University of Minnesota
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The Coccinellidae (Ladybird Beetles) of Minnesota (Coleoptera)

Wm. C. Stehr
Division of Entomology and Economic Zoology

UNIVERSITY FARM, ST. PAUL

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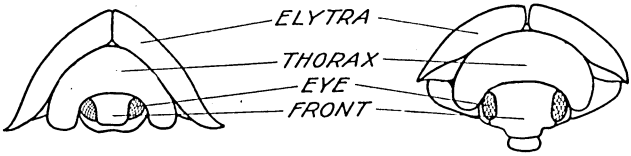


FIG. I. Front view of Chilocorus to show front extending before eyes.

FIG. II. Front view of Hippodamia to show front not extending before eyes

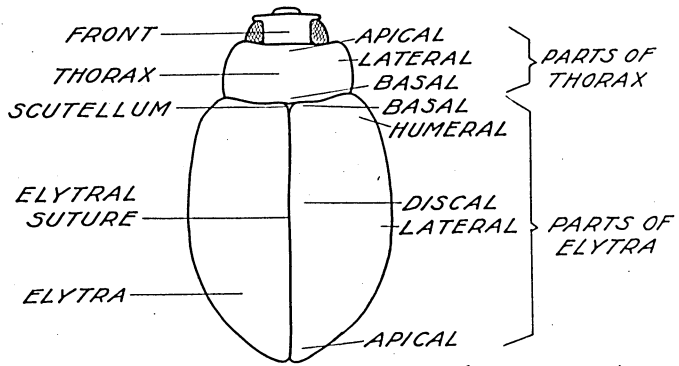
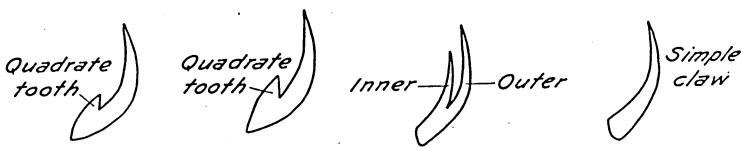


FIG. III. Dorsal view of a Coccinellid (Hippodamia) to show parts of the thorax and elytra.



A. Claw of Coccinella

B. Claw of Chilocorus

C. Claw of Neomysia

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FIG. IV. Diagrams of the Claws of Coccinellids.

THE COCCINELLIDAE (LADYBIRD BEETLES) OF MINNESOTA

WM. C. STEHR

BIOLOGY AND CHARACTERISTICS

The *Coccinellidae,* commonly known as ladybird beetles or lady "bugs," have long been of interest because of their habits, both beneficial and destructive, and because of their attractive coloration. Many references to them occur in the literature and folklore of medieval times. In Scandinavia the number of spots on the wing covers was believed to indicate whether the prices of grain would be high or low. If there were more than seven spots the price would be low and if less than seven the price would be high. In Germany, France, and England girls would catch beetles and allow them to fly from their hands; the direction they took was believed to indicate the direction from which their lovers would come.

There are many references to their beneficial nature, and the esteem in which they were held by earlier generations is still reflected in the common names applied to them in some of the European countries today. In France they are called "les bêtes du bon Dieu" (the creatures of the good God) and "les vâches de la Vierge" (cows of the Virgin); and in Germany they are often called "Marienkäfer" (Mary's beetles).

There are upward of 1,500 species of *Coccinellidae* in the world, about 300 in the United States, and of these probably 50 species occur in Minnesota. By far the greater number of species are beneficial to mankind, and, fortunately, all found in Minnesota belong to this group. In general the tribe *Epilachninae* are plant feeders and thus are economic pests. Only two species of any importance in the latter group are found in the United States.

One of these, the Mexican bean beetle, *Epilachna corrupta,* ranks as a major pest in our southern states. It appeared in the semi-arid region of Arizona, New Mexico, Colorado, and western Texas about 1864 and for many years was confined to that region. Its original home was probably in southern Mexico or in Central America. It attacks leguminous crops, especially beans, and causes great economic loss to the growers by destroying the leaves of the plants. In 1920 it was accidentally introduced into the region near Birmingham, Alabama, and since then has spread very rapidly throughout the southeastern and eastern states. In 1928 it had reached Pennsylvania, New York, Ohio, Indiana, Michigan, Kentucky, Tennessee, Mississippi, and all states nearer to Alabama. There are also several records from the

Province of Ontario, Canada. Today the majority of the states east of the Mississippi River have to cope with this pest, which very often entirely destroys the bean crop in certain districts. Soybeans are especially injured by it. How far this pest will spread is not known, for each year sees further advances to the north and west. Only Illinois and Wisconsin are between its northern limits and Minnesota today. Dusting or spraying with arsenicals is the most effective control, but the arsenical dust or spray must lodge on the under side of the leaves, for the beetles eat only the under surface and internal tissues of the leaves, leaving the tough upper epidermis untouched.

The other species, *Epilachna borealis,* feeds on cucurbits. It is not, however, the serious pest that the Mexican bean beetle has become.

The other *Epilachninae* are mainly tropical species and the chances of their establishment in Minnesota are small. There are many species in Mexico and South America but most of them feed on native plants, especially of the family *Solanaceae.* In southern Europe and Asia, *Epilachna chrysomelina* is a serious pest, and in Australia *Epilachna 28-punctata* causes much damage each year.

But the *Epilachninae* are the aberrant group of the family and the others are, in general, among the best insect friends of the farmer, fruit grower, and nurseryman. The other groups feed mainly on plant lice, scale insects, eggs and larvae of other insects, and on pollen of plants and spores of fungi.

S. A. Forbes (1883) examined the stomachs of 39 beetles and found the following percentages of food eaten:

37.....animal food (mainly aphids and scale insects)
45.....spores of fungi
4.....lichens
14.....pollen (mainly of grasses and weeds)

These are fairly erepresentative of the food of Minnesota species.

Wadley (1928), in a study of the ecology of the green bug, *Toxoptera graminum,* made some observations on the number of aphids destroyed by various Minnesota lady beetles. The following are some of his data:

Species	Stage in life	Grain aphids eaten
Coccinella 9-notata	Larva up to pupation	133
Coccinella 9-notata	Adult female per day	85
Coccinella 9-notata	Adult male per day	50
Coccinella transversoguttàta	Larva up to pupation	104
Hippodamia convergens	Larva up to pupation	124
Hippodamia convergens	Adult female per day	50-75
Hippodamia convergens	Adult male per day	30-40
Hippodamia 13-punctata	Adult beetle per day	30
Hippodamia parenthesis	Pair of adults per day	46

Wadley calculated hypothetically that a pair of *Coccinella 9-notata* Herbst would wipe out a colony of 1,000 grain aphids in less than a week.

Cutright (1924) gives similar data for *Hippodamia 13-punctata* (L) throughout its life.

Instar	Av. aphids destroyed	Maximum no.	Minimum no.
First	17	38	7
Second	16	31	5
Third	32	56	10
Fourth	55	82	25
Adult female	42 aphids per day.		
Adult male	20 aphids per day.		

It is difficult to estimate how much benefit the lady beetles render in the control of plant lice, but it is certain that unless the outbreak gets very severe, they exert a great limiting influence upon their multiplication. Many cases are on record of outbreaks on apple trees, grains, and vegetables that have been efficiently controlled by some of the common lady beetles.

Aphids are the most common food of the Minnesota lady beetles. Some, as *Hyperaspis binotata* (Say), feed on scale insects. A few years ago the young pines at Lake Vadnais, St. Paul, were badly infested with scale insects. In the summer of 1929 *Hyperaspis binotata* (Say), a little black beetle with a red spot on each wing cover, became very numerous and in the unsprayed portion of the plantation was very effective in diminishing the number of scales. L. W. Orr reported the same beetle at work on scales in Hubbard County the same year. Since food was plentiful, the beetles multiplied rapidly and by midsummer thousands of larvae were busily devouring scales. The larvae attack the young scales and eggs under the old females. They take a position near the females and then insert their heads under the bodies of the scales and start feeding on the young and eggs. They bite into the young scale and suck out the body fluids, then puff up the body of the scale several times as if they were blowing up balloons. This is probably a means of loosening the soft internal parts of the scale from the exoskeleton. Finally the body is sucked dry and the hard outer body covering cast away. Larvae observed by Mr. Orr and the author ate an average of one young scale each 2½ minutes.

Speaking of the same species, Simanton (1916) says: "One of the most effective enemies of the Lecanium scales is the coccinellid beetle, *Hyperaspis binotata* (Say). . . . Throughout the spring and early summer the larvae, conspicuous by their flocculent covering, could be found in large numbers feeding upon immature scales and over-turning the adult scales. The adult beetles do not feed upon the mature scales,

but they destroy the young and also attack aphids and other soft-bodied insects."

J. B. Smith (1904) reports the same species as "reducing an infestation of *Pulvinaria* spp. at Montclair, N. J., from 500 to 1,000 scales per leaf to about one dozen scales per leaf."

In California the lady beetles have been used more than anywhere else in the control of pests of orchard and field crops. The story of the introduction of foreign species of lady beetles to control the dreaded citrus scale is one of the most interesting chapters in the history of biological control.

In 1868 the fluted, or cottony, cushion scale, *Icerya purchasi* Maskell, was introduced into California at Menlo Park, near San Francisco, on some orange trees from Australia. By 1880 it had spread to all the orange districts of California and its injuries to the trees were so severe as to threaten the orange industry of the state with destruction. In 1888 Mr. Albert Koebele was sent to Australia by the United States Department of Agriculture and made a careful search for enemies of this dangerous scale. He found a little black-and-red lady beetle, *Rodolia cardinalis* (Mulsant), feeding on this scale in Australia. He collected and shipped about 500 specimens to the United States in five shipments. These arrived safely and were liberated at various points. They readily attacked the scales in California, multiplied rapidly, and in a few years brought the cottony cushion scale under complete control. Since that time the United States and the California experiment stations have reared this little beetle so as to have it ready to liberate in case of any further outbreaks of the dreaded scales. No great damage has been done since by the scales, and the orange industry was saved in California.

Success with this beetle led to further investigations of control of pests by lady beetles. *Cryptolaemus montrouzieri* Mulsant was a species introduced to control the citrus mealy bug. Essig (1900) speaks of its work as follows: "At the present time the insect is doing excellent work. It has practically cleaned up large areas of infested orchards."

Three other species have been used in the control of the citrus mealy bug, namely: *Rhizobius ventralis* (Erichson), *Rhizobius lophanta,* and *Scymnus guttulatus* Leconte. *Rhizobius ventralis* (Erichson) and *Orcus chalybeus* (Boisduval) have both been introduced to combat the black olive scale and their work has been quite effective. None of the later introductions has been as thoro or complete in its control as the first one to control the cottony cushion scale, but all have been of great benefit and well worth the cost.

