi* (Muray.); 131, 132 — *M. (Eumaladera) nitidiceps* Nom.; 133, 134 — *Hoplia (Euchromoplia) aureola* (Pall.). Figs. 135, 136. *H. (Decamera) djukini* Jacob. 135 — last segment and claw of posterior tarsus; 136 — antenna. Figs. 137, 138. *Hilyotrogus bicoloreus* (Heyd.) — male genitalia, lateral and dorsal view. Figs. 139, 140. *Ectinohoplia rufipes* (Motsch.); 139 — last segment and claw of posterior tarsus; 140 — inner claw of anterior tarsus. Figs. 141, 142. *Hoplosternus incanus* Motsch.; 141 — prosternal process; 142 — pigidium

Remarks. Subgenus *Eumaladera* NOM. contains two Japanese species inhabiting Ryu-kyu Archipelago: *M. (E.) nitididorsis* NOM. and *M. (E.) nitidiceps* NOM. These species differ from the representatives of the subgenus *Maladera* s. str. by following features: hind tibia broad and flat with longitudinal serrated ridge from base to near apex on outer side. Hind tarsi with short setae on ventral side. Anterior margin of hind femur finely serrate. Dorsal surface partially shining. Color red-brown to dark red-brown. *M. (E.) nitidiceps* is a new species to the Korean fauna.

Hopliini

Hoplia (Euchromoplia) aureola (PALLAS, 1781)

(Figs. 133, 134)

Distribution. East Siberia, Mongolia, Manchuria, North China, Korea (MEDVEDEV, 1952; 1974; 1976; ENDRÖDI, 1965; 1967; 1969; 1971).

Material examined. 66 ♂♂ and ♀♀. Prov. Kesŏng-si, vicinity of the waterfall Pakjŏn on the Čhŏnma-san (Mt., 13), 6 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-ri, 27 V 1965, N. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngjang-si, distr. Jongsŏng (41), Maram, 29 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. An element of Manchurian fauna. Beetles appear in great numbers, cover various herbaceous plants and bush scrubs; they are enemies of cabbage and rice cultivations. In D.P.R.K. collected frequently in the vicinity of plough-lands, at stream borders, on bushes and flowers.

Hoplia (Decamera) djukini JACOBSON, 1914

(Figs. 135, 136)

Distribution. USSR — Primorskij Kraj (Vorošilov-Ussurijskij, Šmakovka, vicinity of Spassk, Vinogradovka, Tiutiche river, Tumen-ula river), (MEDVEDEV, 1952).

Material examined. 1 ♀. Prov. Hamhyng-si, Hyngnam (28), 11 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. According to MEDVEDEV (1952) beetles occur on the banks of inland waters and at sea shore, often locally in Primorskij Kraj. Species new to the Korean fauna.

Ectinohoplia rufipes (MOTSCHULSKY, **1860**)

(Figs. 139, 140)

Distribution. USSR — Amur, Primorskij Kraj, Sachalin, Kurile Islands (Sernovodsk, Alechino, Goriače Lake, Malokurilsk, Veslovskij Pen.) North- and East China, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, (MEDVEDEV et ERMOLENKO, 1969; KRYVOLUCKAJA, 1973; MEDVEDEV, 1974).

Material examined. 2 ♀♀. Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 8 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. Beetles inhabit wooded areas, occur in great numbers in Primorskij Kraj. By eating leaves of apple-trees, plum-trees and other fruit-trees often cause great damages in orchards.

Melolonthini

Hoplosternus incanus MOTSCHULSKY, **1853**

(Figs. 141, 142)

Distribution. USSR — Primorskij Kraj (Vorošilov-Ussurijskij, Vladivostok, Tumen-ula river), North China (to Peking), Manchuria (twelve localities recorded in Japanese), Japan — Kyushu; Korea — Mokpho (66), Kangjasan (49), Suvŏn (92), Sičhang (97), Čočhingvŏn (5), Kjŏngsŏng (44), Kymgang-san (Mts, 53), Ičhŏn (33), Hedžu (18), Hamhyng (19), Musan (70), Kangge (45), Sŏnčhŏn (95), Sinyidžu (96), Purjŏng (87) (and 13 not called localities recorded in Japanese) (MEDVEDEV, 1951; MURAYAMA, 1954).

Material examined. 4 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 20 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ); Prov. Hamgjŏng-punkto, distr. Kjŏngsŏng (44), Onpho-ri (77), 14—15 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW).

Remarks. Similar to the majority of representatives of the tribe *Melolonthini*, this species appears exclusively in the evenings and at the beginning of nights. Linked to woodland, collected only at light.

Heptophyllini

Hilyotrogus bicoloreus (HEYDEN, **1887**)

(Figs. 137, 138)

Distribution. USSR — Primorskij Kraj (Vladivostok, Olga), Manchuria, Korea — Kangjasan (49), Korjŏng (126), Kymgang-san (Mts, 53) (and 13 not called localities recorded in Japanese) (MEDVEDEV, 1951; MURAYAMA, 1954).

Material examined. 1 ♂ and 2 ♀♀. Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-san, 27 VIII 1971, at light, J. PAWŁOWSKI and A. SZEPTYCKI (ISEZ).

Remarks. Rare species, probably mountainous, collected as isolated individuals. The not-deciphered names of the localities in Korea given by MURAYAMA (1954) in the Japanese language, mainly indicate mountains or eminences (—„san" ending). The names of particular summits were created according to designations by local inhabitants, therefore the identification of them is very difficult.

Rhizotrogini

Apogonia cupreoviridis KOLBE, 1886

(Figs. 143, 144)

Distribution. Japan, Manchuria (seven localities recorded in Japanese), Korea — Vando (120), Kvangjang (43), Sunčhŏn (94), Tongne (111), Kvangdžu (47). Mokpho (66), Namvŏn (73), Kangjasan (49), Mudžu (67), Čongdžu (6), Ponghva-ri (88), Uldžin (117), Čočhingvŏn (5), Thosan (114), Suvŏn (92), Kjŏngsŏng (44). Pisylsan (89), Čhunčhŏn (8), Vŏndžu (119), Hongčhŏn (20), Ičhŏn (33), Vŏnsan (118), Hedžu (18), Kečhŏn (57), Čongphjŏng (10), Jŏngvŏn (37) (and nine not called localities recorded in Japanese) (MURAYAMA, 1954).

Material examined. 82 ♂♂ and ♀♀. Prov. Hvanghe-namdo, Sujang-san (Mt., 121), vicinity of the water-fall, 3 VI 1974, Z. STEBNICKA (ISEZ), Sinčhŏn (108), 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, Nampho (75), Vaudo, 21 VI 1974, Z. STEBNICKA (ISEZ), 28 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Usan-ri, 28 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Sunan (104), Sŏkam-Čŏsud (105), vicinity of the lake, 30 V 1974, Z. STEBNICKA (ISEZ), distr. Kangsŏ (61), Thesŏng, 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kangvŏn-do, Vŏnsan (118), 15 VI 1974, at light, Z. STEBNICKA (ISEZ), Kymgang-san (Mts, 53) near Kosŏng (122), 16—18 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Tesŏng-san (Mts, 124), 20 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 16 V 1974, Z. STEBNICKA (ISEZ), Phjŏngjang (86), 26 VI 1974, Z. STEBNICKA (ISEZ), Jongak-san (Mt., 40), 29 V 1974, under stones, Z. STEBNICKA (ISEZ), 24 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Samsŏk (106), Sŏngmun-ri, 22 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Janggang-do, distr. Hjesan (26), 11 IX 1971, at light of UV lamps, J. RAZOWSKI (ISEZ).

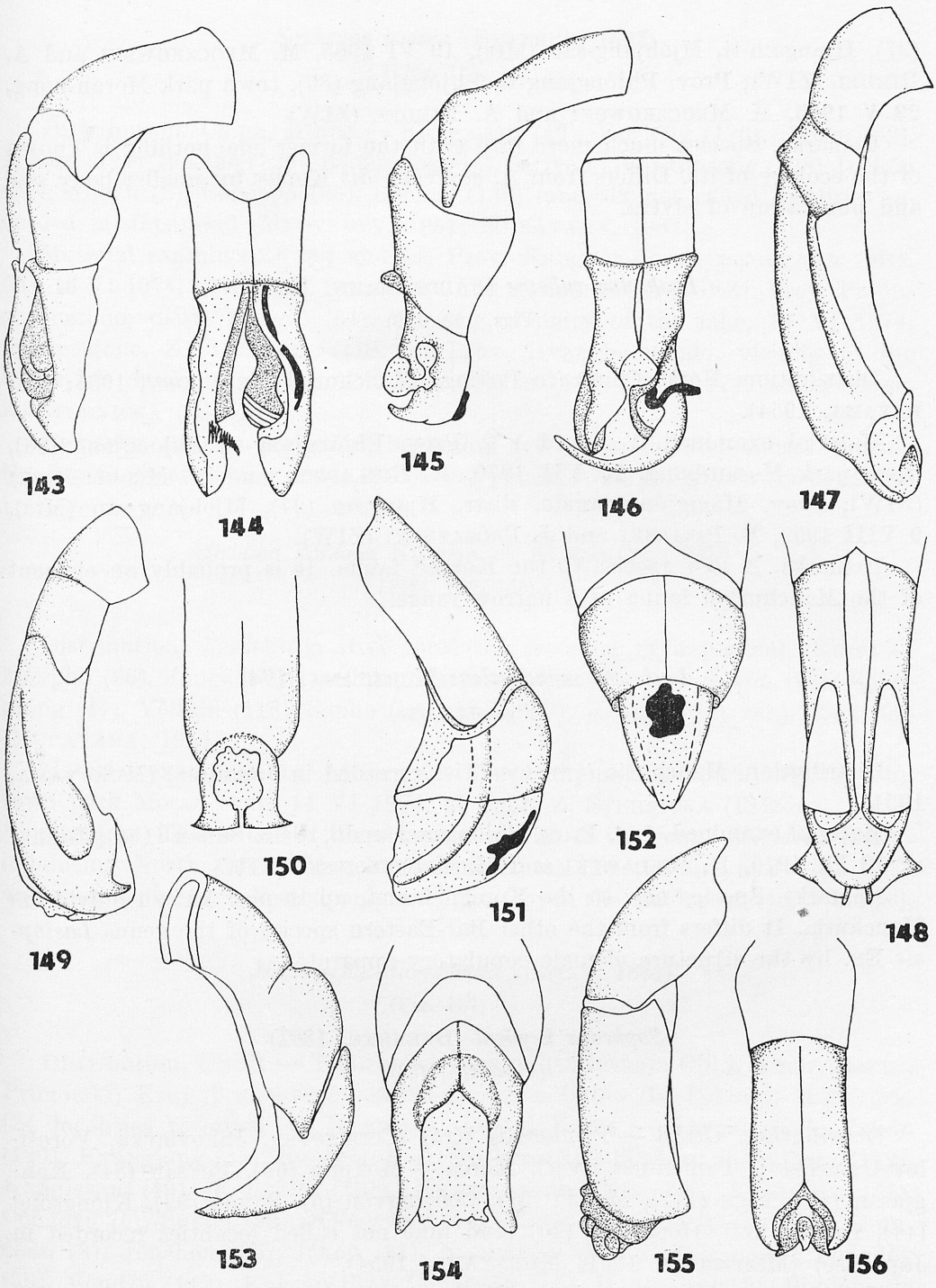
Remarks. Species frequent and numerous in D.P.R.K. Collected mainly under stones, on plants or directly on the ground, also at light. Most frequently occurs at sea-shore, in the valleys of mountainous rivers and streams and in the vicinity of lakes.

Apogonia cribricollis BURMEISTER, 1855

(Figs. 145, 146)

Distribution. Manchuria (six localities recorded in Japanese), Korea — Suvŏn (92), Kjŏngsŏng (44) (MURAYAMA, 1954).