Some of the native lady beetles are just as important, however, especially to the truck farmer. Each year in California about 30 tons of

these native beetles are distributed to various parts of the state to aid in the control of aphids and other pests on truck crops.

It is possible to get such large numbers because of the curious habits of these beetles during their period of hibernation. They assemble in great numbers high on the mountain slopes, almost to the snow line, and there crawl under stones and other debris and spend the winter. They are gathered by government and state employees from these places and then sent to all parts of the state to do their work. *Hippodamia convergens* Guerin, which is one of the most common in Minnesota, also, is the principal species thus used. Why these insects seek these high altitudes for hibernation is not known. Some authors think it may be to get a more equitable temperature, but this has not been proved. There are records of assemblages on the snow itself, where the beetles were so numerous as to give the snow a reddish sheen.

In addition to attacking plant lice and scale insects, the lady beetles attack many other species of insects. C. V. Riley (1891) reports *Megilla maculata* (DeGeer) as feeding on the eggs, larvae, and pupae of *Lina scripta,* a leaf-eating beetle. This was probably *Ceratomegilla fuscilabris* (Mulsant), as *Megilla maculata* (DeGeer) is now considered a tropical species only. The same author (1870) reports that *Ceratomegilla fuscilabris* attacked chinch bugs and the eggs of the Colorado potato beetle as well. He also reports that *Cycloneda munda* (Say) and two species of *Scymnus* attack the chinch bug.

Quayle (1912) reports that *Stethorus picipes* Casey feeds on the red spider and is about as effective in this respect as are other species in aphid control.

Swezey (1905) reports that three species, *Callineda testudinaria* Mulsant, *Coccinella repanda* Thunberg, and *Verania frenata* Erichson, introduced into Hawaii, feed on sugar cane leaf-hoppers as well as on aphids.

There are many other records of the lady beetles attacking various insect pests, especially the eggs and larvae of many moths and beetles, including such forms as the European corn borer and the Mexican bean beetle.

There is one other group of foods, the vegetable foods, of the lady beetles which should be mentioned. Many of the species eat some pollen, mainly the pollen of grasses and weeds, and therefore can not been considered harmful. Still others eat the spores of certain fungi. There is not much known of the biology of these species so we do not know how beneficial is their action. It is certain that the destruction of these saprophytes is not harmful.

Lichtenstein (1917) reports from France that lady beetles of the genera *Thea, Vibidia,* and *Halyzia* feed to a large extent upon fungi of the genus *Phyllactinia.* Davidson (1921) reports that *Psyllobora taedata* Leconte attacks the rose mildew, *Sphaerotheca pannosa* Lev., and the apple powdery mildew, *Podosphaera oxyacantha* De Bary in California. Whether our native *Psyllobora 20-maculata* (Say) has the same habit is not known.

The family was named *Coccinellidae* by Linnaeus. The literal meaning of the name is "little ball or sphere," and is very appropriately chosen because of the very convex spherical form of the beetles. Britton (1914) gives a very good description and details of the life history, which help us in recognizing the family.

Britton says: "They are easily recognized by their convex elongated hemispherical shape, their three-jointed tarsi, and their usually conspicuous markings. Though some species are entirely black, most kinds are black with red or yellow spots, or red or yellow with black spots. The wing-covers of most species are smooth and shiny and the beetles are well able to fly from one plant to another. Our largest species is not over three-eighths of an inch long and the smallest measures less than one-twentieth of an inch.

"Though the immature stages of the various kinds of lady beetles differ somewhat, in general the eggs are oval, light yellow in color, and are laid in clusters, each egg being fastened by one end to the leaf or bark of the plant upon which its food insect lives. . . .

"The larvae of the lady beetles are alligator-shaped grubs, usually seen running around on foliage, especially if infested with plant lice, and are three-fourths of an inch or less in length, with prominent legs, and with body tapering backward, and often covered with warts or spines. Some species are nearly black, some gray, and others are spotted or checkered with bright colors. . . .

"When the larva is fully grown it fastens itself by its tail to a leaf, stem, or other convenient object, the larval skin pushes upward and forms a wad at the tail, and the insect changes to the pupa (or chrysalid) stage. . . . In this stage the insect only slightly resembles the adult and much less the larva. From the pupa the adults soon emerge, mate, and with certain species the females lay eggs for a second generation; most species of lady beetles, however, probably have only one generation each season. Some, perhaps most kinds, pass the winter as adult beetles; some kinds are found in houses and other buildings and some kinds hide under loose bark, stones, or wherever they can find shelter."

The preceding remarks, altho made with reference to the lady beetles of Connecticut, will apply to those of Minnesota as well, for most of the same species are commonly found in this state.

The data of the *Coccinellidae* of Minnesota on the following pages are compiled from the entomological collections of the University of Minnesota. Only those are included of which there are specimens from Minnesota in the collection of the University of Minnesota.

All specimens were examined with a binocular microscope and all were labelled and placed in the collections of the Entomology and Zoology departments of the University of Minnesota, where they are available for reference. A few specimens collected in 1930 are in the collection of the author and are available, also, for examination. He has given complete data for each specimen to facilitate reference and examination.

Of most species considerable numbers were available from Minnesota, but where only one or two specimens from the state are listed there are often ten or more specimens of the same species from other states in the collections. All were examined and used in making the determinations and comparisons. The specimens from other states bear determination labels. Table 1 lists the species and number of each examined.

Table 1

Specimens of Each Species Examined During the Course of This Study

Species	No. of Minnesota specimens	Total No. of specimens
Anisosticta bitriangularis Say	12	27
Macronaemia episcopalis (Kirby)	1	5*
Ceratomegilla fuscilabris (Mulsant)	126	163
Hippodamia 13-punctata (Linnaeus)	294	360
Hippodamia parenthesis (Say)	200	347
Hippodamia tridens Kirby	9	11
Hippodamia glacialis (Fabricius)	15	37
Hippodamia convergens Guerin	760	874
Hippodamia 5-signata (Kirby)	1	40
Coccinella perplexa Mulsant (males)	55	59
Coccinella perplexa Mulsant (females)	71	78
Coccinella tricuspis Kirby	20	22
Coccinella 9-notata Herbst	333	386
Coccinella transversoguttata Faldermann	196	316
Coccinella transversoguttata var. *nugatoria* Mulsant	9	22
Coccinella monticola Mulsant	2	10
Cycloneda munda (Say) (males)	48	64
Cycloneda munda (Say) (females)	115	121
Olla abdominalis (Say)	2	25
Adalia bipunctata (Linnaeus)	205	239
Adalia frigida (Schneider)	1	4
Adalia frigida var. *disjuncta* (Randall)	1	1

* Four specimens collected by John Moore, at Spearfish and Devil's Lake, So. Dak., and now in his personal collection.

Table 1—Continued

Specimens of Each Species Examined During the Course of This Study

Species	No. of Minnesota specimens	Total No. of specimens
Adalia frigida var. *humeralis* (Say)	10	15
Cleis picta (Randall)	5	56
Cleis picta var. *hudsonica* Casey	1	3
Anisocalvia 14-guttata (Linnaeus)	4	4
Anisocalvia 12-maculata (Gebler)	3	3
Anatis 15-punctata (Olivier)	33	68
Anatis 15-punctata var. *mali* (Say)	29	33
Neomysia pullata (Say)	3	17
Psyllobora 20-maculata (Say)	36	57
Chilocorus bivulnerus Mulsant	13	56
Exochomus (*Brumus*) *davisi* Leng	4	5
Hyperaspis bigeminata (Randall)	6	10
Hyperaspis binotata (Say)	53	86†
Hyperaspis proba (Say)	1	20
Hyperaspis fimbriolata Melsheimer	16	38
Hyperaspis disconotata Mulsant	2	2
Hyperaspis undulata (Say)	91	127
Brachyacantha ursina (Fabricius)	24	44
Brachyacantha 10-pustulata (Melsheimer)	29	53
Brachyacantha albifrons (Say)	2	10
Stethorus punctum (Leconte)	1	21
Scymnus fraternus Leconte	12	35
Scymnus haemorrhous Leconte	14	47
Scymnus consobrinus Leconte	1	1
Scymnus collaris Melsheimer	1	52
Scymnus tenebrosus Mulsant	7	39
Scymnus lacustris Leconte	18	38
Scymnus punctatus Melsheimer	1	1
Coccidula lepida Leconte	2	3

† More than 500 specimens in student material and nearly 1,000 liberated after rearing.

A field key of the Minnesota species has been included which, with the aid of the diagrams in Plate I, can be used to identify the species most likely to be collected in this state. Phylogenetic keys of the tribes, genera, and species found in Minnesota are added as aids for more exact determinations. In preparing these I have drawn heavily upon the works of Dr. Geo. Horn, Major T. L. Casey, Dr. W. L. Blatchley, and C. W. Leng, and acknowledge my indebtedness to their excellent works.

The synonymy given is not complete, but has been prepared for each species with the following aims in view: (1) To cite the source of the original description, (2) to note important changes in the synonymy, (3) to mention important papers on the taxonomy of the

species, especially those containing keys and complete descriptions. Under "Literature Cited," I have included only papers that have been specifically mentioned in the manuscript. Many of these contain excellent larger bibliographies.

For the opportunity to work with this group I am indebted to Dr. C. E. Mickel and the Department of Entomology of the University of Minnesota and I wish here to express my appreciation of their kindness and help. I also wish to thank Carl T. Schmidt and L. W. Orr for valuable notes and assistance.

SUMMARY

1. The *Coccinellidae* were well known to early peoples, as is evidenced by the superstitions, folklore, and common names that have come down to us.

2. The members of the tribe *Epilachninae* are plant feeders but none exist in Minnesota and only two species of importance occur in the United States.

3. By far the greater number of lady beetles prey on aphids, scale insects, and other noxious insects. They have been used advantageously in biological control of pests and should be protected and encouraged. Their value to the farmer, orchardist, florist, and gardener is enormous.

4. They are easily recognized by their shape, spots, and three-jointed tarsi.

5. A field key, figures, and phylogenetic keys have been included to facilitate identification of the Minnesota species.

6. The important points in the synonymy of each species and some of the important references to the species in the literature are given.

7. The collection data for all specimens from Minnesota in the collections of the University of Minnesota are given in full.

Many of the commoner species were examined in the field but were not taken for the collections.

Key to the Minnesota Species of Coccinellidae

This is a highly artificial key and will hold only for species included. An attempt has been made to avoid technical terms and characters requiring minute microscopic examination so that this key may be of service to the general collector as a field key. Keys of the tribes, genera, and species are included in the following pages and may be used for more exact determinations.