Material examined. 6 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hjangsan



Figs. 143—156. Male genitalia, lateral and dorsal view; 143, 144 — *Apogonia cupreoviridis* KOLBE; 145, 146 — *A. cribricollis* BURM.; 147, 148 — *Lasiopsis manchuricus* MURAY.; 149, 150 — *Brahmina rubetra* (FALD.); 151, 152 — *Sophrops heydeni* (BRSKE); 153, 154 — *S. striata* (BRSKE); 155, 156 — *Miridiba koreana* NIIJ. et KIN.

(27), Hjangam-ri, Mjohjang-san (Mts), 19 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), town park Moran-bong, 29 V 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Species much more rare than the former one; nothing is known of the ecology of its. Differs from *A. cupreoviridis* Kolbe by smaller body size and punctation of elytra.

Brahmina rubetra (Faldermann, **1835**)

(Figs. 149, 150)

Distribution. North China (to Peking), Manchuria (Medvedev, 1951; Murayama, 1954).

Material examined. 1 ♂ and 1 ♀. Prov. Phjŏngjang-si, Phjŏngjang (86), town park Moran-bong, 27 VII 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), 9 VIII 1959, B. Pisarski and J. Prószyński (ZIW).

Remarks. A new species to the Korean fauna. It is probably an element of the Manchurian fauna of a narrow range.

Lasiopsis manchuricus Murayama, **1941**

(Figs. 147, 148)

Distribution. Manchuria (two localities recorded in Japanese) (Murayama, 1954).

Material examined. 1 ♂. Prov. Phjŏngan-namdo, distr. Sunan (104), Junha-ri, 13 IX 1970, R. Bielawski and M. Mroczkowski (ZIW).

Remarks. Species new to the Korean fauna, up to now known only from Manchuria. It differs from the other Far-Eastern species of the genus *Lasiopsis* Er. by the structure of male copulatory apparate.

Sophrops heydeni (Brenske, **1892**)

(Figs. 151, 152)

Distribution. USSR — Primorskij Kraj (Černigovka, Jakovlevka, Vorošilov-Ussurijskij, Tumen-ula river), Korea — Mokpho (66), Peksan (84), Kangjasan (49), Tegu (112), Mudžu (67), Čočhingvŏn (5), Suvŏn (92), Kjŏngsŏng (44), Inčhŏn (32), Hongčhŏn (20) (and nine not called localities recorded in Japanese) (Medvedev, 1951; Murayama, 1954).

Material examined. 1 ♂. Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), vicinity of the lake, 27 VIII 1971, at light of UV lamps, J. Pawłowski (ISEZ).

Remarks. Beetles active in the evenings.

Sophrops striata (Brenske, 1892)

(Figs. 153, 154)

Distribution. China, Korea — Kangjasan (49), Korjŏng (126), Suvŏn (92), Hvado (127), Sokčho (129), Kjŏngsŏng (44), Sarivŏn (101), Sinsang (128), Inčhŏn (32), Andžu (2), Sŏnčhŏn (95), Sŏnsan (130) (and six not called localities recorded in Japanese) (Medvedev, 1951; Murayama, 1954).

Material examined. 6 ♂♂ and ♀♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16 VI 1974, at light, Z. Stebnicka and A. Szeptycki (ISEZ); Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, vicinity of the lake, 13 VI 1974, under stone, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, under stone, Z. Stebnicka (ISEZ).

Remarks. Species nocturnal, beginning activity soon after sunset. During the day the beetles stay under stones and plants, come to light in the evenings.

Miridiba koreana Nijima et Kinoshita, 1923

(Figs. 155, 156)

Distribution. Manchuria (five localities recorded in Japanese), Korea — Mokpho (66), Jongdžu (34), Čhungdžu (4), Čočhingvŏn (5), Suvŏn (92), Kjŏngsŏng (44), Vŏnsan (118), Sepho (98), Andžu (2), Kangge (45), Sinphjŏng (99) (Murayama, 1954).

Material examined. 14 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Phjŏngjang (86), town park Moran-bong, 14 VI 1974, at light, Z. Stebnicka (ISEZ).

Remarks. This is one of three known species of the genus *Miridiba* Reitt. inhabiting North China, Manchuria and Korea. Beetles are active at dusk and in the nights, collected only at light (cover the shades of street lamps).

Holotrichia diomphalia (Bates, 1888)

(Fig. 157)

Distribution. USSR — Transbajkal Region (Čitinskaja Obl.), Amur, Ussuri, Primorskij Kraj (Tarasovka), Sachalin; North China (to Peking), Manchuria (24 localities recorded in Japanese), Japan, Korea — Mokpho (66), Vando (120), Kvangjang (43), Sunčhŏn (94), Tongne (111), Peksan (84), Tegu (112), Kangjasan (49), Kongdžu (131), Kymgang-san (Mts, 53), Kvangdžu (47), Čŏngdžu (6), Suvŏn (92), Kjŏngsŏng (44), Kosan (54), Hongčhŏn (20), Čhunčhŏn (8), Jŏnčhŏn (35), Ičhŏn (33), Kangnyng (42), Kočhang (48), Jongdŏk (36), Vŏndžu (119), Koksan (64), Čhŏngdžu (12), Hamhyng (19), Phjŏngjang (86), Jŏngvŏn (37), Sŏnčhŏn (95), Kangge (45), Mjŏngčhŏn (68), Čongsŏng (9), Kildžu (55) (Medvedev, 1951; Murayama, 1954; Medvedev, 1974; Kalinina, 1977).

Material examined. 40 ♂♂ and ♀♀. Prov. Kangvŏn-do Kymgang-san (Mts, 53), 16 VI 1974, at light, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, Mjohjang-san (Mts), 21 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), valley Munsu-tong, 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 3 VIII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW); Prov. Phjŏngjang-si, distr. Samsŏk (106), Sŏngmun-ri, 22 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Tečhŏn-ri, 22 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Jongak-san (Mt., 40), 24 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Čhŏngdžin-si, mountain chain Hamgjŏng-sanmek, pass Musan-rjŏng, 2 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamhyng-si, Hamhyng (19), 7 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); South Korea, Čedžu-do (Isl., 3), coll. LGOCKI (ISEZ).

Remarks. Numerous species of the genus *Holotrichia* HOPE, which mainly inhabit East Asia are very similar externally and difficult to determine, however, the morphology of male copulatory apparates of particular species is distinctly differentiated. Bionomy of the representatives of this genus is very little known. Beetles are active at evenings and nights, however, nearly exclusively females were collected by means of electric light. This indicates that mainly females fly. Imagines probably feed on leaves and young tree-sprouts. The developmental cycle of *H. diomphalia* (BAT.) takes two years on an average; larva winters twice. Larvae destroy the cultivations of rice, wheat, barley, millet, maize, pulse plants, flax, hemp, sugar cane and potatoes.

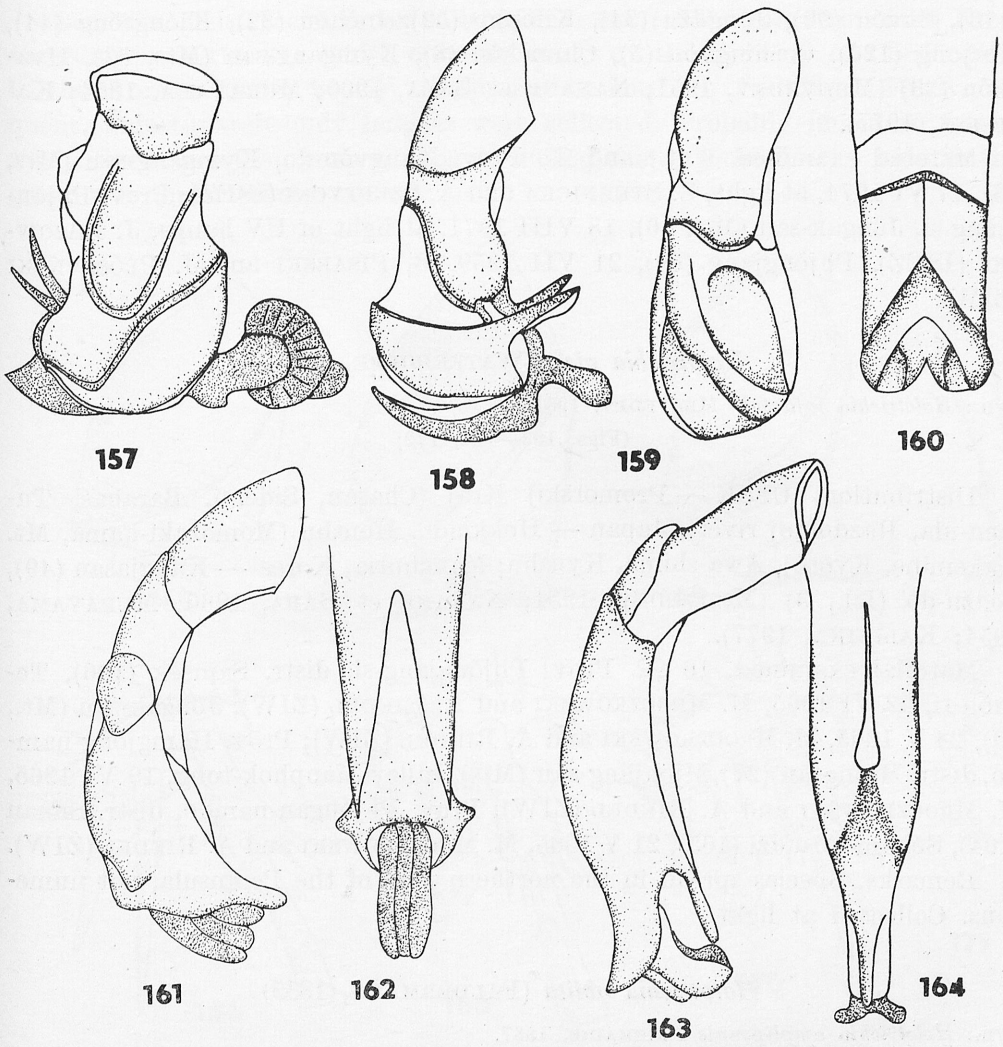
Holotrichia ernesti REITTER, 1902

(Fig. 158)

Distribution. USSR — Amur, Ussuri, Primorskij Kraj (Chanka Lake), North China, Mongolia, Manchuria (Mukden, Harbin), Korea — Namvŏn (73), Korjŏng (126), Suvŏn (92), Kjŏngsŏng (44) (MEDVEDEV, 1951; MURAYAMA, 1954; KALININA, 1977).

Material examined. 6 ♂♂ and ♀♀. Prov. Hamgjŏng-punkto, distr. Kjŏngsŏng (44), Džuyr (17), Jonghen, 25 V 1974, Z. STEBNICKA (ISEZ); Prov. Čhŏngdžin-si, Purjŏng (87), valley of river, 22 V 1974, under stones, Z. STEBNICKA (ISEZ); Prov. Hvanghe-namdo, Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, under stone, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamhyng-si, distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), 24 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Fairly frequent but not numerous species, beginning activity soon after sunset; during the day the beetles stay in the ground or under stones, come to light in the evenings. Probably linked to watersides.



Figs. 157—164. Male genitalia, lateral and dorsal view; 157 — *Holotrichia diomphalia* (Bat.); 158 — *H. ernesti* Reitt.; 159, 160 — *Eotrichia titanis* (Reitt.); 161, 162 — *Holotrichia paralella* (Motsch.); 163, 164 — *H. picea* Waterh.

Holotrichia paralella (Motschulsky, 1854)

Syn.: *Holotrichia morosa* Waterhouse, 1875.