1		Elytra black with orange, yellow, or red spots or bars	2
		Elytra yellow, orange, or red with black spots or bars	18
2	(1)	Elytra glabrous (not hairy)	3
		Elytra pubescent (hairy); small forms	13

3 (2) Larger species, 4 mm. or over in length..... 4
Smaller species, less than 4 mm. in length..... 7
4 (3) Elytra black with a round red discal spot..... 5
Elytra black with yellow or orange spots..... 6
5 (4) Elytra black except for a round red discal spot, base of the antennae hidden by the frontal plate.....*Chilocorus bivulnerus* Mulsant
Elytra black with a round red discal spot, a rectangular marginal spot at the humeral angles, and a small apical spot; base of antennae not hidden.....*Adalia humeralis* (Say)
6 (4) Elytra black with seven round yellow spots on each.....
Anisocalvia 14-guttata (Linnaeus)
Elytra with five irregular orange spots on each. This species varies much in size but the spots cover most of the elytra.....
Brachyacantha ursina (Fabricius)
7 (3) Elytra with one red discal spot on each....*Hyperaspis binotata* (Say)
Elytra with yellow markings..... 8
8 (7) Elytra with a marginal yellow band, otherwise black.....
Hyperaspis fimbriolata Melsheimer
Elytra with yellow spots, or spots and band..... 9
9 (8) Elytra with three marginal yellow spots, may be confluent to a greater or lesser extent..... 10
Elytra without three marginal yellow spots..... 12
10 (9) Elytra with three marginal and one discal yellow spots..... 11
Elytra with three marginal, one discal, and one basal yellow spots....
Brachyacantha 10-pustulata (Melsheimer)
11 (10) Body broadly oval, discal spot round.....*Hyperaspis undulata* (Say)
Body elongate oval, discal spot elongate oval.....
Hyperaspis disconotata Mulsant
12 (9) Elytra with one apical spot.....*Hyperaspis bigeminata* (Randall)
Elytra with two apical spots and discal yellow spot.....
Hyperaspis proba (Say)
13 (2) Elytra with a round discal spot on each.....
Scymnus punctatus Melsheimer
Elytra with yellow spots or entirely black..... 14
14 (13) Elytra black; thorax black..... 15
Elytra with yellow apices; thorax entirely brown, or black with yellow margins 16
15 (14) Size less than 1.5 mm. .....*Stethorus punctum* (Leconte)
Size over 1.5 mm. .....*Scymnus tenebrosus* Mulsant
16 (14) Thorax brown or brownish yellow; narrow yellow apex on the elytra .....*Scymnus collaris* Melsheimer
Thorax with lateral yellow margins..... 17
17 (16) Apical third of the elytra yellow.....*Scymnus haemorrhus* Leconte
Very narrow yellow margin on the apex of the elytra.....
Scymnus fraternus Leconte
18 (1) Elytra with black spots or bars, or both..... 20
Elytra without markings 19
19 (18) Body oval; thorax black with apical and lateral margins and two oblique lines on the thorax pale.....
Hippodamia convergens Guerin variation
Body rounded and very convex; thorax black with lateral and apical

pale margins and with two coma-shaped extensions dorsally from the apical margin.....*Cycloneda munda* (Say)

20 (18) Elytra pubescent, orange with black basal bar extending half of the length of the lateral margin and common sutural spot in the middle of the elytra.....*Coccidula lepida* Leconte

Elytra glabrous 21

21 (20) Elytra with black spots only..... 22

Elytra with black bars or bars and spots..... 37

22 (21) Elytra with a common scutellar spot, sometimes small or faint..... 23

Elytra without a common scutellar spot..... 34

23 (22) Elytra with additional common spots..... 24

Elytra without additional common spots..... 25

24 (23) Elytra with one additional common spot on the apical third of the elytra; body oval; color dull red.....
Ceratomegilla fuscilabris (Mulsant)

Elytra with two additional common spots on the apical third of the elytra; body oval; color reddish orange.....
Anisocalvia 12-maculata (Gebler)

25 (23) Middle of the pronotum black with light markings joining the basal margin 26

Middle of the pronotum black with no light markings joining the basal margin 30

26 (25) Light markings of the pronotum large proportionately; body oval, size 3.5 mm. or less.....*Anisosticta bitriangularis* (Say)

Light markings of the pronotum relatively small..... 27

27 (26) Thorax with one light quadrate basal spot..... 28

Thorax with two light quadrate basal spots; seven black spots on each elytron 29

28 (27) With a humeral spot and a coma-shaped lunule on each elytron....
Hippodamia parenthesis (Say)

A humeral spot may or may not be present; a large triangular black spot on the apical portion of each elytron.....
Hippodamia tridens (Kirby)

29 (27) Spots on the elytra black.....*Anatis 15-punctata* (Olivier)

Black spots on the elytra surrounded by pale rings.....
Anatis 15-punctata var. *mali* (Say)

30 (25) Two converging oblique pale lines on the thorax..... 31

Middle portion of the pronotum black, no converging line present.... 32

31 (30) Six spots on each elytron, none joined..*Hippodamia convergens* Guerin

Six spots on each elytron, two large ones on the middle of each elytron joined.....*Hippodamia convergens* Guerin variation

32 (30) Six spots on each elytron.....*Hippodamia 13-punctata* (Linnaeus)

Less than six spots on each elytron..... 33

33 (32) Four spots on each elytron.....*Coccinella 9-notata* Herbst

Three spots on each elytron; one opposite the common scutellar spot, the others further posterior and placed somewhat transversely and slightly elongate, sometimes appear as short bars.....
Coccinella transversoguttata var. *nugatoria* Mulsant

34 (22) Reddish species 35

Yellowish species 36

35 (34) With one black discal spot on each elytron.....
Adalia bipunctata (Linnaeus)
With two black spots on each elytron.....*Adalia frigida* (Schneider)

36 (34) Larger species over 4 mm. in length; with eight black spots arranged in three rows on each elytron, four of the spots in the basal row, 3 in the medial, and one apical.....*Olla abdominalis* (Say)
Smaller species, less than 3 mm. in length, with nine black spots on each elytron .....*Psyllobora 20-maculata* (Say)

37 (21) Elytra with bars and spots..... 38
Elytra with bars only..... 46

38 (37) Elytra with transverse bars..... 39
Elytra with longitudinal bars..... 42

39 (38) With a transverse bar across the humeral or basal third of the elytra 40
With a common scutellar spot but no transverse bar in the humeral or basal region 41

40 (39) With a medial bar and an apical spot on the elytra.....
Hippodamia 5-signata (Kirby)
With short transverse medial and apical bars, might be called elongate spots in some specimens..*Coccinella transversoguttata* Faldermann

41 (39) With a transverse bar and an apical spot on the apical third of the elytra; a small humeral spot may be present.....
Hippodamia glacialis (Fabricius)
With two heavy transverse bars on each elytron.....
Coccinella monticola Mulsant

42 (38) With a heavy black bar extending the full length of the suture between the elytra 43
With bars in other positions or not extending the full length of the elytral suture 44

43 (42) Two large black spots on each elytron broadly joined to the sutural stripe; apical points of the elytra broadly black, front covers the base of the antennae.....*Exochomus* (*Brumus*) *davisi* Leng
Two black spots on each elytron narrowly joined to the sutural bar or stripe; apical points of the elytra narrowly tipped with black; bases of the antennae not hidden by the front.....
Brachyacantha albifrons (Say)

44 (42) Three longitudinal bars on each elytron. These may be somewhat broken or indistinct in pigmentation and appear as spots; thorax black with pale margins each including a black spot; size over 5 mm. .....*Neomysia pullata* (Say)
One longitudinal bar in the middle of each elytron connecting to various spots; thorax black spotted; size less than 5 mm..... 45

45 (44) Broad heavy bars in the middle of the elytra connected to a partial sutural bar and to several sutural spots and laterally to a median spot .....*Cleis picta* (Randall)
Narrow elytral bars with four enlargements formed by junction with four spots. Patterns of the two elytra never joined.....
Cleis hudsonica Casey

46 (37) With longitudinal bars only.....*Marconaemia episcopalis* (Kirby)
With transverse bars only..... 47

47 (46) Without a common basal bar but having two short transverse bars on each elytron.....*Adalia disjuncta* (Randall)
With a common transverse basal bar..... 48
48 (47) With two additional transverse bars on each elytron, the basal bar not dentate .....*Coccinella perplexa* Mulsant
With one additional transverse bar on the elytra, the basal bar tridentate anteriorly .....*Coccinella tricuspis* Kirby

Key to the Minnesota Tribes of Coccinellidae

(1) Middle coxae narrowly separated; body elongate-oval, glabrous; legs, long, free, the femora extending beyond the sides of the body; sixth segment of the abdomen visible in both sexes; head not deeply inserted; thorax strongly sinuate but not covering the eyes..... *Hippodamiini*
Middle coxae widely separated; legs shorter, the femora generally not extending beyond the sides of the body; head deeply inserted; the thorax covering a large portion of the eyes..... 2
2 (1) Front coxal cavities closed behind; eyes finely faceted..... 3
Front coxal cavities not closed behind; eyes coarsely faceted; body oblong-oval, pubescent; abdomen with six segments; antennae long, the club loose; length less than 3.5 mm. .....*Coccidulini*
3 (2) Body loosely jointed, generally rounded in form; epipleurae wide, concave, and strongly descending externally; length 4 mm. to 7.5 mm. except *Psyllobora* 4
Body compact, generally oval in form; epipleurae narrow, generally horizontal, flat, or feebly concave; length less than 4 mm. except a few *Brachyacantha*..... 7
4 (3) Frontal plate narrowed from the base, not covering the base of the antennae or subdividing the eyes..... 5
Frontal plate broadly dilated, concealing the base of the antennae and subdividing the eyes; upper surface glabrous; body rounded, very convex; legs free or feebly retractile.....*Chilocorini*
5 (4) Upper surface of the body glabrous..... 6
Upper surface of the body pubescent, antennae long with loosely articulate club; thorax deeply emarginate at the apex; mandibles bifid at the tips and denticulate within.....*Epilachnini*
6 (5) Body length 4 mm. to 7.5 mm.; antennae short with the last joint truncate .....*Coccinellini*
Body length 1.6 mm. to 2.5 mm.; antennae slender with the last joint elongate .....*Psylloborini*
7 (3) Abdomen composed of only five segments, the fifth triangular and longer than the second, third, and fourth combined; eyes entire; base of the antennae exposed; size minute.....*Oencini*
Abdomen with the sixth segment well-developed, the fifth segment shorter than the three preceding combined..... 8
8 (7) Body distinctly pubescent .....*Scymnini*
Body glabrous or apparently glabrous..... 9
9 (8) Body glabrous, oval; length over 1 mm. .....*Hyperaspini*
Body apparently glabrous, but finely pubescent as seen under high power; very convex and rounded; shining in appearance; length 0.8 mm. to 1.0 mm. .....*Microweiseini*

Tribe *Hippodamiini*

Key to the Minnesota Genera of *Hippodamiini*

1 Tarsal claws simple; length less than 3.5 mm. 2
Tarsal claws either with a large quadrate tooth at the base or bifid; length 4.5 mm. or over 3
2 (1) Body oval; elytra maculate and strongly punctate ..... *Anisosticta* Chevrolat
Body elongate; elytra vittate and finely punctate...*Macronaemia* Casey
3 (1) Claws with a large quadrate tooth at the base; thorax with a narrow but distinct margin along the base; elytra dull red ..... *Ceratomegilla* Crotch
Claws bifid, the two teeth unequal in length and acutely pointed; thorax not margined; elytra orange yellow .....*Hippodamia* Chevrolat

Genus *Anisosticta Chevrolat*

There is but one Minnesota species of the genus. Its color is pale yellow with small black spots on the thorax and elytra.

Anisosticta bitriangularis Say

1824 *Anisosticta bitriangularis* Say, Jour. Acad. Phil. iv:269
1873 *Anisosticta strigata,* Crotch, Trans. Am. Ent. Soc. iv:369
1899 *Anisosticta bitriangularis,* Casey, Jour. N. Y. Ent. Soc. vii:76
1903 *Anisosticta strigata,* Leng, Jour. N. Y. Ent. Soc. xi:37
1910 *Anisosticta strigata,* Blatchley, Coleoptera of Indiana
1920 *Anisosticta bitriangularis,* Leng, Catalog of Coleoptera

Specimens examined: 1 Minnesota (Lugger collection); 1 Lake Vermillion (Lugger Collection); 1 July 15, 1911, Chisago County; 1 August 22, 1922, Pelican Rapids (H. H. Knight); 1 May 29, 1920, Crystal Lake, Hennepin County; 1 June 14, 1921, Bussey's Pond, St. Paul (W. E. Hoffman); 1 June 21, 1921, St. Paul (W. E. Hoffman); 1 July 4, St. Anthony Park, St. Paul (Lugger Collection); 1 August 2, Hennepin County; 1 August 10, 1922, Caribou Creek, Lake County (W. E. Hoffman); 1 Hennepin County (Zoology Collection); 1 Traverse County (Zoology Collection); 1 May 29, 1930, Frontenac, Minn. (W. C. Stehr).

Genus *Macronaemia* Casey

There is but one Minnesota species of this genus. It is a pale yellow with black longitudinal stripes on the elytra. There is but one specimen in the collections here from the state of Minnesota. I have seen a number from South Dakota, however, and so it can probably be found in the western portion of Minnesota.

Macronaemia episcopalis (Kirby)

1838 *Coccinella episcopalis* Kirby, Fauna Bor. Amer. iv:228
1850 *Naemia episcopalis,* Mulsant, Spec. des Coleoptères, p. 34

1874 *Naemia episcopalis,* Crotch, Rev. Cocc. p. 93
1899 *Macronaemia episcopalis,* Casey, Jour. N. Y. Ent. Soc. vii:76
1903 *Anisosticta episcopalis,* Leng, Jour. N. Y. Ent. Soc. ix:37-38
1920 *Macronaemia episcopalis,* Leng, Catalog of Coleoptera

Specimens examined: 1 Dakota County (Lugger Collection).

Genus *Ceratomegilla* Crotch

Here again we have but one Minnesota species. It is a dull red color with heavy black spots on the elytra and thorax. It is predacious on aphids and can be found very commonly in the southern half of the state. It is often present in great numbers on corn, especially on new silks when the ears are forming, also on many other plants.

Ceratomegilla fuscilabris (Mulsant)

1775 *Coccinella maculata* DeGeer, Mem. v:392. (This was probably the southern species, now listed as *Megilla maculata* (DeG.)
1850 *Megilla maculata* Mulsant, Spec. de Coleoptères, iv:28. (Now applied to the southern species.)
1864 *Coccinella limensis* Phillipi, Stett. Ent. Zeit. xxv:402. (Probably a synonym of *M. maculata* (DeG.)
1866 *Naemia fuscilabris* Mulsant, Mon. Cocc. ii:22. (Under this name Mulsant differentiated the northern smaller species from the larger southern species.)
1874 *Megilla maculata,* Crotch, Rev. Cocc. p. 82. (Crotch recombines the two.)
1899 *Megilla fuscilabris* Casey, Jour. N. Y. Ent. Soc. vii:76
1903 *Megilla maculata,* Leng, Jour. N. Y. Ent. Soc. xi:38
1910 *Megilla maculata,* Blatchley, Coleoptera of Indiana
1920 *Ceratomegilla fuscilabris,* Leng, Catalog of the Coleoptera

Specimens examined: 1 June 10, 1920, Ramsey County; 2 September 19, 1921, University Farm, Ramsey County (W. E. Hoffman); 1 July 4, 1899, St. Anthony Park, Ramsey County (Lugger Collection); 1 September 27, 1899, St. Anthony Park, Ramsey County (Lugger Collection); 3 June 22, 1921, St. Anthony Park, Ramsey County (W. E. Hoffman); 2 July 14, 1922, Hennepin County near Shakopee (W. E. Hoffman); 1 July 30, 1918, near Lake Independence; 1 June 27, 1922, Minneapolis (W. E. Hoffman); 1 May 12, 1912, Hennepin County; 2 May 20, 1920, Hennepin County; 2 June 6, Hennepin County; 1 June 25, 1922, Hennepin County (W. E. Hoffman); 1 August 7, 1926, Hennepin County (J. E. Hill); 1 Hennepin County (Lugger Collection); 2 August 14, 1918, Lake City; 1 June 25, 1921, Lake City (W. E. Hoffman); 1 July 10, 1922, Carver County (W. E. Hoffman); 1 June 14, 1922, Rochester (C. E. Mickel); 4 July 17,

1922, Lesueur County, Fish Hatchery (W. E. Hoffman); 1 July 17, 1923, Lesueur County, Fish Hatchery (Sam Kepperley); 2 May 29, 1920, Crystal Lake; 19 August 9, 1921, Albert Lea (W. E. Hoffman); 10 July 17, 1922, Sibley County near Blakeley (W. E. Hoffman); 1 June 19, 1922, Faribault (W. E. Hoffman); 1 June 19, 1922, Faribault (A. T. Hertig); 1 June 20, 1922, Faribault (A. T. Hertig); 1 August 31, 1920, Chisago County; 2 July 22, 1922, St. Peter (W. E. Hoffman); 1 July 27, 1922, St. Peter (W. E. Hoffman); 1 August 3, 1920, Olivia (J. P. Jensen); 1 July 13, 1922, Scott County (W. E. Hoffman); 1 July 14, 1922, Scott County (W. E. Hoffman); 3 August 1, 1922, Jordan, Scott County (W. E. Hoffman); 4 June 20, 1921, Hutchinson (C. E. H.); 1 August 11, 1921, Motordale (W. E. Hoffman); 1 June 20, 1924, Excelsior (Walter Carter); 4 August 20, Hennepin County (Zoology Collection); 3 September 6, Hennepin County (Zoology Collection; 2 Ramsey County (Zoology Collection); 30 May 29, 1930, Frontenac, Minn. (W. C. Stehr); 4 July 24, 1930, Minneapolis (W. C. Stehr); 2 July 17, 1930, Minneapolis (W. C. Stehr); 1 June 5, 1930, Minneapolis (W. C. Stehr); 2 June 19, 1930, Minneapolis (W. C. Stehr).

Genus *Hippodamia* Chevrolat

This genus is well represented in Minnesota. Some of the species are among those most common in the state. They are all aphid-feeding forms and are usually rather numerous in most parts of the state.

Key to the Species

1 Thorax black with broad pale margins within each of which is a black dot; tibiae and tarsi pale.....*H. 13-punctata* (Linnaeus)

Thorax with a distinctly narrower pale margin without a distinct dot, but usually intruded upon by a more or less pronounced angulation of the central black area; legs black throughout..... 2

2 (1) Black disc of the thorax nearly divided by a white quadrate spot at the middle of the base, and an elongate triangular spot at the apex.. 3

Black disc of the thorax without white spots at the base and apex, but with two discal divergent pale lines..... 4

3 (2) Elytra with a humeral spot and a coma-shaped lunule on each..... *H. parenthesis* (Say)

Elytra with or without humeral spots and with a triangular black spot on the posterior half of each.....*H. tridens* Kirby

4 (2) Elytra immaculate, discal lines of the thorax may be dim or lacking.... *H. convergens* Guerin variation

Elytra with black markings..... 5

5 (4) Elytra with six small black spots on each, three of these are on the anterior half 6

Elytra with one or more transverse bands and additional spots..... 7

6 (5) Spots on the elytra small and all widely separated..... *H. convergens* Guerin

Spots larger; two large ones in the middle of each elytron joined....
H. convergens Guerin variation

7 (5) Front half of the elytra without markings or with only a humeral dot..
H. glacialis (Fabricius)

Elytra with two transverse bands and an apical spot on each.....
H. 5-signata (Kirby)

Hippodamia tredecempunctata (Linnaeus)

This is a very common species in all parts of Minnesota and can be found from early April until October. It occurs on a great variety of plants, but I have found it most frequently on leguminous plants, such as sweet clover, alfalfa, and clover. It is probably one of the most beneficial in the destruction of aphids on farm crops.

1758 *Coccinella 13-punctata* Linnaeus, Syst. Nat. p. 336
1824 *Coccinella tibialis* Say, Jour. Phil. Acad. iv:94
1846 *Hippodamia 13-punctata* Mulsant, Securipalpes, 1:31
1874 *Hippodamia 13-punctata* Crotch, Rev. Cocc. p. 94
1899 *Hippodamia 13-punctata* Casey, Jour. N. Y. Ent. Soc. vii:77
1903 *Hippodamia 13-punctata* Leng, Jour. N. Y. Ent. Soc. xi:44
1910 *Hippodamia 13-punctata* Blatchley, Coleoptera of Indiana