(Figs. 161, 162)

Distribution. USSR — Sachalin, Primorskij Kraj (Tumen-ula), Japan — Honshu (Kurokawa), Tsushima; North- and Central China, Tibet, Manchuria (six localities recorded in Japanese), Korea — Čedžu-do (Isl., 3), Kvangjang (43), Vando (120), Kvangdžu (47), Sunčhŏn (94), Mokpho (66), Tongne (111), Kangjasan (49), Namvŏn (73), Pungan (85), Kangdžin (50), Hadong (21), Kjŏngdžu (51), Čhŏngdžu (12), Tegu (112). Čhŏngan (7), Hvengjang (22), Tedžŏn

(113), Suvŏn (92), Jongdžu (34), Kimpho (52), Inčhŏn (32), Kjŏngsŏng (44), Korjŏng (126), Čočhingvŏn (5), Čhunčhŏn (8), Kymgang-san (Mts, 53), Hvačhŏn (23) (MEDVEDEV, 1951; NAKANE et BABA, 1960; MURAYAMA, 1954; KALININA, 1977).

Material examined. 6 ♂♂ and ♀♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 17 VI 1974, at light, Z. STEBNICKA and A. SZEPTYCKI (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 18 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ), Phjŏngjang (86), 21 VII 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW).

Holotrichia picea WATERHOUSE, 1875

Syn.: *Holotrichia infantula* MEDVEDEV, 1951.

(Figs. 163—166, 172)

Distribution. USSR — Promorskij Kraj (Chasan, Sidemi, Barabaš, Tumen-ula, Razdolnoj river), Japan — Hokkaido, Honshu (Momozaki-hama, Mt. Yakemine, Kyoto), Awa-shima, Kyushu; Manchuria, Korea — Kangjasan (49), Čedžu-do (Isl., 3) (MEDVEDEV, 1951; NAKANE et BABA, 1960; MURAYAMA, 1954; KALININA, 1977).

Material examined. 10 ♀♀. Prov. Phjŏngjang-si, distr. Samsŏk (106), Techŏn-ri, 22 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Jongak-san (Mt., 40), 24 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), valley Manphok-tong, 19 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Species spread in the northern part of the Peninsula, not numerous. Collected at light.

Holotrichia oblita (FALDERMANN, 1835)

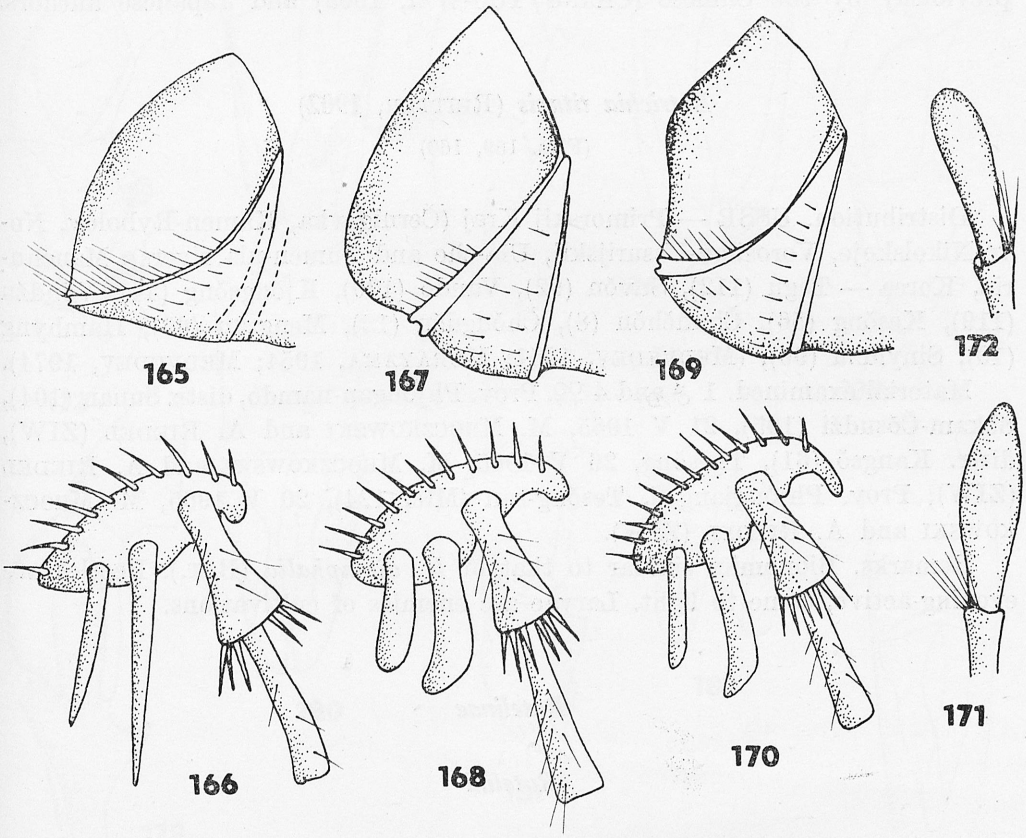
Syn.: *Holotrichia amplipennis* FAIRMAIRE, 1887.

(Figs. 167, 168)

Distribution. Manchuria, Japan — Honshu (MEDVEDEV, 1951).

Material examined. 12 ♀♀. Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, Mjohjang-san (Mts), 29 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), 12—22 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Jongak-san (Mt., 40), 24 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, distr, Kangsŏ (61), Thesŏng, 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 16 VI 1974, under stones, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 17 VI 1974, at light, Z. STEBNICKA and A. SZEPTYCKI (ISEZ), Samil-pho (123), vicinity of the lake, 19 VI 1974, J. PAWŁOWSKI and A. SZEPTYCKI (ISEZ); Prov. Hvanghe-namdo, Sinčhŏn (108), 25 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. This species reported by MEDVEDEV (1951) from Primorskij Kraj, according to KALININA (1973) does not occur on the territory of USSR. New to the Korean fauna, widely distributed in northern Provinces. Fairly frequent, unfortunately only females were collected. Probably linked to watersides. Evening-active, comes to light, during the day the beetles hide in the ground or under stones.



Figs. 165, 166. *Holotrichia picea* WATERH.; 165 — female pigidium; 166 — apex of posterior tibia. Figs. 167, 168. *H. oblita* (FALD.); 167 — female pigidium; 168 — apex of posterior tibia. Figs. 169—171. *H. inelegans* (LEWIS); 169 — female pigidium; 170 — apex of posterior tibia; 171 — last segment of maxillary palpus. Fig. 172. *H. picea* WATERH. — last segment of maxillary palpus

Holotrichia inelegans (LEWIS, 1895)

(Figs. 169—171)

Distribution. USSR — Primorskij Kraj (Tatjanovka, Kamen-Rybolov, Troickoje, Jakovlevka, Ussurijsk, vicinity of Chabarovsk, Nižn. Tambovskoje), Sachalin; Manchuria (Mukden), Japan — Hokkaido, Honshu, Kyushu (MEDVEDEV, 1951; KALININA, 1977).

Material examined. 1 ♀. Prov. Čhŏngdžin-si, Čhŏngdžin (11), 21 V 1974, at light, Z. STEBNICKA (ISEZ).

Remarks. This species has been probably reported from Korea by MURAYAMA (1954) as *H. kiotoensis* BRSKE, however, due to lack of the material I can not check this report. A detailed revision of the genus *Holotrichia* HOPE is desiderable, with reference to the materials from China and to the reports done previously by the Chinese (CHANG YOU-WEI, 1965) and Japanese authors.

Eotrichia titanis (REITTER, 1902)

(Figs. 159, 160)

Distribution. USSR — Primorskij Kraj (Černigovka, Kamen-Rybolov, Novo-Nikolskoje, Vorošilov-Ussurijskij, Ula-che and Tumen-ula rivers), Manchuria, Korea — Tegu (112), Suvŏn (92), Vando (120), Kjŏngsŏng (44), Vŏndžu (119), Kesŏng (56), Čhunčhŏn (8), Čhŏngdžu (12), Mengsan (69), Hamhyng (19), Sinyidžu (96), (MEDVEDEV, 1951; MURAYAMA, 1954; MEDVEDEV, 1974).

Material examined. 1 ♂ and 4 ♀♀. Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Kangsŏ (61), Thesŏng, 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngjang-si, Tesŏng-san (Mts, 124), 20 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Bionomics similar to that of *H. diomphalia* (BAT.). Beetles are evening-active, come to light. Larvae are enemies of cultivations.

Rutelinae

Rutelini

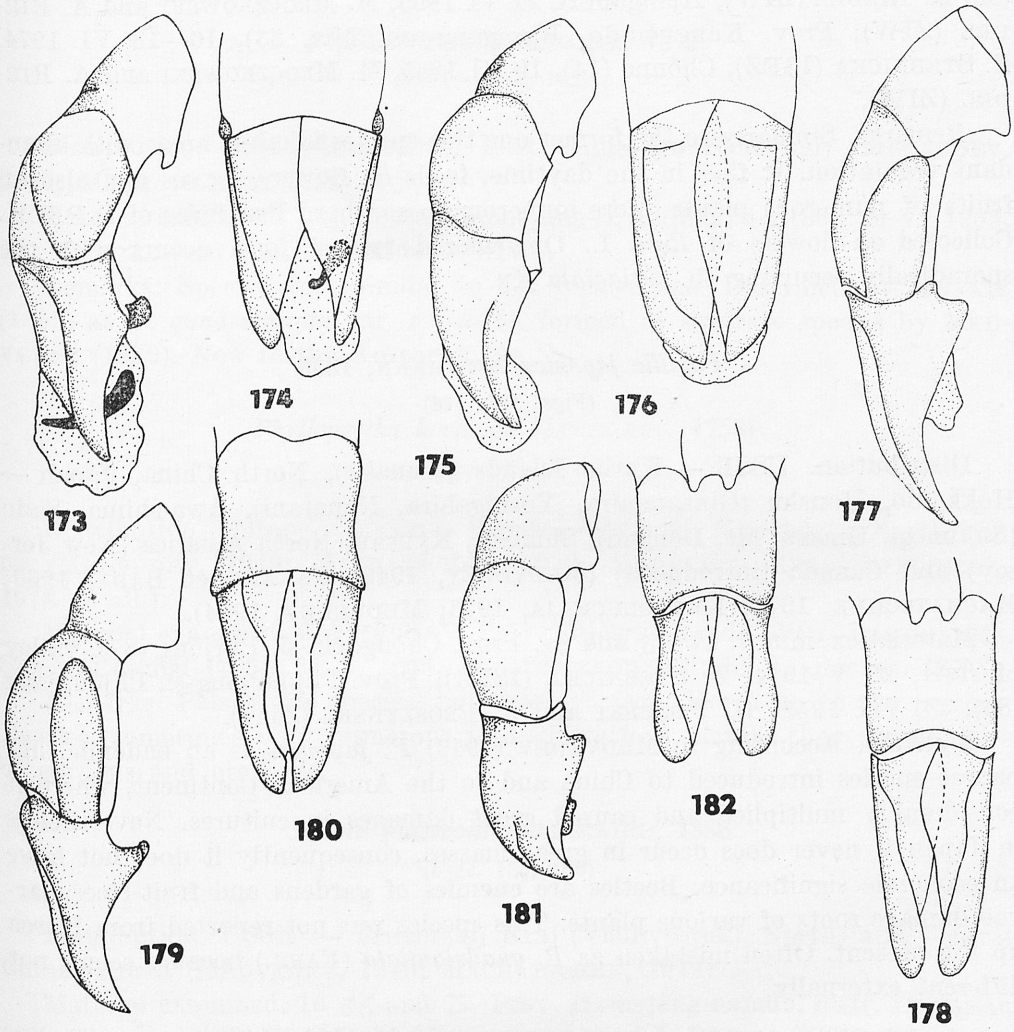
Popillia indigonacea MOTSCHULSKY, 1853

(Figs. 173, 174)

Distribution. USSR — Amur, Ussuri, Bureinskij Chrebet, Primorskij Kraj (Sedanka, Černigovka), Manchuria, East China, Korea, Japan — Ryu-kyu Isl.; Taiwan (MEDVEDEV, 1949; MACHATSCHKE, 1972; MEDVEDEV, 1974).