Specimens examined: 1 June 28, 1921, Olivia (H. H. Knight); 1 August 16, 1922, Carver County (W. E. Hoffman); 1 June 23, 1927, Two Harbors (M. H. Hatch); 2 August 2, 1922, Dakota County (W. E. Hoffman); 2 August 13, 1922, Benson (W. E. Hoffman); 1 June 25, 1925, Luverne (R. W. Dawson); 1 July 11, 1923, Winnebago (P. L. Keene); 3 October 14, 1923, Mendota (W. E. Hoffman); 4 August 14, 1923, Albert Lea (P. L. Keene); 3 July 8, 1910, Washington County; 1 June 24, 1910, Rock County; 1 May 21, 1921, Faribault (W. E. Hoffman); 1 Hennepin County (Lugger Collection); 1 June 6, St. Anthony Park, St Paul (Lugger Collection); 1 June 10, 19—, St. Anthony Park (Lugger Collection); 1 August 8, Hennepin County (Zoology Collection); 6 August 20, Hennepin County (Zoology Collection); 7 August 29, Hennepin County (Zoology Collection); 7 September 6, Hennepin County (Zoology Collection); 1 July 10, Cass County (Zoology Collection); 3 July 10, Chisago County (Zoology Collection); 3 Traverse County (Zoology Collection); 1 May 29, 1929, Hennepin County (W. C. Stehr); 19 May 31, 1929, Minneapolis (W. C. Stehr); 3 August 11, 1929, Stewart River near Two Harbors (W. C. Stehr); 1 August 11, 1929, Cascade River, Cook County (W. C. Stehr); 4 August 9, 1929, Rosebush Township, Cook County (W. C. Stehr); 1 August 8, 1929, Kadunce Creek near Lake Superior, Cook County (W. C. Stehr); 1 August, 1929, Polk County (H. L. Parten); 2 September 1, 1929, Nisswa (O. E. Storm); 1 September 27, 1899, St. Anthony Park, Ramsey County (Lugger Col-

lection); 1 October 6, 1899, St. Anthony Park, Ramsey County (Lugger Collection); 1 February 9, 1920, St. Anthony Park, Ramsey County; 1 August 20, 1908, St. Anthony Park, Ramsey County (A. C. Baker); 2 June 28, 1910, St. Anthony Park, Ramsey County (F. C. P.); 1 June 6, 1921, St. Anthony Park, Ramsey County (W. E. Hoffman); 1 June 22, 1921, St. Anthony Park, Ramsey County (W. E. Hoffman); 1 June 25, 1921, St. Anthony Park, Ramsey County (W. E. Hoffman); 1 June 23, 1922, St. Anthony Park, Ramsey County (H. H. Knight); 1 June 14, 1921, Bussey's Pond, St. Paul (W. E. Hoffman); 1 July 4, 1921, University Farm, St. Paul, at light (W. E. Hoffman); 3 July 6, 1921, University Farm, St. Paul, at light (W. E. Hoffman); 2 June 25, 1921, University Farm, St. Paul, at light (W. E. Hoffman); 1 July 8, 1921, University Farm, at light (W. E. Hoffman); 1 July 10, 1921, University Farm, at light (W. E. Hoffman); 1 July 8, 1921, University Farm, at light (W. E. Hoffman); 1 July 25, 1921, University Farm, at light (W. E. Hoffman); 4 September 19, 1921, University Farm, at light (W. E. Hoffman); 1 May 22, 1925, University Farm, greenhouse (Sam Kepperley); 1 August 31, 1925, University Farm, greenhouse (Sam Kepperley); 1 May 19, 1922, University Farm, St. Paul (W. E. Hoffman); 1 May 27, 1927, University Farm, St. Paul (Carl T. Schmidt); 2 August 22, 1926, University Farm, St. Paul (Carl T. Schmidt); 1 July 6, 1921, Como Park, St. Paul (W. E. Hoffman); 1 July 24, 1921, Ramsey County (W. E. Hoffman); 1 July 6, 1923, Ramsey County (R. W. Dawson); 1 July 11, 1925, Ramsey County (Sam Kepperley); 5 September 14, 1925, Ramsey County (Sam Kepperley); 2 June 28, 1910, Hennepin County; 1 July 1, 1910, Hennepin County; 1 July 13, 1922, Hennepin County (W. E. Hoffman); 1 August 1, 1926, Hennepin County (J. E. Hill); 1 June 6, 1922, Fort Snelling (A. A. Nichol); 3 June 12, 1921, Lake Calhoun (W. E. Hoffman); 1 July 13, 1922, Hennepin County near Shakopee (W. E. Hoffman); 1 July 14, 1922, Hennepin County near Shakopee (W. E. Hoffman); 1 July 14, 1922, Hennepin County near Shakopee (A. T. Hertig); 1 May 11, 1911, Minneapolis; 1 May 22, 1922, Minneapolis (W. E. Hoffman); 1 May 23, 1920, Minneapolis (C. E. H.); 2 Lake Itasca; 3 July 27, 1914, Lake Itasca; 1 July 24, 1914, Lake Itasca; 1 August 5, 1914, Lake Itasca; 5 August 13, 1914, Lake Itasca; 2 August 21, 1914, Lake Itasca; 2 June 2, 1928, Lake Itasca (L. W. Orr); 1 July 15, 1921, Princeton (W. E. Hoffman); 1 July 19, 1921, Princeton (W. E. Hoffman); 2 July 24, 1928, Duluth (F. M. Wadley); 1 July 22, 1922, St. Peter (W. E. Hoffman); 1 July 26, 1922, St. Peter near Lake Emily (W. E. Hoffman); 1 July 27, 1922, St. Peter (W. E. Hoffman); 7 August 10, 1923, St. Peter near Fish Hatchery (Sam Kepperley); 1 July 17, 1923, St. Peter near

Fish Hatchery (Sam Kepperley); 1 June 19, 1922, Marshall (C. E. Mickel); 1 July 28, 1910, Marshall County; 2 August 29, 1919, Kawishiwi River (H. H. Knight); 1 August 15, 1922, Isabella River, Lake County (W. E. Hoffman); 1 August 10, 1922, Caribou River, Lake County (W. E. Hoffman); 1 August 15, 1922, Stony River Camp, Lake County (H. B. Hungerford); 1 July 17, 1922, Lesueur (W. E. Hoffman); 1 July 21, 1922, Lesueur County near Fish Hatchery (W. E. Hoffman); 2 July 25, 1922, Lesueur County near Fish Hatchery (W. E. Hoffman); 1 July 15, 1923, Lesueur County near Fish Hatchery (Sam Kepperley); 7 June 26, 1924, Wadena County (Walter Carter); 5 July 5, 1922, Eagle Bend (W. E. Hoffman); 2 June 20, 1924, Excelsior (Walter Carter); 1 April 27, 1923, Norman County (A. A. Nichol); 1 August 6, 1921, Motordale (W. E. Hoffman); 1 August 6, 1922, Taylor Falls (H. B. Hungerford); 1 August 8, 1925, Taylor Falls (Sam Kepperley); 5 July 17, 1922, Sibley County near Blakeley (W. E. Hoffman); 4 August 13, 1922, Grand Marias (H. B. Hungerford); 14 Frontenac, Minn. May 29, 1930 (W. C. Stehr); 2 July 24, 1930, Minneapolis (W. C. Stehr); 20 July 19, 1930, Minneapolis (W. C. Stehr); 21 June 19, 1930, Minneapolis (W. C. Stehr); 23 June 14, 1930, Minneapolis (W. C. Stehr); 5 June 5, 1930, Minneapolis (W. C. Stehr).

Hippodamia parenthesis (Say)

This is the smallest of the Minnesota species of the genus *Hippodamia*. It can be readily recognized by the coma-shaped lunule on the posterior half of the elytra. It is common in all parts of the state and can be found from early spring until late autumn. It is very common on field crops and is without question another very beneficial species in the destruction of aphids.

1824 *Coccinella parenthesis* Say, Jour. Phil. Acad. iv:93
1850 *Adonia parenthesis,* Mulsant, Spec. des Coleoptéres, 3, p. 41
1845 *Hippodamia lunatomaculata,* Motschulsky, Bull. Mosc. p. 382
1873 *Hippodamia parenthesis,* Crotch, Trans. Am. Ent. Soc. iv:368
1874 *Hippodamia parenthesis,* Crotch, Rev. Cocc. p. 97
1899 *Hippodamia parenthesis,* Casey, Jour. N. Y. Ent. Soc. vii:81
1903 *Hippodamia parenthesis,* Leng, Jour. N. Y. Ent. Soc. ix:44
1910 *Hippodamia parenthesis,* Blatchley, Coleoptera of Indiana

Specimens examined: 2 June 13, 1923, Jordan, Scott County (H. H. Knight); 1 June 21, 1922, Owatonna (W. E. Hoffman); 1 August 21, 1922, Lake Isabella, Lake County (W. E. Hoffman); 5 August 15, 1922, Lake Isabella, Lake County (W. E. Hoffman); 1 June 21, 1921, Faribault (C. E. H.); 1 June 27, 1920, Roseau (J. P. Jensen); 2 August 6, 1922, North Branch (W. E. Hoffman); 1 August 9, 1922,

Two Harbors (H. B. Hungerford); 2 June 27, 1927, Two Harbors (M. H. Hatch); 5 June 29, 1926, New London (C. E. Mickel); 5 Itasca Park; 1 June 27, 1912, Itasca Park; 1 June 25, 1914, Itasca Park; 1 July 24, 1914, Itasca Park; 2 August 27, 1911, Itasca Park; 1 July 15, 1912, Ottertail County; 1 May 8, 1928, Fort Snelling (C. T. Schmidt); 1 July 24, 1928, Duluth (F. M. Wadley); 3 July 22, 1926, Wadena (F. M. Wadley); 1 July 22, 1926 Belgrade (F. M. Wadley); 1 September 6, Hennepin County (Zoology Collection); 3 Traverse County (Zoology Collection); 1 May 29, 1929, Hennepin County (W. C. Stehr); 1 May 31, 1929, Minneapolis (W. C. Stehr); 1 August 10, 1929, Poplar Lake, Cook County (W. C. Stehr); 8 August 9, 1929, Rosebush Township, Cook County (W. C. Stehr); 1 August 8, 1929, Kadunce Creek, Cook County (W. C. Stehr); 1 July 4, 1929, Nisswa (O. E. Storm); 1 August 20, 1908, St. Anthony Park, Ramsey County (A. C. Baker); 1 June 28, 1910, St. Anthony Park, Ramsey County (E. C. P.); 1 June 10, 1910, St. Anthony Park, Ramsey County; 1 May 9, 1911, St. Anthony Park, Ramsey County; 1 June 24, 1921, St. Anthony Park, Ramsey County (W. E. Hoffman); 1 July 25, 1921, University Farm, St Paul (W. E. Hoffman); 1 August 5, 1921, University Farm, St. Paul (W. E. Hoffman); 4 September 19, 1921, University Farm, St. Paul (W. E. Hoffman); 1 August 23, 1924, University Farm, St. Paul (Sam Kepperley); 1 July 13, 1910, Ramsey County; 1 May 25, 1922, Ramsey County (Florence Defiel); 1 September 14, 1925, Ramsey County (Sam Kepperley); 1 August 31, 1925, St. Paul (Sam Kepperley); 1 June 12, 1910, Hennepin County; 1 June 29, 1910, Hennepin County; 1 May 23, 1922, Hennepin County (A. A. Nichol); 1 May 27, 1922, Hennepin County (W. E. Hoffman); 1 August, 1926, Hennepin County (J. E. Hill); 1 June 28, 1923, Fort Snelling (Carl Ostrum); 1 August 23, 1924, Fort Snelling (Sam Kepperley); 1 July 29, 1925, Fort Snelling (C. E. Mickel); 2 August 27, 1925, Fort Snelling (R. W. Dawson); 1 May 5, 1920, Crystal Lake; 1 June 20, 1924, Excelsior (Walter Carter); 1 August 4, 1925, Taylor Falls (Sam Kepperley); 1 June 30, 1923, Fridley sand area, Anoka County (R. W. Dawson); 3 May 15, 1927, Fridley sand dunes (C. T. Schmidt); 2 August 7, 1922, Willow River (W. E. Hoffman); 1 August 2, 1922, Savage, Dakota County (W. E. Hoffman); 1 August 13, 1922, Grand Marais (H. B. Hungerford); 1 July 8, 1910, Washington County; 1 June 20, 1910, Faribault County; 1 August 31, 1910, St. Louis County; 11 June 22, 1924, Wadena County (Walter Carter); 1 June 26, 1924, Wadena County (Walter Carter); 1 June 23, 1922, Leseuer County near Fish Hatchery (W. E. Hoffman); 1 July 17, 1922, Lesueur County near Fish Hatchery (W. E. Hoffman); 1 July 27, 1923, Lesueur County near Fish Hatchery (Sam

Kepperley); 55 May 29, 1930, Frontenac (W. C. Stehr); 3 June 5, 1930, Minneapolis (W. C. Stehr); 2 June 19, 1930, Minneapolis (W. C. Stehr); 9 July 17, 1930, Minneapolis (W. C. Stehr); 10 July 19, 1930, Minneapolis (W. C. Stehr); 11 July 24, 1930, Minneapolis (W. C. Stehr).

Hippodamia tridens Kirby

Hippodamia tridens is undoubtedly an extreme variation of *H. parenthesis*. All the specimens that I have taken were found where *H. parenthesis* was very abundant. The series of *H. parenthesis* in the collections of the University of Minnesota show all stages intermediate between *H. parenthesis* and *H. tridens*.

1838 *Hippodamia tridens* Kirby, Faun. Bor. Am. p. 229
1873 *Hippodamia parenthesis,* Crotch, Rev. Cocc. p. 97
1899 *Hippodamia parenthesis,* Casey, Jour. N. Y. Ent. Soc. vii:81
1920 *Hippodamia tridens,* Leng, Catalog of Coleoptera

Specimens examined: 2 August 19, 1929, St. Paul, Minn. (W. C. Stehr); 4 May 29, 1930 Frontenac (W. C. Stehr); 3 July 19, Minneapolis (W. C. Stehr).

Hippodamia glacialis (Fabricius)

1775 *Coccinella glacialis,* Fabricius, Syst. Ent. p. 80
1850 *Hippodamia glacialis,* Mulsant, Spec. des Coleoptères, p. 18
1874 *Hippodamia glacialis,* Crotch, Rev. Cocc. p. 95
1899 *Hippodamia glacialis,* Casey, Jour. N. Y. Ent. Soc. vii:79
1903 *Hippodamia glacialis,* Leng, Jour. N. Y. Ent. Soc. xi:41
1910 *Hippodamia glacialis,* Blatchley, Coleoptera of Indiana

Specimens examined: 1 July 20, 1910, Big Stone County; 2 August 31, 1925, St. Paul (Sam Kepperley); 1 June 27, 1897, St. Anthony Park, Ramsey County (Lugger Collection); 1 August 28, 1923, Lesueur County near Fish Hatchery (W. E. Hoffman); 1 August 9, 1921, Albert Lea (W. E. Hoffman); 5 June 29, 1926, New London (C. E. Mickel); 1 June 25, 1925, Luverne (C. E. Mickel); 1 Hennepin County (Lugger Collection); 2 Traverse County (Zoology Collection).

Hippodamia convergens Guerin

1846 *Hippodamia convergens,* Guerin, Icon. R. A. p. 321.

All later publications use the same name for this species. This is an extremely variable form and some authors have named certain variations. However, the species name has never been disputed or confused.

This species is one of the most common in the state and can be found feeding almost anywhere there are aphids. It is not numerous

early in the spring, but from May until October is usually very abundant. On July 17, 1930, 499 specimens were swept from a small area (about 10 feet square) of *Compositae* which were practically covered with aphids. On July 19 the patch was visited again and a great many more had migrated to the area so that they appeared as numerous as on July 17. The aphids were still abundant. On July 23 a third visit was made and the aphids were practically exterminated. There were still some *H. convergens* present, but most of them had migrated to other places.

This series also shows the great variation in the maculation of the elytra of this species. There are 19 specimens with entirely immaculate elytra. All of the variations described by Johnson, 1910, Carnegie Inst. Publication No. 122, can be picked out in this series. I have taken several specimens in which even the oblique lines on the pronotum have entirely disappeared. In my keys I have included categories to receive these extreme variations which might be mistaken for other species.

Specimens examined: 3 July 17, 1922, Lesueur County near Fish Hatchery (W. E. Hoffman); 1 July 17, 1923, Lesueur County near Fish Hatchery (Sam Kepperley); 1 July 28, 1922, Gum Lake, Lesueur County (A. T. Hertig); 2 August 21, 1923, Madison; 4 July 29, 1926, New London (C. E. Mickel); 1 July 13, 1923, Jordan, Scott County (A. T. Hertig); 1 June 23, 1922, Scott County (W. E. Hoffman); 1 June 29, 1922, Alexandria (W. E. Hoffman); 1 August 28, 1918, Burntside Lake, St. Louis County (V. E. Haber); 1 September 14, 1918, Pillager (V. E. Haber); 1 October 14, 1923, Mendota (W. E. Hoffman); 1 August 20, Hennepin County (Zoology Collection); 10 August 25, Hennepin County (Zoology Collection); 2 August 29, Hennepin County (Zoology Collection); 5 September 6, Hennepin County (Zoology Collection); 1 September 23, Hennepin County (Zoology Collection); 2 October 2, Hennepin County (Zoology Collection); 6 October 6, Hennepin County (Zoology Collection); 2 November 3, Hennepin County (Zoology Collection); 1 October 2, Ramsey County (Zoology Collection); 1 Lyon County (Zoology Collection); 1 May 29, 1929, Hennepin County (W. C. Stehr); 2 June 1, 1929, Minneapolis (W. C. Stehr); 2 June 4, 1929, Minneapolis (W. C. Stehr); 3 June 21, 1929, University Farm, St. Paul (W. C. Stehr); 2 June 26, 1929, Minneapolis (W. C. Stehr); 2 September 4, 1929, Luverne (F. W. Munger); 4 May 29, 1930, Frontenac (W. C. Stehr); 10 June 5, 1930, Minneapolis (W. C. Stehr); 7 June 14, 1930, Minneapolis (W. C. Stehr); 11 June 19, 1930, Minneapolis (W. C. Stehr); 57 July 1, 1930, Minneapolis (W. C. Stehr); 41 July 12, 1930, Minneapolis (W. C. Stehr); 499 July 17, 1930, Minneapolis (W. C. Stehr); 1 July 18, 1922, Ramsey County (H. H. Knight); 1 August 31, 1925, St Paul (Sam Kepperley); 1 August 12, 1921, University

Farm, St. Paul (W. E. Hoffman); 6 September 19, 1921, University Farm, St. Paul (W. E. Hoffman); 1 September 24, 1921, Lake Johanna, Ramsey County (W. E. Hoffman); 1 May 20, 1922, Battle Creek, Ramsey County (W. E. Hoffman); 3 June 28, 1910, St. Anthony Park, St. Paul (E. P.); 1 June 5, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 June 22, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 August 5, 1921, Power Plant, Ramsey County (W. E. Hoffman); 1 August, 1926, Hennepin County (J. E. Hill); 1 July 13, 1922, Shakopee (W. E. Hoffman); 1 July 14, 1922, Shakopee (W. E. Hoffman); 2 June 18, 1922, Minneapolis (A. T. Hertig); 1 August 27, 1924, Fort Snelling (Allen McIntosh); 1 June 12, 1921, Lake Calhoun, Hennepin County (W. E. Hoffman); 1 July 22, 1922, St. Peter (A. T. Hertig); 1 July 18, 1922, Ottawa (W. E. Hoffman); 1 July 20, 1910, Big Stone County; 1 July 21, 1914, Lake Itasca; 2 August 3, 1914, Lake Itasca; 1 August 6, 1914, Lake Itasca; 2 July 22, 1928, Park Rapids (F. M. Wadley); 1 July 24, 1928, Duluth (F. M. Wadley); 1 July 20, 1926, Rochester (F. M. Wadley); 1 July 20, 1926, Blue Earth (F. M. Wadley); 1 Lake Vermilion (Lugger Collection); 2 July 19, 1926, Owatonna (F. M. Wadley); 2 August 9, 1921, Albert Lea (W. E. Hoffman); 4 July 22, 1922, St. Peter, near Fish Hatchery (W. E. Hoffman); 1 July 27, 1922, St. Peter, near Fish Hatchery (W. E. Hoffman); 1 August 16, 1922, Bengal (W. E. Hoffman); 2 August 17, 1922, Sibley County near Blakeley (W. E. Hoffman); 3 August 23, 1926, Hines (F. M. Wadley); 1 June 26, 1925, Luverne (H. L. Sweetman); 2 June 25, 1925, Luverne (R. W. Dawson); 1 August 9, 1922, Two Harbors (W. E. Hoffman); 1 June 22, 1927, Two Harbors (M. H. Hatch); 3 June 27, 1927, Two Harbors (M. H. Hatch); 1 June 23, 1921, Tyler (H. H. Knight); 3 July 21, 1922, Lesueur County (W. E. Hoffman).

The following are immaculate specimens of *H. convergens* other than those mentioned as collected on July 17, 1930: 2 July 17, 1922, St. Peter near Fish Hatchery (W. E. Hoffman); 1 July 5, 1922, Eagle Bend (W. E. Hoffman); 1 August 5, 1914, Lake Itasca; 1 August 3, 1914, Lake Itasca; 1 August 6, 1922, North Branch (W. E. Hoffman); 1 June 1, 1929, Minneapolis (W. C. Stehr); 1 June 26, 1929, Minneapolis (W. C. Stehr).

Hippodamia quinquesignata (Kirby)

1838 *Coccinella quinquesignata* Kirby, Faun. Bor. Am. p. 320
1850 *Hippodamia quinquesignata,* Mulsant, Spec. de Coleoptères, p. 15
1873 *Hippodamia 5-signata,* Crotch, Trans. Am. Ent. Soc. iv:366
1874 *Hippodamia 5-signata,* Crotch, Rev. Cocc. p. 95
1899 *Hippodamia 5-signata,* Casey, Jour. N. Y. Ent. Soc. vii:78
1903 *Hippodamia 5-signata,* Leng, Jour. N. Y. Ent. Soc. xi:40

This species is found to the west and north of Minnesota and is seldom found in the state. The only specimen from Minnesota that I have seen is one labelled Lake Superior but having no other data. It is probable that collecting in the northwest portion of the state would reveal this species.