Material examined. 6 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 2 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Hamgjŏng-pukto, Kjŏngsŏng (44), 11 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW); Prov. Hamgjŏng-namdo, Pučhŏn (91), 2 VIII 1950 (ZIL); Prov. Janggang-do, distr. Hjesan (26), vicinity of the village Dŏngha-ri, 2 IX 1971, J. PAWŁOWSKI (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. Species widely spread but not numerous in D.P.R.K. Collected with *P. atrocoerulea* BAT. mainly in the flowers of *Rosa* L. According to MEDVEDEV (1974) this species is an enemy of cotton in China and Taiwan.



Figs. 173—182. Male genitalia, lateral and dorsal view; 173, 174 — *Popillia indigonacea* MOTSCH.; 175, 176 — *P. atrocoerulea* BAT.; 177, 178 — *P. japonica* NEWM.; 179, 180 — *P. quadriguttata* (FABR.); 181, 182 — *P. ruficollis* KR.

Popillia atrocoerulea BATES, 1888

(Figs. 175, 176)

Distribution. USSR — Primorskij Kraj (Chasan, Tumen-ula), North- and Central China, Taiwan, Korea — Vŏnsan (118) (MEDVEDEV, 1949; MACHATSCHKE, 1972; MEDVEDEV, 1974).

Material examined. 43 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Tesŏng-san (Mts, 124), 26 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), 22 VI 1965, M. Mroczkowski and A. Riedel (ZIW), Hjangam-ri, 21 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16—18 VI 1974, Z. Stebnicka (ISEZ), Čhŏnne (14), 10 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Similarly to the former one this species inhabits areas with abundant vegetation. It flies in the daytime, feeds on flowers, leaves and also on fruits of numerous plants. More numerous in southern Provinces of D.P.R.K. Collected on flowers of *Rosa* L. One-colored typical form occurs with the sporadically occurring ab. *biplagiata* Kr.

Popillia japonica Newmann, 1838

(Figs. 177, 178)

Distribution. USSR — Kurile Islands (Kunašir), North China, Japan — Hokkaido, Honshu (Ginzandaira, Yoshigahira, Nanatani), Awa-shima, Sado (Sukunegi, Umezu, Mt. Donden), Shikoku, Kyushu; North America (New Jersey) and Canada (introduced) (Medvedev, 1949; Nakane et Baba, 1960; Machatschke, 1972; Kryvoluckaja, 1973; Medvedev, 1974).

Material examined. 17 ♂♂ and ♀♀. Prov. Čhŏngdžin-si, Purjŏng (87), valley of river, 22 V 1974, Z. Stebnicka (ISEZ); Prov. Phjŏngjang-si, Phjŏngjang (86), 21 VII 1959, B. Pisarski and J. Prószyński (ZIW).

Remarks. According to Medvedev (1949) *P. japonica* is an endemic, Japanese species introduced to China and to the American Continent, where it considerably multiplied and caused great damages in cultures. Nevertheless in Japan it never does occur in great masses, consequently it does not have an economic significance. Beetles are enemies of gardens and fruit-trees, larvae damage roots of various plants. This species was not reported from Korea up the present. Often mistaken as *P. quadriguttata* (Fabr.) because seems not different externally.

Popillia quadriguttata (Fabricius, 1787)

(Figs. 179, 180)

Distribution. USSR — Primorskij Kraj (Chabarovsk), Manchuria (Harbin, Mukden), North China (Peking, Tianjin), Central China (Kansu), Korea, Taiwan, Vietnam (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974).

Material examined. 5 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Phjŏngjang-si, Phjŏngjang (86), 21 VII 1959, B. Pisarski and J. Prószyński (ZIW).

Remarks. This species occurs mainly in the river-valleys. Beetles are enemies of vegetable cultures (pulse plants, cabbage, potatoes), fruit-trees, rye, wheat and vineyards.

Popillia ruficollis KRAATZ, 1892

(Figs. 181, 182)

Distribution. South Manchuria, East China (to Shanghai) (MEDVEDEV, 1949; MACHATSCHKE, 1972).

Material examined. 1 ♂. Prov. Phjŏngjang-si, Phjŏngjang (86), 29 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Species very similar to the former one. Described by KRAATZ (1892) as *P. quadriguttata* var. *ruficollis*, formed as separate species by MEDVEDEV (1949). New to the Korean fauna.

Phyllopertha horticola (LINNAEUS, 1758)

(Figs. 183, 184)

Distribution. Europe, Caucasus, Siberia, Mongolia, Manchuria, North China (MEDVEDEV, 1949; MACHATSCHKE, 1972; MEDVEDEV, 1974; STEBNICKA, 1978 et all.).

Material examined. 6 ♂♂ and ♀♀. Prov. Phjŏgan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Palaearctic species, not recorded from Korea up to the present. Beetles, sometimes very numerous feed on various plants; they are enemies of gardens and orchards.

Spilota plagicollis FAIRMAIRE, 1886

(Figs. 185, 186)

Distribution. USSR — Primorskij Kraj (Vladivostok), North- and Central China, Korea (MEDVEDEV, 1949; MACHATSCHKE, 1972).

Material examined. 16 ♂♂ and ♀♀. Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 18 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Mjohjang-san (Mts), valley Munsu-tong, 20 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. This species is a single representative of the genus *Spilota* BURM. and a typical element of the Manchurian fauna.

Proagopertha lucidula (FALDERMANN, 1835)

(Fig. 187)

Distribution. USSR — Ussuri, Primorskij Kraj (Chanka lake, Spassk), Manchuria (Mukden), North- and East China (MEDVEDEV, 1949; MACHATSCHKE, 1972; MEDVEDEV, 1974).

Material examined. 7 ♀♀. Prov. Phjŏngjang-si, Tesŏng-san (Mts, 124), 23 VI 1965, M. Mroczkowski and A. Riedel (ZIW), Phjŏngjang (86), 24 V 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Jongsŏng (41), Maram, 29 V 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-ri, 27 V 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), Onpho-ri (77), 3 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Beetles feed on leaves of apple-trees and other fruit-trees in orchards. They also occur in forest clearings on flowers, especially *Rosa davurica* Pall. Species new to the Korean fauna.

Mimela splendens (Gyllenhal in Schönheer, 1817)

(Figs. 188, 189)

Distribution. USSR — Primorskij Kraj (Vladivostok), East China, Korea — Čedžu-do (Isl., 3), Japan — Honshu (Tochigi: Ootawara; Saitama-Tokorazawa, Hannô; Tokyo: Meguro, Kunitachi, Murayama; Kanagawa: Noborito; Niigata: Kurokawa, Imakawa, Shibata, Niigata; Shizuoka: Ohdaru spa; Aichi: Toyohashi; Gifu; Mie: Mt. Fujiwara, Iga, Yunoyama; Kyoto: Kyoto, Yamazaki; Osaka: Minoo; Hyogo: Hyonosen; Wakayama: Kanaya), Sado (Ogura-toge), Shikoku (Tokushima: Kamiryo; Ehime: Imabari, Mt. Ishizuchi), Kyushu (Fukuoka: Mt. Hikosan; Oita: Beppu; Kumamoto: Mt. Ichifusa; Kagoshima: Kurino spa, Kagoshima); Taiwan (Chiahsien, Fengshan, Suisharyo, Kangkou, Lienhwachi, Qixinsha, Puli, Nanshanchi), Indochina (Burma) (Medvedev, 1949; Nakane et Baba, 1960; Machatschke, 1972; Nomura et Kobayashi, 1976).

Material examined. 2 ♂♂. Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, vicinity of the salt lake, 18 VI 1974, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, Sujang-san (Mt., 121) vicinity of the water-fall, 3 VI 1974, Z. Stebnicka (ISEZ).

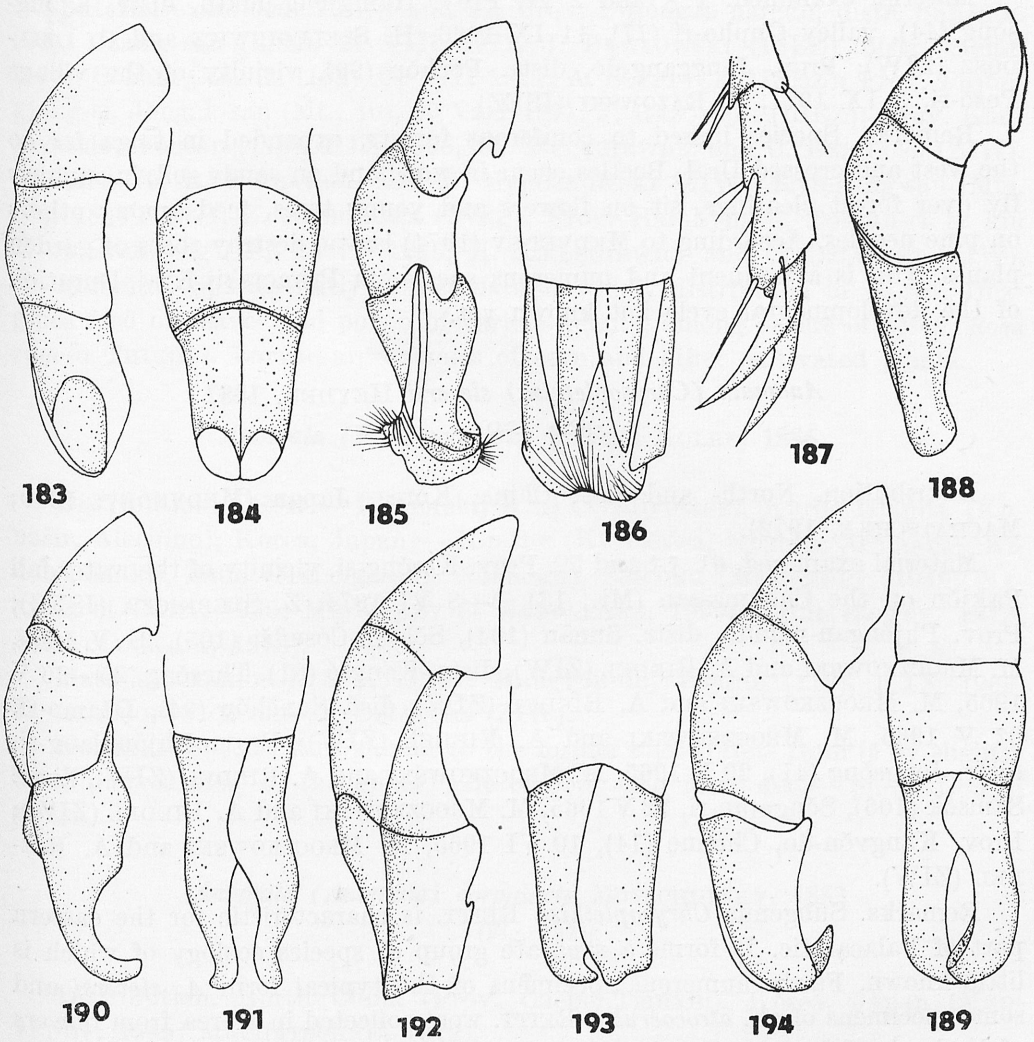
Mimela chinensis Kirby, 1823

(Figs. 190, 191)

Distribution. East China, Korea (Medvedev, 1949; Machatschke, 1972).

Material examined. 1 ♂ and 1 ♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, Z. Stebnicka (ISEZ).

Remarks. Bionomics of the species of the genus *Mimela* Kirby is little known; beetles fly in the daytime, feed on various plants. Both species were collected in the vicinity of waters in leafy brushwood.



Figs. 183—186. Male genitalia, lateral and dorsal view; 183, 184 — *Phyllopertha horticola* (L.); 185, 186 — *Spilota plagicollis* FAIRM.

Fig. 187. *Proagopertha lucidula* (FALD.) — last segment and claws of posterior tarsus. Figs. 188—194. Male genitalia, lateral and dorsal view; 188, 189 — *Mimela splendens* (GYLL.); 190, 191 — *M. chinensis* KIRBY; 192, 193 — *Rhombonyx holosericea* (FABR.); 194 — *Anomala (Chrysoplethisa) sieversi* HEYD.