Specimen examined: 1 Lake Superior (Zoology Collection).

Tribe *Coccinellini*

Key to the Minnesota Genera of *Coccinellini*

1 Metacoxal lines form a distinct arc; the metacoxal plates are distinctly shorter than the first ventral segment; body broadly oval; usually one or two spots on the elytra.....*Adalia* Mulsant

Metacoxal lines curve outward toward the side of the body along the first suture, the included area often divided by an oblique line which may or may not reach the metacoxal line posteriorly; body generally rounded, rarely oval; elytra with more than two spots or immaculate 2

2 (1) Tarsal claws bifid, external tooth longer.....*Neomysia* Casey

Tarsal claws with a large quadrate tooth at the base..... 3

3 (2) Metacoxal plates divided by an oblique line joining the bounding arc at about the midpoint, forming an angulate inner plate; body very convex and rounded 4

Metacoxal plates not or only partially divided, the oblique line obsolete or feeble; body less convex, sometimes depressed, slightly oval..... 6

4 (3) Thorax black with a narrow pale apical margin and a large pale subquadrate spot at each apical angle.....*Coccinella* Linnaeus

Thorax black variegated with pale markings; or thorax red or yellow with black spots 5

5 (4) Elytra reddish, immaculate.....*Cycloneda* Crotch

Elytra yellowish with black spots.....*Olla* Casey

6 (3) Thorax black, front and side margins pale, a median pale line more or less complete, two quadrate white spots at the basal margin never present; length 5 to 5.5 mm.....*Anisocalvia* Crotch

Thorax black, apical and side margins pale, median pale line not present, two quadrate light spots at basal margin; sometimes these are united into one..... 7

7 (6) Thorax short, spotted with yellow, very variable, length of body 3 to 5 mm. .....*Cleis* Mulsant

Thorax longer with pale lateral margins, length of body 6.5 to 9 mm. *Anatis* Mulsant

Genus *Coccinella* Linnaeus

Key to the Minnesota Species

1 Body larger, 5 to 7 mm..... 2

Body smaller, less than 5 mm..... 4

2 (1) Elytra normally nine-spotted, suture black; head with white front; thorax with pale apical margins.....*Coccinella novemnotata* Herbst

Elytra with transverse bands and some spots..... 3

3 (2) Elytra with a sub-basal transverse bar and four large elongate black spots .....*Coccinella transversoguttata* Falderman

Elytra with the sub-basal band reduced to a sub-basal spot and humeral spots .....*C. transversoguttata* var. *nugatoria* Mulsant

4 (1) Elytra with three bands.....*Coccinella perplexa* Mulsant

Elytra with a sub-basal band tricuspid in front, and two additional spots .....*Coccinella tricuspis* Kirby

The genus *Coccinella* is quite common in Minnesota. The individuals are not seen as frequently as *Hippodamia* or *Adalia,* but may be collected at most places during the entire summer. They are among the most important enemies of aphids on farm products.

Coccinella perplexa Mulsant

1851 *Coccinella perplexa* Mulsant
1874 *Coccinella trifasciata,* Crotch, Rev. Cocc. (in part)
1899 *Coccinella perplexa,* Casey, Jour. N. Y. Ent. Soc. vii:89
1903 *Coccinella trifasciata,* Leng, Jour. N. Y. Ent. Soc. xi:200
1910 *Coccinella trifasciata,* Blatchley, Coleoptera of Indiana
1920 *Coccinella perplexa,* Leng, Catalog of the Coleoptera

Specimens examined:

Males: 1 August 21, 1918, Lake Itasca; 1 Lake Itasca; 1 August 10, 1914, Lake Itasca; 1 May 29, 1920, Crystal Lake; 8 August 10, 1922, Baptism Creek, Lake County (W. E. Hoffman); 3 August 9, 1922, Baptism Creek, Lake County (W. E. Hoffman); 1 August 10, 1922, Oramer (W. E. Hoffman); 2 August 13, 1922, Grand Marais (W. E. Hoffman); 1 August 6, 1922, Beaver Dam, Cook County (W. E. Hoffman); 1 August 6, 1922 (W. E. Hoffman); 1 June 27, 1927, Two Harbors (M. H. Hatch); 3 St. Anthony Park, Ramsey County (Lugger Collection); 2 St. Anthony Park, Ramsey County, 1895 (Lugger Collection); 1 August 29, 1918, St. Anthony Park, Ramsey County (A. W.); 1 Lake Vermilion (Lugger Collection); 1 Duluth (Lugger Collection); 1 June 20, 1899, Lake City (Lugger Collection); 1 June 21, Kittson County (Zoology Collection); 1 May 29, 1929, Hennepin County (W. C. Stehr); 1 June 1, 1929, Minneapolis (W. C. Stehr); 4 May 31, 1929, Minneapolis (W. C. Stehr); 1 June 8, 1929, Minneapolis (W. C. Stehr); 18 May 29, 1930, Frontenac (W. C. Stehr); 1 June 19, 1930, Minneapolis (W. C. Stehr); 1 July 17, 1930, Minneapolis (W. C. Stehr).

Females: 3 Lake Itasca; 1 June 27, 1911, Lake Itasca; 1 August 13, 1914, Lake Itasca; 1 August 9, 1922, Baptism River, Lake County (W. E. Hoffman); 1 August 8, 1922, Finland (W. E. Hoffman); 1 August 13, 1922, Grand Marais (W. E. Hoffman); 1 August 13, 1922, Grand Marais (H. B. Hungerford); 1 August 13, 1922, Grand Marais (H. H. Knight); 1 Duluth (Lugger Collection); 1 July 14, 1918, Duluth; 1 June 22, 1927, Two Harbors (M. H. Hatch); 1 June 24,

1927, Two Harbors (M. H. Hatch); 4 June 27, 1927, Two Harbors (M. H. Hatch); 1 August 16, 1924, Roseau County (Walter Carter); 2 June 20, 1912, Lake City; 1 August 9, 1918, University Farm, St. Paul (A. W.); 1 St. Anthony Park, St. Paul (Lugger Collection); 1 October 10, St. Anthony Park, St Paul (Lugger Collection); 1 June 18, 1919, St. Anthony Park, St Paul (H. H. Knight); 1 June 28, 1910, St. Anthony Park, St. Paul (E. C. P.); 1 Hennepin County (Zoology Collection); 1 May 20, Hennepin County (Zoology Collection); 2 July 27, Hennepin County (Zoology Collection); 2 July 27, Hennepin County (Zoology Collection); 1 August 1, Hennepin County (Zoology Collection); 1 Ramsey County (Zoology Collection); 3 July 13, Cass County (Zoology Collection); 3 July 20, Cass County (Zoology Collection); 2 August 11, 1929, Stewart River near Two Harbors (W. C. Stehr); 2 August 9, 1929, Rosebush Township, Cook County (W. C. Stehr); 1 August 8, 1929, Little Devil's Track River near Grand Marais (W. C. Stehr); 1 August 8, 1929, Kadunce Creek near Lake Superior, Cook County (W. C. Stehr); 23 May 29, 1930, Frontenac (W. C. Stehr); 2 July 21, 1930, St. Paul (W. C. Stehr).

Coccinella tricuspis Kirby

This species is never very common. All the records from Minnesota are from coniferous areas. Those from the region around Minneapolis were taken in tamarack bogs during the summer of 1929. These are the only records south of the coniferous belt of the state.

1838 *Coccinella tricuspis* Kirby, Faun. Bor. Am. p. 231
1850 *Coccinella tricuspis,* Mulsant, Spec. des Coleoptères, p. 107
1850 *Coccinella mannerheimii,* Mulsant, Spec. des Coleoptères, p. 106
1874 *Coccinella mannerheimii,* Crotch, Rev. Cocc. p. 115
1899 *Coccinella tricuspis,* Casey, Jour. N. Y. Ent. Soc. vii:90
1903 *Coccinella tricuspis,* Leng, Jour. N. Y. Ent. Soc. xi:201

Specimens examined: 3 June 27, 1927, Two Harbors (M. H. Hatch); 1 June 28, 1927, Two Harbors (M. H. Hatch); 1 June 23, 1927, Two Harbors (M. H. Hatch); 1 June 24, 1927, Two Harbors (M. H. Hatch); 1 August 22, 1926, Winton (Allen McIntosh); 3 Lake Superior (Lugger Collection); 3 May 29, 1929, Hennepin County in tamarack bog (W. C. Stehr); 1 June 1, 1929, Minneapolis (W. C. Stehr); 6 June 28, 1927, Two Harbors (M. H. Hatch).

Coccinella novemnotata Herbst

This is the commonest species of the genus *Coccinella* in the state. It is usually abundant wherever aphids are present. It is especially common on field crops and grass and must be rated among those species of greatest economic benefit.

1793 *Coccinella novemnotata,* Herbst, Käfer, V:269

1850 *Coccinella novemnotata,* Mulsant, Spec. des Coleoptères, p. 123
1874 *Coccinella novemnotata,* Crotch, Rev. Cocc. p. 117

All later authors are in accord with the synonymy for this species.