Rhombonyx holosericea (FABRICIUS, 1787)

(Figs. 192, 193)

Distribution. European part of USSR to South Siberia, Amur, Primorskij Kraj, Sachalin; Mongolia, North China, Manchuria, Korea, Japan (MEDVEDEV, 1949; MACHATSCHKE, 1972; MEDVEDEV, 1974).

Material examined. 1 ♂ and 2 ♀♀. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 11 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW); Prov. Janggang-do, distr. Počhŏn (90), vicinity of the village Posŏ-ri, 3 IX 1971, J. RAZOWSKI (ISEZ).

Remarks. Species linked to coniferous forests, expanded in taiga far to the west and crossed Ural. Beetles occur in woodland on sandy soil, in summer fly over forest clearings, sit on flowers and young trees, feed among others on pine needles. According to MEDVEDEV (1974) larvae destroy roots of garden plants. This is a frequent and numerous species in Primorskij Kraj. Duration of the developmental cycle not known yet.

Anomala (Chrysoplethisa) sieversi HEYDEN, 1887

(Fig. 194)

Distribution. North- and East China, Korea, Japan (MEDVEDEV, 1949; MACHATSCHKE, 1972).

Material examined. 61 ♂♂ and ♀♀. Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 5—8 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Kangsŏ (61), Thesŏng, 25—26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), dist. Sunčhŏn (94), Džamo-ri, 27 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngjang-si, distr. Jongsŏng (41), 29 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Samsŏk (106), Sŏngmun-ri, 22 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kangvŏn-do, Čhŏnne (14), 10 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Subgenus *Chrysoplethisa* REITT. is characteristic for the eastern part of Palaearctic. It forms a separate group of species ecology of which is little known. Fairly numerous specimens of the typical form *A. sieversi* and some specimens of ab. *atrocoerulea* REITT. were collected in Korea from flowers of bushes and herbaceous plants on sunny days in May and June. Similarly as other species of genus *Anomala* SAM., they probably feed on leaves and flowers of various plants, including cultivated ones.

Anomala (Euchronomala) cuprea (HOPE, 1839)

(Figs. 195, 196)

Distribution. USSR — Primorskij Kraj (Vladivostok), Kurile Islands (Alechino, Goriače Lake, Veslovskij Pen., Sernovodsk); North-Eastern China, Korea, Japan — Hokkaido Honshu (Kurokawa, Niigata, Hishizato), Sado (Matsugasaki, Mt. Donden), Shikoku, Kyushu (MEDVEDEV, 1949; NAKANE et BABA, 1960; MEDVEDEV et ERMOLENKO, 1969; MACHATSCHKE, 1972; KRYVOLUCKAJA, 1973; MEDVEDEV, 1974).

Material examined. 19 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-san (hills), 27 VIII 1971, J. Pawłowski (ISEZ), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 VIII 1971, A. Szeptycki (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 20 VIII 1971, J. Razowski (ISEZ); Prov. Kangvŏn-do, Vŏnsan (118), 1 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW), 20 IX 1970, R. Bielawski and M. Mroczkowski (ZIW), Kymgang-san (Mts, 53), 18 VI 1974, Z. Stebnicka (ISEZ); Prov. Hamhyng-si, Tŏksan-ri 12 km N of Hamhyng (19), 14 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW).

Remarks. Species fairly numerous and widely distributed in Korea. Imagines feed on leaves and pollen of various plants, among others of roses (*Rosa rugosa* Thunb.). Larvae are enemies of corn and other cultivated plants.

Anomala (Euchronomala) viridana Kolbe, 1886

Distribution. USSR — Primorskij Kraj (Vladivostok), Kurile Islands, (Kunašir, Alechino); Korea, Japan — Honshu (Kurokawa, Niigata, Araihama, Kinoto, Maki), Sado (Matsugasaki, Nakaoku), Shikoku (Medvedev, 1949; Nakane et Baba, 1960; Medvedev et Ermolenko, 1969; Machatschke, 1972; Kryvoluckaja, 1973).

Material examined. 5 ♀♀. Prov. Kangvŏn-do, Vŏnsan (118), 1 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW).

Remarks. Species very similar to the former one. Differs from it by slightly more mat surface of the upper side of body and more dense punctation of elytra.

Anomala (Anomala) corpulenta Motschulsky, 1853

(Fig. 197)

Distribution. North China (Prov. Chebei-Tianxin), Korea, Japan (Medvedev, 1949; Machatschke, 1972).

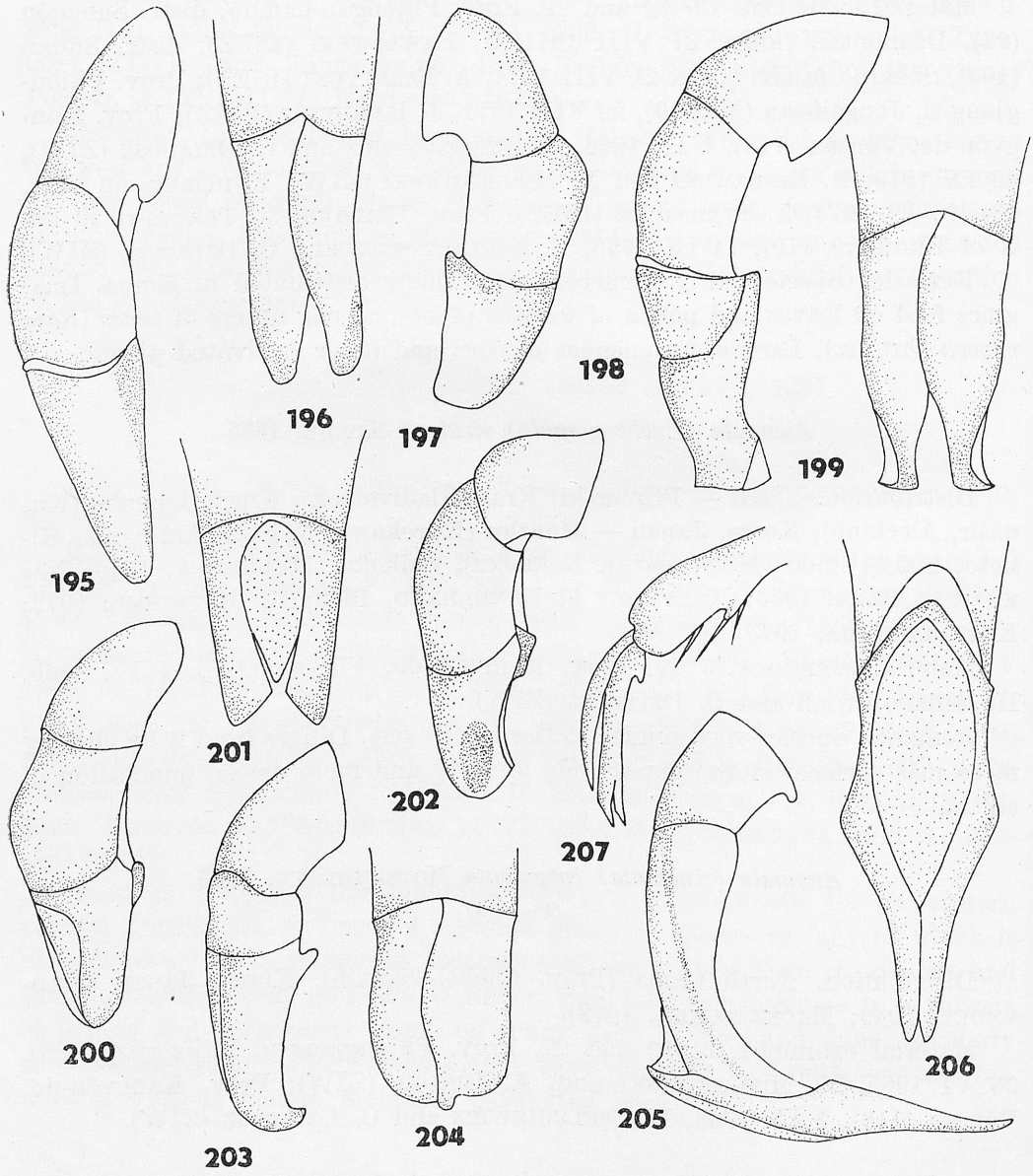
Material examined. 6 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Phjŏngjang (86), 26 VI 1965, M. Mroczkowski and. A. Riedel (ZIW); Prov. Kangvŏn-do, Vŏnsan (118), 1 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW).

Anomala (Anomala) luculenta Erichson, 1847

(Figs. 198, 199)

Distribution. USSR — Transbajkal Region, Amur, Primorskij Kraj; North China, Manchuria, Mongolia, Korea (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974; 1976).

Material examined. 11 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 2 IX 1970, R. Bielawski and M. Mroczkowski (ZIW), distr. Kangsŏ (61), Thesŏng, 24 VIII 1971, A. Szeptycki (ISEZ), distr.



Figs 195—206. Male genitalia, lateral and dorsal view; 195, 196 — *Anomala (Euchronomala) cuprea* (Hope); 197 — *A. (Anomala) corpulenta* Motsch.; 198, 199 — *A. (A.) luculenta* Er.; 200, 201 — *Blitopertha (Exomala) pallidipennis* Reitt.; 202 — *B. (E.) orientalis* (Waterh.); 203, 204 — *B. (Blitopertha) conspurcata* (Har.); 205, 206 — *Adoretus (Lepadoretus) sinicus* Burm. Fig. 207. *A. (L.) tenuimaculatus* Waterh. — last segment and claws of female anterior tarsus

Sunčhŏn (94), Džamo-san (hills), 27 VIII 1971, J. Pawłowski (ISEZ); Prov. Kangvŏn-do, Vŏnsan (118), 1 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW).

Remarks. Manchurian element, linked to sandy and halfsandy soils; penetrates toward west, probably along river valleys. Imagines and larvae are enemies of orchards. Beetles come to light.

Blitopertha (Exomala) pallidipennis Reitter, 1903

(Figs. 200, 201)

Distribution. USSR — Primorskij Kraj; Mongolia, Manchuria, North Korea (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974; 1976).

Material examined. 1 ♂ and 2 ♀♀. Prov. Kangvŏn-do, Vŏnsan (118), 14 VI 1974, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), 3 VIII 1959, B. Pisarski and J. Prószyński (ZIW).

Remarks. Manchurian element of a narrow range. Beetles occur on various bushes and herbaceous plants, feed on flowers and young leaves. Larvae are enemies of young forest cultures.

Blitopertha (Exomala) orientalis (Waterhouse, 1875)

(Fig. 202)

Distribution. Korea, Japan — Hokkaido (Hakodate), Honshu (Echigo: Kurokawa, Gokahama, Tanibama, Mt. Hishigatake, Ginzandaira, Yoshigahira), Sado (Suizu, Hatano, Mt. Donden, Aoneba-goe), Shikoku, Kyushu, Tsushima, Yakushima, Amami-Ôshima, Ogasawara, Niijima, Shikine, Kouzu, Hachijo, Torishima; Hawaiian Islands, North America (Medvedev, 1949; Nakane et Baba, 1960; Nomura, 1966; 1969; Machatschke, 1972; Medvedev, 1974).

Material examined. 6 ♂♂ and ♀♀. Prov. Hamgjŏng-pukto, valley of river Poro-čhŏn 20 km NW of Kjŏngsŏng (44), 4 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), 3 VIII 1959, B. Pisarski and J. Prószyński (ZIW).

Remarks. The collected specimens are uniformly black with opalescent lustre. Representatives of this species are enemies of vineyards and plantations of sugar cane.

Blitopertha (Blitopertha) conspurcata (Harold, 1878)

(Figs. 203, 204)

Distribution. USSR — South-Eastern Siberia (vicinity of Blagoveščensk), Primorskij Kraj (vicinity of Chanka Lake); North China, Korea, Japan — Honshu (Echigo: Kurokawa, Maramatsu-hama, Sasaguchi-hama, Kinoto) (Medvedev, 1949; Nakane et Baba, 1960; Machatschke, 1972).

Material examined. 134 ♂♂ and ♀♀. Prov. Kesŏng-si, Čhŏnma-san (Mt., 13), 6 VI 1974, Z. Stebnicka (ISEZ); Prov. Kangvŏn-do, Vŏnsan (118), 14 VI 1974, Z. Stebnicka (ISEZ), Čhŏnne (14), 10 VI 1965, M. Mroczkowski and A. Rie-

DEL (ZIW), Kymgang-san (Mts, 53), 16 VI 1974, Z. STEBNICKA (ISEZ); Prov. Hamhyng-si, Hyngnam (28), 16 VI 1965, 11 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 16—21 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngjang-si, distr. Jongsŏng (41), Maram, 19 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Numerous specimens of this species were collected from flowers of briar-rose; petales were nearly completely eaten. Similarly as other species of the same genus, occurs in great masses.

Adoretini

Adoretus (Lepadoretus) sinicus BURMEISTER, 1855

(Figs. 205, 206)

Distribution. China, Korea, Japan — Honshu (Tsuruga), Kyushu (Nagasaki), Miyako, Ishigaki, Iriomote, Heteruma, Yonaguni; Taiwan, Indochina, Hawaiian Islands (MEDVEDEV, 1949; NOMURA, 1965, 1966; 1970; MACHATSCHKE, 1972; MEDVEDEV, 1974).

Material examined. 143 ♂♂ and ♀♀. Prov. Phjŏngjang-si, distr. Jongsŏng (41), Maram, 29 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Samsŏk (106), village Sŏngmun-ri, 22 V 1965, M. MROCZKOWSKI and. A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, distr. Kangsŏ (61), Thesŏng, 19 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), distr. Sunčhŏn (94), Džamo-ri, 27 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Kangvŏn-do, Vŏnsan (118), 1 —2 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), Ungčin 25 km S of Vŏnsan (118), 18 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Munčhŏn (71) 12 km NW of Vŏnsan (118), 19 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Hvanghe-namdo, Sujang-san (Mt., 121) near Hedžu (18), 3 VI 1974, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 19 —20 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 25 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW); Prov. Hamhyng-si, Čojang (15) 15 km SW of Hamhyng (19), 25 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Kesŏng-si, Čhŏnma-san (Mt., 13), 8 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. The representatives of the subgenus *Lepadoretus* REITT. mainly inhabit the Oriental Realm; in Palaearctic occur only two species. Their bionomy is little known. According to MEDVEDEV (1949) they are active in the evenings and nights and are enemies of fruit-trees, roses and grape-vines. *A. sinicus* is fairly frequent and numerous in D.P.R.K, especially in southern Provinces. In the evenings comes to light, however, it was collected mainly during the day on various *Rosaceae*.

Adoretus (Lepadoretus) tenuimaculatus WATERHOUSE, **1875**

(Fig. 207)

Distribution. China, Korea Japan — Honshu (Echigo: Kurokawa, Sakasamaki, Mt. Kasuga), Sado (Kawaharada), Ryu-kyu Islands; Indochina (Burma, Vietnam), Java, Hawaiian Islands (MEDVEDEV, 1949; NAKANE et BABA, 1960; MACHATSCHKE, 1972; MEDVEDEV, 1974).

Material examined. 2 ♀♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 21 VIII 1971, at light of UV lamps, J. RAZOWSKI (ISEZ).

Remarks. According to MEDVEDEV (1949, 1974) this species similarly to the former one is an enemy of fruit-trees, roses and grape-vines. No numerous populations were found in D.P.R.K.

Cetoniinae

Goliathini

Rhomborrhina (Rhomborrhina) japonica HOPE, **1841**

(Figs. 209, 210)

Distribution. Central- and South China, Korea, Japan — Honshu (Shibata, Niigata, Mt. Yoneyama), Awa-shima, Sado (Sukunegi, Katabe, Kawamo, Mt. Donden, Ogura-toge, Suizu, Tassha, Matsugasaki), Shikoku, Kyushu, Tsushima, Ohshima, Niijima, Kouzu (NAKANE et BABA 1960; MEDVEDEV; 1964; NOMURA, 1969).

Material examined. 1 ♂ and 1 ♀. Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 5—8 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. Nothing is known of the bionomy of representatives of the genus. Korean specimens were collected in young forest, among bush-like shrubs including *Aceraceae (Kalopanax pictum)*.

Dicranocephalus adamsi PASCOE, **1863**

(Fig. 208)

Distribution. Tibet („Maenia"), China (Sichuan), South Korea („Kosan", „Hpouno-Soun-Ouen"), Indochina — Vietnam (Bao Lac) (MEDVEDEV, 1964).

Material examined. 1 ♀. Prov. Hvanghe-namdo, Sujang-san (Mt., 121), 3 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. Genus *Dicranocephalus* BURM., discussed by POUILLAUDE (1914), MEDVEDEV (1964), KUROSAWA (1968) and MIKŠIĆ (1971) contains 8 species both Palaearctic and Oriental ones. Bionomy of these species is not known; they are probably linked to woodland and occur rarely. One female specimen has been collected by the author on the southern slope of a mountain in the young leafy forest containing *Ginkgo biloba*, *Quercus dentata*, *Q. aliena*, *Kalopanax pictum* and *Fagus* sp. The specimen is carbon black, without a sign of creme or white coating. POUILLAUDE (1914) already reported the occurrence of females coloured similarly.

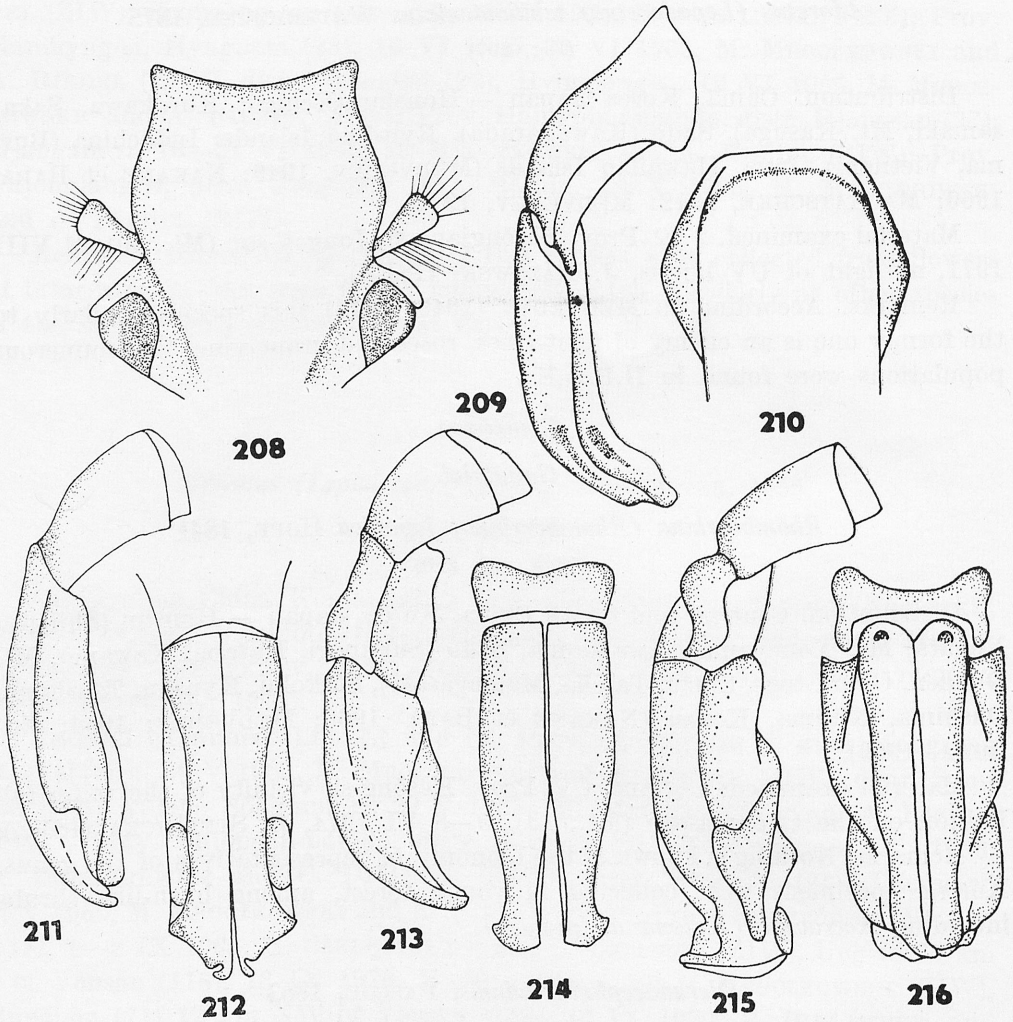


Fig. 208. *Dicranocephalus adamsi* PASC. — female head. Figs. 209, 210. *Rhomborrhina (Rhomborrhina) japonica* HOPE; 209 — male genitalia, lateral view; 210 — clypeus. Figs. 211—216. Male genitalia, lateral and dorsal view; 211, 212 — *Cetonia (Eucetonia) magnifica* BALL.; 213, 214 — *Potosia (Liocola) brevitarsis* (LEWIS); 215, 216 — *P. (Colopotosia) aerata* ER.

Cetoniini

Cetonia (Eucetonia) magnifica BALLION, 1870

(Figs. 211, 212)

Distribution. South-Eastern Siberia (Amur — Blagoveščensk, Bureinskij Chrebet, Primorskij Kraj), North- and East China, Korea (MEDVEDEV, 1964).

Material examined. 42 ♂♂ and ♀♀. Prov. Hvanghe-namdo, Sujang-san (Mt., 121), 2 VI 1974, Z. STEBNICKA (ISEZ); Prov. Kesŏng-si, vicinity of the

water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 5 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 24 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 29 V 1974, Z. STEBNICKA (ISEZ), distr. Jongsŏng (41), Maram, 29 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Tesŏng-san (Mts, 124), 23 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Janggang-do, distr. Hjesan (26), vicinity of the village Dŏngha-ri, 2 IX 1971, J. PAWŁOWSKI (ISEZ), distr. Počhŏn (90), valley of river Karim-čhŏn 5 km S from Počhŏnbo, 1 IX 1971, J. PAWŁOWSKI (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 16—18 VI 1974, Z. STEBNICKA (ISEZ); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 21 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Čhŏngdžin-si, mountain pass Musan-rjŏng in the mountain chain Hamgjŏng-sanmek, 2 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Hamhyng-si, distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-ri, 27 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Beetles occur in woodland, on large forest clearings and glades, in parks. They sit on flowers of various plants, in particular of *Spiraeoideae*, *Tamaricaceae* and *Caprifoliaceae*. Species widely spread in Korea, frequent but not numerous.

Potosia (Liocola) brevitarsis (LEWIS, 1879)

(Figs. 213, 214)

Distribution. USSR — Chabarovskij and Primorskij Kraj, Sachalin, Kurile Islands (Vlc. Mendelejev, Rejdovo, Kujbyševo); Mongolia, North-Eastern China, Taiwan, Korea, Japan — Hokkaido, Honshu (Kurokawa), Sado (Futami, Matuyama), Shikoku, Kyushu (NAKANE et BABA, 1960; MEDVEDEV, 1964; ENDRÖDI, 1971; KRYVOLUCKAJA, 1973; MEDVEDEV, 1974).

Material examined. 6 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Sunan (104), Sŏkam-Čŏsudži (105), 2 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), distr. Kangsŏ (61), Thesŏng, 13 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 25 VIII 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), Tesŏng-san (Mts, 124), 29 VIII 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Mankjŏngde, 31 VIII 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Hamhyng-si, distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW).

Remarks. Beetles are enemies of fruit-trees, maize and other cultivated plants. No numerous population found in D.P.R.K.

Potosia (Calopotosia) aerata (Erichson, 1834)

(Figs. 215, 216)

Distribution. USSR — Primorskij Kraj (Vladivostok); East China, Korea, Japan — Honshu, Kyushu (Medvedev, 1964).

Material examined. 2 ♂♂ and 1 ♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, Z. Stebnicka (ISEZ), distr. Jongsŏng (41), Maram, 29 V 1965, M. Mroczkowski and A. Riedel (ZIW).

Potosia (Potosia) famelica (Janson, 1879)

(Figs. 217, 218)

Distribution. USSR — Jevrejskaja A. O., Amur, Primorskij Kraj; East China, Korea (Medvedev, 1964).

Material examined. 1 ♂ and 1 ♀. Prov. Phjŏngjang-si, Jongak-san (Mt., 40), 29 V 1974, Z. Stebnicka (ISEZ); Prov. Kangvŏn-do, Samil-pho (123), vicinity of the lake, 19 VI 1974, J. Pawłowski (ISEZ).

Remarks. Species linked to leafy forests. According to Medvedev (1964) and Mikšić (1959) in the southern part of the range occurs subspecies *P. famelica scheini* Mikš., which inhabits a part of Eastern China and South Korea including Čedžu-do (Isl., 3).

Poecilophilides rusticola (Burmeister, 1842)

(Figs. 219, 220)

Distribution. USSR — Amur, Ussuri, Daurija, Primorskij Kraj; Mongolia, Korea, North- and Central China, Japan — Honshu (Niigata), Kyushu, Sado (Kanazawa) (Tesař, 1959; Nakane et Baba, 1960; Medvedev, 1964).

Material examined. 95 ♂♂ and ♀♀. Prov. Phjŏngjang-si, Tesŏng-san (Mts, 124), 22 VIII 1966, H. Szelęgiewicz and C. Dziadosz (ZIW), 29 VIII 1970, R. Bielawski and M. Mroczkowski (ZIW), 18 V 1974, Z. Stebnicka (ISEZ), distr. Samsŏk (106), Sŏngmun-ri, 22 V 1965, M. Mroczkowski and A. Riedel (ZIW).

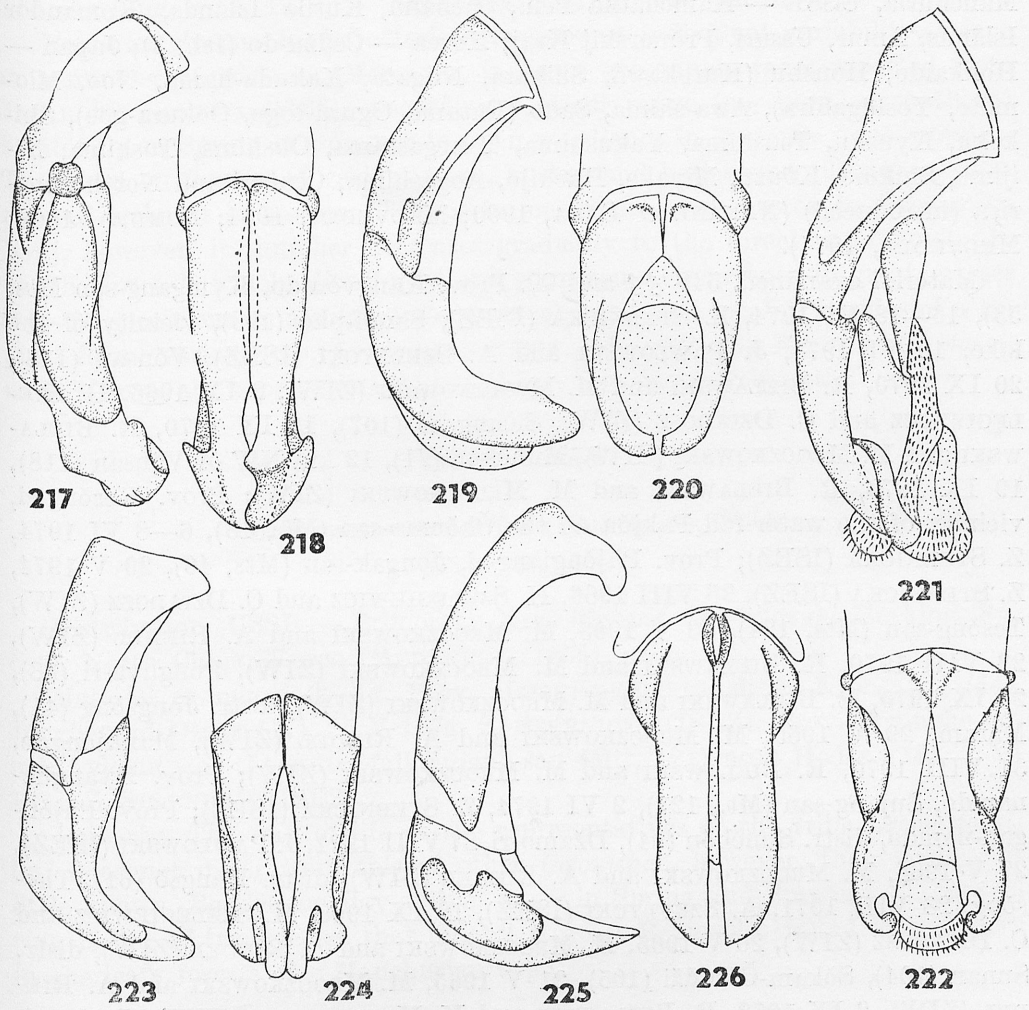
Remarks. Species linked to leafy forests of a Manchurian type. Beetles fly from April to the beginning of September in lowlands and in mountains (up to 1000 m above sea level). They stay on flowers of various plants, are also found under bark of leafy trees. According to Medvedev (1964) this species is frequent in Primorskij Kraj; very numerous locally in D.P.R.K.

Glycyphana (Glycyphana) fulvistemma (Motschulsky, 1860)

(Figs. 221, 222)

Distribution. USSR — East- and South Bajkal, Amur, Primorskij Kraj; Manchuria, North China, Korea, Japan — Honshu (Kurokawa); Taiwan (Nakane et Baba, 1960; Medvedev, 1964; Mikšić, 1970; Medvedev, 1974).

Material examined. 4 ♂♂ and ♀♀. Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-ri, 27 V 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Phjŏngjang-si, distr. Jongsŏng (41), 29 V 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27) valley Manphok-tong in the Mjohjang-san (Mts), 29 VI 1965, M. Mroczkowski and A. Riedel (ZIW).



Figs. 217—226. Male genitalia, lateral and dorsal view; 217, 218 — *Potosia (Potosia) famelica* (Jans.); 219, 220 — *Poecilophilides rusticola* (Burm.); 221, 222 — *Glycyphana (Glycyphana) fulvistemma* (Motsch.); 223, 224 — *Oxycetonia jucunda jucunda* (Fald.); 225, 226 — *Clinterocera mandarina* (Westw.)

Remarks. Manchurian species, occurs in woodland. Beetles fly from Spring to Autumn; feed on flowers of various plants, among others on fruit-trees. Numerous populations were not found in D.P.R.K.

Oxycetonia jucunda jucunda (FALDERMANN, 1835)

(Figs. 223, 224)

Distribution. North-and East India, Tibet, Nepal, North-and Central China, Manchuria, USSR — Kamchatka Pen., Sachalin, Kurile Islands, Komandor Islands, Amur, Ussuri, Primorskij Kraj; Korea — Čedžu-do (Isl., 3); Japan — Hokkaido, Honshu (Kurokawa, Shibata, Niigata, Kakuda-hama, Noo, Miomote, Yoshigahira), Awa-shima, Sado (Futami, Ogura-toge, Ookura-goe), Shikoku, Kyushu, Tsushima, Yakushima, Tanegashima, Ohshima, Toshima, Niijima, Shikine, Kouzu, Miyake, Hachijo, Aogashima; Central and North America (introduced) (NAKANE et BABA, 1960; MEDVEDEV, 1964; NOMURA, 1969; MEDVEDEV, 1974).

Material examined. 546 ♂♂ and ♀♀. Prov. Kangvŏn-do, Kymgang-san Mts, 53), 16—18 VI 1974, Z. STEBNICKA (ISEZ), Samil-pho (123), vicinity of the lake, 19 VI 1974, J. PAWŁOWSKI and A. SZEPTYCKI (ISEZ), Vŏnsan (118), 20 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), 2 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), Sičung-ho (107), 18 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Munčhŏn (71), 12 km NW of Vŏnsan (118), 19 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 6—8 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mts, 40), 29 V 1974, Z. STEBNICKA (ISEZ), 25 VIII 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), Tesŏng-san (Mts, 124), 23 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 28 VIII 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Ponghva-ri (88), 24 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), distr. Jongsŏng (41), Maram, 29 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), Mankjŏngde, 31 VIII 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Hvanghenamdo, Sujang-san (Mt., 121), 2 VI 1974, Z. STEBNICKA (ISEZ); Prov. Phjŏngan-namdo, distr. Sunčhŏn (94), Džamo-ri, 27 VIII 1971, J. PAWŁOWSKI (ISEZ), 27 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Kangsŏ (61), Thesŏng, 23 VIII 1971, A. SZEPTYCKI (ISEZ), 19 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), 26 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), distr. Sunan (104), Sŏkam-Čŏsudži (105), 21 V 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 2 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Junha-ri, 13 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Mjohjang-san (Mts), 24 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW); Prov. Janggang-do, distr. Hjesan (26), vicinity of the village Dŏngha-ri, 2 IX 1971, J. RAZOWSKI (ISEZ); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 23—24 V 1974, J. PAWŁOWSKI (ISEZ), 3 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW), 6 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW); Prov. Hamhyng-si, Čojang (15), 25 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW), Oro (78), 15 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), Tŏksan-ri, 14 IX 1966, H. SZELĘGIEWICZ and C. DZIADOSZ (ZIW), distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. MROCZKOWSKI and A. RIEDEL (ZIW); Prov.

Hamgjŏng-namdo, distr. Hongvŏn (30), Jŏnpong-ri, 8 VI 1965, M. Mroczkowski and A. Riedel (ZIW), distr. Hjangsan (27), Hjangam-ri, 21 VI 1965, M. Mroczkowski and A. Riedel (ZIW), Sangvŏn-am (109), 17 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Čhŏngdžin-si, distr. Purjŏng (87), Thomak-tong, 8 IX 1970, R Bielawski and M. Mroczkowski (ZIW).

Remarks. Species is characterised by a great individual variability. Occur in a number of variants. Moreover, it forms geographic races reported from Japan by Nomura (1966). According to their range (northern or southern) beetles fly in Spring or Summer in open woodland, in lowlands or mountains. They feed on flowers of various trees, bushes and herbaceous plants, are enemies of orchards in blosom. The species occurs in great masses in Primorskij Kraj, however, its number decreases gradually to the direction of north. In North Korea is widely distributed and numerous. Occurrence in great masses (10—20 specimens on a single inflorescence) was found locally. Besides of a typical form, variants ab. *ferruginosa* Reitt., ab. *vitticollis* Reitt., ab. *marginalis* Medv., ab. *kuperi* Schaum, ab. *dolens* Kr. occur frequently.

Cremastochilini

Clinterocera mandarina (Westwood, 1874)

(Figs. 225, 226)

Distribution. USSR — Primorskij Kraj (Spassk, Jakovlevka, Duškino, Sučan), North China, Korea (Medvedev, 1964).

Material examined. 2 ♂♂. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), Jonghen ad Džuyr (17), 25 V 1974, Z. Stebnicka (ISEZ); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (Mt., 121) near Hedžu (18), 3 VI 1974, Z. Stebnicka (ISEZ).

Remarks. The way of life of the representatives of the tribe *Cremastochilini* does not differ from this of other *Cetoniinae*, however, their ecology is little known. Beetles are day-active, occur in Spring and Summer. *C. mandarina* is one of two species that inhabit Korean Peninsula; found sporadically in the leafy forests of a Manchurian type.

Valginae

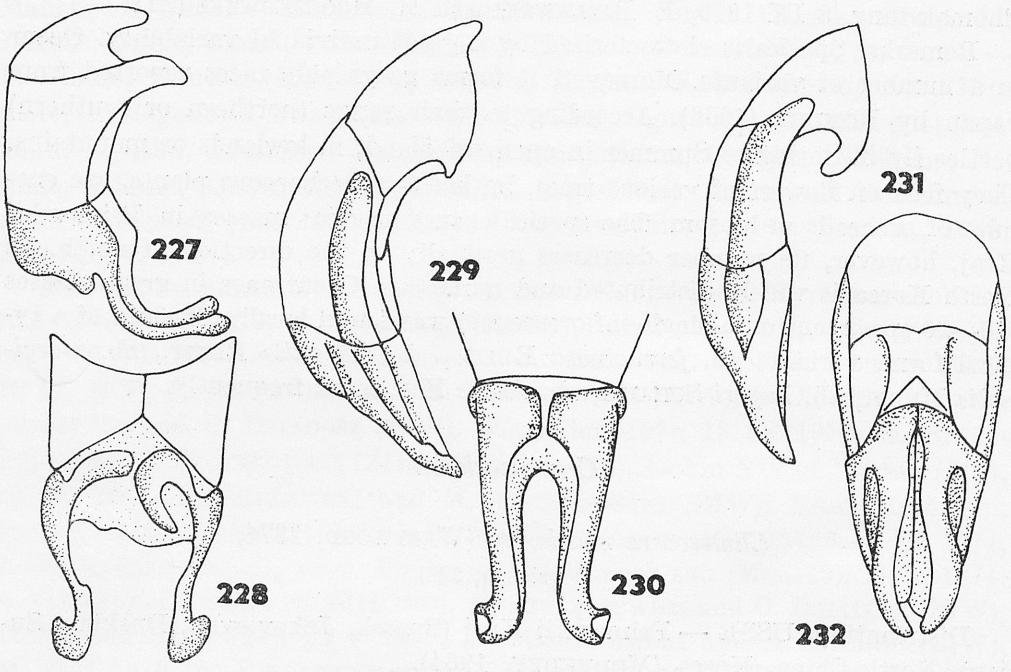
Dasyvalgus angusticollis (Waterhouse, 1875)

(Figs. 227, 228)

Distribution. Korea, Japan — Hokkaido, Honshu (Echigo: Kurokawa, Kuramitsu, Kamiishikawa, Meiji-mura, Miomote), Awa-shima, Sado (Matsugasaki, Nakaoku, Mt. Kinpoku), Shikoku, Kyushu, Tsushima, Yakushima, Tanegashima, Ohshima, Toshima, Niijima, Miyake (Nakane et Baba, 1960; Medvedev, 1964; Nomura, 1969).

Material examined. 6 ♂♂ and ♀♀. Prov. Kesŏng-si, vicinity of the waterfall Pakjŏn on the Čhŏnma-san (Mt., 13) 5—8 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. Beetles dendrophilic, fly during warm sunny days, occur on leaves and flowers of trees and bushes.



Figs. 227—232. Male genitalia, lateral and dorsal view; 227, 228 — *Dasyvalgus angusticollis* (WATERH.); 229, 230 — *Lasiotrichius succinctus* (PALL.); 231, 232 — *Gnorimus subopacus* MOTSCH.

Trichiinae

Trichiini

Lasiotrichius succinctus (PALLAS, 1781)

(Figs. 229, 230)

Distribution. USSR — Central- and East Siberia, Bajkal, Sachalin, Southern Kurile, Primorskij Kraj, North Mongolia, Manchuria, North- and East China, Korea, Japan — Honshu (Echigo: Renge-spa), Hokkaido, Shikoku, Kyushu, Ryu-kyu Islands (NAKANE et BABA, 1960; MEDVEDEV, 1960; TESAŘ 1968; ENDRÖDI, 1971; KRYVOLUCKAJA, 1973).

Material examined. 80 ♂♂ and ♀♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, Z. STEBNICKA (ISEZ), Samil-pho (123) vicinity of the lake, 19 VI 1974, J. PAWŁOWSKI (ISEZ), Masin-rjŏng, mountain pass, 34 km W of

Vŏnsan (118), 16 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (Mt., 121) near Hedžu (18), 3 VI 1974, Z. Stebnicka (ISEZ); Prov. Janggang-do , distr. Hjesan (26), Dŏngha-ri, 2 IX 1971, J. Pawłowski (ISEZ); Prov. Phjŏngjang-si, Jongak-san (Mts, 40) 29 V 1974, Z. Stebnicka (ISEZ); Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 7 VI 1974, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), valley Onpho-ri (77), 11 IX 1966, H. Szelęgiewicz and C. Dziadosz (ZIW), 5 IX 1970, R. Bielawski and M. Mroczkowski (ZIW), Džuyr (17), 7 IX 1970, R. Bielawski and M. Mroczkowski (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 22 VI 1965, M. Mroczkowski and A. Riedel (ZIW), Sangvŏn-am (109), 17 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Hamhyng-si, distr. Hamdžu (29), Hyngpong-ri, 12 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. East-Siberian species, occurs in lowlands and mountains, in leafy and coniferous forests. Beetles are active from Spring to early Autumn, feed on flowers of herbaceous plants, trees and bushes. Species frequent and numerous in D.P.R.K., found mainly on large inflorescences of *Rosaceae* and *Caprifoliaceae*.

Gnorimus subopacus Motschulsky, 1860

(Figs. 231, 232)

Distribution. USSR — Amur, Ussuri, Primorskij Kraj, Sachalin, Kurile Islands (Kunašir); North-Eastern China, Manchuria, Korea, Japan (Medvedev, 1960; Medvedev et Ermolenko, 1969; Kryvoluckaja, 1973).

Material examined. 2 ♂♂. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 16 VI 1974, Z. Stebnicka (ISEZ); Prov. Hamgjŏng-pukto, Nadžin (74), 5 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Manchurian species, linked to leafy and mixed forests. Beetles are active in Summer, feed on flowers of bushes and herbaceous plants. The Korean specimens have been collected on the flowers of *Magnoliaceae*.

Trogidae

Trox sabulosus (Linnaeus, 1758)

(Fig. 102)

Distribution. Europe, Caucasus, Siberia, Korea — Čedžu-do (Isl., 3) (Horion, 1958 et all.).

Material examined. 1 ♂. Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Hjangam-ri, 18 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Lucanidae

Psalidoremus inclinatus (MOTSCHULSKY, 1857)

Distribution. Taiwan, Korea, Japan — Hokkaido, Honshu, Sado, Shikoku, Kyushu, Yakushima, Kuchinoerabu, Ohshima, Niijima, Kouzu, Miyake, Mikura (DIDIER et SÉGUY, 1952—1953; BENESH, 1960; NOMURA, 1965; 1966; NISHIO, 1970; NAKANE, 1977 — P. 27, Fig. 577).

Material examined. 1 ♀. Prov. Hamgjŏng-pukto, distr. Kjŏngsŏng (44), vicinity of Džuyr (17), 7 IX 1970, R. BIELAWSKI and M. MROCZKOWSKI (ZIW).

Macrodorcas rubrofemoratus (VOLLENHOVEN, 1865)

Distribution. USSR — Primorskij Kraj, Kurile Islands (Alechino); North- and Central China, Taiwan, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Amami-Ôshima (DIDIER et SÉGUY, 1952—1953; BENESH, 1960; NOMURA, 1966; NISHIO, 1970; KRYVOLUCKAJA, 1973; NAKANE, 1977 — Pl. 27, Fig. 579).

Material examined. 1 ♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 18 VI 1974, at light, Z. STEBNICKA and A. SZEPTYCKI (ISEZ).

Macrodorcas striatipennis MOTSCHULSKY, 1861

Distribution. USSR — Kurile Islands (Alechino, Malokurilsk), Manchuria, North China, Taiwan, Korea, Japan — Hokkaido, Honshu, Sado, Shikoku, Kyushu, Yakushima, Tanegashima, Tsushima (DIDIER et SÉGUY, 1952—1953; BENESH, 1960; NOMURA, 1969; KRYVOLUCKAJA, 1973; NAKANE, 1977 — Pl. 27, Figs. 584—586).

Material examined. 1 ♂. Prov. Kesŏng-si, vicinity of the water-fall Pakjŏn on the Čhŏnma-san (Mt., 13), 8 VI 1974, Z. STEBNICKA (ISEZ).

Serrognathus titanus (BOISDUVAL, 1835)

Distribution. Korea, Japan — Honshu, Shikoku, Kyushu, Yakushima, Nakanoshima, Ohshima, Toshima, Niijima, Iki; Taiwan, Central- and South China, East India, Assam, Indochina, Philippines, Sunda Islands (DIDIER et SÉGUY, 1952—1953; BENESH, 1960; NOMURA, 1965; 1966; 1969; NAKANE, 1977 — Pl. 27, Figs. 587, 588).

Material examined. 4 ♂♂. Prov. Hvangde-namdo, Hedžu (18), 1 VI 1974, at light, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 18 VI 1974, at light, Z. STEBNICKA (ISEZ).

Dorcus hopei (SAUNDERS, 1854)

Distribution. Korea, Manchuria, North-, Central- and South China, Taiwan, Japan, Indochina (DIDIER et SÉGUY, 1952—1953; BENESH, 1960; NAKANE, 1977 — Pl. 28, Figs. 600, 601).

Material examined. 1 ♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 19 VI 1974, at light Z. STEBNICKA and A. SZEPTYCKI (ISEZ).

Dorcus montivagus (LEWIS, 1883)

Distribution. North China, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Ohshima (DIDIER et SÉGUY, 1952—1953; BENESH, 1960; NOMURA 1969; NAKANE, 1977 — Pl. 28, Figs. 602, 603).

Material examined. 1 ♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 18 VI 1974, at light, Z. STEBNICKA and A. SZEPTYCKI (ISEZ).

Institute of Systematic and Experimental Zoology
Polish Academy of Sciences,
Sławkowska 17, 31-016 Kraków, Poland

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STRESZCZENIE

Autorka przedstawia rewizję systematyczno-faunistyczną obejmującą *Scarabaeoidea* Koreańskiej Republiki Ludowo-Demokratycznej, z uwzględnieniem danych bibliograficznych dotyczących całego Półwyspu Koreańskiego. Praca została zrealizowana na podstawie materiałów zebranych przez uczestników sześciu ekspedycji zoologicznych Polskiej Akademii Nauk, które w latach 1959—1974 prowadziły badania w Koreańskiej Republice Ludowo-Demokratycznej. Duża część okazów została zebrana osobiście przez autorkę podczas szóstej „krakowskiej" ekspedycji w 1974 roku. Część szczegółowa opracowania zawiera systematyczny przegląd gatunków, wzbogacony rysunkami aparatów kopulacyjnych, oraz redeskrypcje gatunków mało znanych i rzadkich. W omówieniu poszczególnych gatunków zamieszczono odnośne pozycje literatury systematycznej, ważniejsze pozycje literatury faunistycznej, dane o bionomii i ogólnym rozsiedleniu oraz własne komentarze autorki i stanowiska zbadanych okazów. Z ogólnej liczby 224 gatunków wykazanych z Półwyspu Koreańskiego, omówiono w niniejszym opracowaniu 138, w tym 29 nowych dla Korei i jeden nowy dla nauki. Wszystkie gatunki z uwzględnieniem ich rozsiedlenia zestawione są w tabeli. Stanowiska z Korei wykazane w tekście (łącznie ze stanowiskami podawanymi w cytowanej literaturze) zostały oznaczone liczbami i naniesione na mapę schematyczną Półwyspu Koreańskiego według załączonego indeksu. Nazwy geograficzne, podawane w literaturze w języku japońskim zostały przez autorkę transkrybowane w alfabecie łacińskim przy użyciu transliteracji międzynarodowej; pisownia większości tych nazw, wymawianych w języku japońskim, została włączona do indeksu.

Całość opracowania uzupełnia szczegółowa synteza zoogeograficzna, dokonana w oparciu o metodę statystyczną, obejmująca *Scarabaeoidea* Dalekiego Wschodu i nawiązująca do historii trzeciorzędu i czwartorzędu tego obszaru.

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