Specimens examined: 1 February 3, 1897, Ramsey County (Lugger Collection); 1 September 27, 1899, Ramsey County (Lugger Collection); 1 July 13, 1910, Ramsey County; 1 July 9, 1924, Ramsey County; 1 September 14, 1925, Ramsey County (Sam Kepperley); 1 June 1, 1897, St. Anthony Park (Lugger Collection); 1 August 20, 1908, St. Anthony Park (A. C. Baker); 7 June 28, 1910, St. Anthony Park (E. C. P.); 2 May 14, 1911, St. Anthony Park; 2 June 21, St. Anthony Park (W. E. Hoffman); 1 June 3, 1921, Battle Creek Park, Ramsey County (W. E. Hoffman); 3 June 20, 1922, Battle Creek Park, Ramsey County (W. E. Hoffman); 1 September 24, 1921, Lake Johanna, Ramsey County (W. E. Hoffman); 1 June 28, 1921, Lake Owasso (W. E. Hoffman); 1 August 21, 1921, University Farm, St. Paul (W. E. Hoffman); 2 September 19, 1921, University Farm, St. Paul (W. E. Hoffman); 1 May 22, 1922, University Farm, St. Paul (W. E. Hoffman); 1 October 27, 1923, University Farm, St. Paul (W. E. Hoffman); 1 August 31, 1925, University Farm, St. Paul (Sam Kepperley); 2 June 14, 1927, University Farm, St. Paul (Carl T. Schmidt); 1 June 30, 1922, New Brighton, Ramsey County (C. E. Mickel); 1 June 12, 1910, Hennepin County; 3 June 28, 1910, Hennepin County; 2 July 1, 1910, Hennepin County; 2 August, 1926, Hennepin County (J. E. Hill); 1 September 3, 1921, Minnehaha Creek, Hennepin County (A. T. Hertig); 2 June 18, 1922, Minneapolis (W. E. Hoffman); 1 July 5, 1922, Minneapolis (A. T. Hertig); 1 April 27, 1922, Fort Snelling (W. E. Hoffman); 1 July 29, 1925, Fort Snelling (C. E. Mickel); 2 August 27, 1924, Fort Snelling (Allen McIntosh); 1 June 1, 1922, Moore's Lake (W. E. Hoffman); 1 May 29, 1920, Crystal Lake; 1 July 30, 1921, Crystal Lake (W. E. Hoffman); 3 August 27, 1910, St. Louis County; 1 August 2, 1910, Beltrami County; 1 July 23, 1910, Big Stone County; 2 June 3, 1923, Fridley sand dunes, Anoka County (C. E. Mickel); 2 June 3, 1923, Fridley sand dunes, Anoka County (W. E. Hoffman); 5 July 17, 1923, Fridley sand dunes, Anoka County (C. E. Mickel); 2 July 14, 1925, Fridley sand dunes, Anoka County (C. E. Mickel); 2 June 30, 1922, King's Bluff, Winona County (H. H. Knight); 1 June 19, 1922, Rice County (W. E. Hoffman); 1 June 3, 1922, Afton (W. E. Hoffman); 3 June 29, 1926, New London (C. E. Mickel); 1 June 22, 1922, St. Peter (W. E. Hoffman); 1 August 11, 1923, St. Peter (Sam Kepperley); 3 August 9, 1921, Albert Lea (W. E. Hoffman); 1 July 15, 1921, Princeton (W. E. Hoffman); 3 July 19, 1921, Princeton (W. E. Hoffman); 1 July 12, 1921, Gray Cloud Island (Wm. A. Riley); 4 August 14, 1918, Lake City; 1 June 25, 1921, Lake City (W. E. Hoffman); 3 June 28, 1923, Lake City (A. T. Hertig);

4 June 29, 1923, Lake City (A. T. Hertig); 1 June 15, 1910, Houston County; 1 July 8, 1910, Washington County; 1 August 10, Washington County; 2 June 14, 1922, Lake Island (W. E. Hoffman); 5 August 1, 1922, Scott County dune area near Jordan (W. E. Hoffman); 1 July 13, 1923, Jordan, Scott County (A. T. Hertig); 4 July 13, 1923, Jordan, Scott County (H. H. Knight); 1 June 13, 1922, Scott County sand area near Shakopee (W. E. Hoffman); 1 June 10, 1922, Scott County sand area near Shakopee (C. E. Mickel); 1 July 14, 1922, Scott County sand area near Shakopee (W. E. Hoffman); 1 July 14, 1922, Scott County sand area near Shakopee (A. T. Hertig); 5 June 22, 1922, Owatonna (A. T. Hertig); 3 June 25, 1923, Owatonna (A. T. Hertig); 1 July 17, 1922, Lesueur County near Blakeley (W. E. Hoffman); 1 July 17, 1922, Lesueur County near Fish Hatchery (W. E. Hoffman); 1 July 21, 1922, Lesueur County near Fish Hatchery (W. E. Hoffman); 3 July 17, 1923, Lesueur County near Fish Hatchery (Sam Kepperley); 1 June 16, 1922, Mora (W. E. Hoffman); 3 June 25, 1925, Luverne (R. W. Dawson); 2 September 15, 1921, Brooten (W. E. Hoffman); 1 July 5, 1923, LaCrescent (P. L. Keene); 1 July 29, 1910, Lake Itasca; 2 June 23, 1911, Lake Itasca; 1 July 28, 1914, Lake Itasca; 2 August 7, 1922, Willow River (W. E. Hoffman); 1 July 17, 1925, Taylor Falls (Sam Kepperley); 1 July 17, 1922, Sib'ey County (W. E. Hoffman); 1 August 6, 1922, North Branch (W. E. Hoffman); 2 June 30, 1923, Red Wing (A. T. Hertig); 2 Hennepin County (Zoology Collection); 4 Ramsey County (Zoology Collection); 1 July 10, Chisago County (Zoology Collection); 1 July 27, Hennepin County (Zoology Collection); 3 August 8, Hennepin County (Zoology Collection); 2 October 8, Hennepin County (Zoology Collection); 1 November 3, Hennepin County (Zoology Collection); 4 May 29, 1929, Hennepin County (W. C. Stehr); 1 June 1, 1929, Minneapolis (W. C. Stehr); 5 June 4, 1929, Minneapolis (W. C. Stehr); 16 May 31, 1929, Minneapolis (W. C. Stehr); 8 June 9, 1929, Minneapolis (W. C. Stehr); 4 June 21, 1929, University Farm, St. Paul (W. C. Stehr); 3 June 26, 1929, Minneapolis (W. C. Stehr); 2 August 12, 1929, Stewart River near Two Harbors (W. C. Stehr); 3 September 1, 1929, Nisswa (O. E. Storm); 8 May 29, 1930, Frontenac (W. C. Stehr); 10 June 5, 1930, Minneapolis (W. C. Stehr); 2 June 14, 1930, Minneapolis (W. C. Stehr); 4 June 19, 1930, Minneapolis (W. C. Stehr); 48 July 12, 1930, Minneapolis (W. C. Stehr); 12 July 19, 1930, Minneapolis (W. C. Stehr); 42 July 24, 1930, Minneapolis (W. C. Stehr).

Coccinella transversoguttata Faldermann

1835 *Coccinella transversoguttata* Faldermann, Mem. Petro. ii:454

1850 *Coccinella transversoguttata,* Mulsant, Spec. des Coleoptères, p. 117

1838 *Coccinella 5-notata,* Kirby, Faun. Bor. Am. iv:230
1840 *Coccinella ephippiata,* Zetterstedt, Ins. Lapp. p. 235
1874 *Coccinella transversoguttata,* Crotch, Rev. Cocc. p. 116
1899 *Coccinella 5-notata,* Casey, Jour. N. Y. Ent. Soc. vii:89
1903 *Coccinella transversoguttata,* Leng, Jour. N. Y. Ent. Soc. xi:199
1908 *Coccinella 5-notata,* Casey, Can. Ent. iv:401
1920 *Coccinella transversoguttata,* Leng, Catalog of the Coleoptera

Kirby applied the name *C. 5-notata* to the American form and considered it different from the Siberian form which Faldermann named *C. transversoguttata.* In this he is upheld by Casey (1899 and 1908). The differences between the two are, however, very slight and there is a question as to whether they are really different species. By other workers on the *Coccinellidae* they have been considered as the same; therefore the name *C. transversoguttata* is used here.

This species is fairly common in all parts of Minnesota. It is one of the important aphid-destroying species of the state. It is the largest of the Coccinellidae in the state with the exception of *Anatis 15-punctata* Mulsant.

Specimens examined: 1 September 30, Hennepin County (Zoology Collection); 1 Ramsey County (Zoology Collection); 1 July 12, Cass County (Zoology Collection); 4 July 4, Chisago County (Zoology Collection); 1 May 29, 1929, Hennepin County (W. C. Stehr); 3 June 1, 1929, Minneapolis (W. C. Stehr); 4 June 4, 1929, Minneapolis (W. C. Stehr); 3 June 8, 1929, Minneapolis (W. C. Stehr); 1 July 3, 1929, on pine near Dale Street, St. Paul (W. C. Stehr); 4 August 8, 1929, Rosebush Twnp., Cook County (W. C. Stehr); 1 August, 1929, Polk County (H. Parten); 1 August 8, 1929, Little Devil's Track River near Grand Marais (W. C. Stehr); 3 September 1, 1929, Nisswa (O. E. Storm); 1 August 9, 1924, Ramsey County; 1 Ramsey County; 1 June 30, 1922, New Brighton (C. E. Mickel); 1 July 12, 1921, Gray Cloud Island (W. E. Hoffman); 1 August 22, 1922, University Farm light, St. Paul (W. E. Hoffman); 1 August 22, 1926, University Farm, St. Paul (Carl T. Schmidt); 1 June 14, 1927, University Farm, St. Paul (Carl T. Schmidt); 1 August 11, 1925, Taylor Falls (Sam Kepperley); 2 July 14, 1925, Fridley sand dunes, Anoka County (C. E. Mickel); 1 August 27, 1910, St. Louis County; 2 September 14, 1918, Pillager (V. E. Haber); 1 August 18, 1922, Hibbing (H. B. Hungerford); 1 August 15, 1922, Lake County (H. B. Hungerford); 1 July 5, 1922, Minneapolis (A. T. Hertig); 68 June 29, 1926, New London (C. E. Mickel); 1 May 25, 1911, Itasca Park; 1 June 10, 1914, Lake Itasca; 1 June 22, 1914, Lake Itasca; 1 June 28, 1914, Lake Itasca; 2 August 3, 1914, Lake Itasca; 1 August 13, 1914, Lake Itasca; 1 1920, Lake Itasca (S. A. Graham); 1 Lake Itasca; 1 June 25, 1925,

Luverne (H. L. Sweetman); 3 June 25, 1925, Luverne (R. W. Dawson); 1 August 6, 1922, North Branch (W. E. Hoffman); 2 June 25, Pine County; 1 August 17, 1918, Crystal Lake (Wm. A. Riley); 2 June 17, 1920, Norman County; 1 April 20, 1923, Norman County (A. A. Nichol); 1 June 22, 1927, Two Harbors (M. H. Hatch); 1 June 24, 1927, Two Harbors (M. H. Hatch); 6 June 27, 1927, Two Harbors (M. H. Hatch); 2 August, 1926, Hennepin County (J. E. Hill); 1 August 31, 1910, St. Louis County; 7 August 27, 1910, St. Louis County; 1 August 2, 1910, Beltrami County; 4 July 24, 1928, Duluth (F. M. Wadley); 1 June 28, 1912, Lake City; 2 Ottertail County (Lugger Collection); 1 May 29, 1930, Frontenac (W. C. Stehr); 18 June 5, 1930, Minneapolis (W. C. Stehr); 2 July 12, 1930, Minneapolis (W. C. Stehr); 10 July 17, 1930, Minneapolis (W. C. Stehr); 7 July 24, 1930, Minneapolis (W. C. Stehr).

Coccinella transversoguttata var. *nugatoria* Mulsant

1850 *Coccinella nugatoria* Mulsant, Spec. des Coleoptères, p. 1021
1920 *Coccinella transversoguttata* var. *nugatoria* Leng, Catalog of the Coleoptera

This variety is exactly like *C. transversoguttata* except that the subbasal bar of the elytra has been divided into a short bar extending across the elytra in the region of the scutellum and a humeral spot on each elytron, whereas in *C. transversoguttata* the bar is continuous. Crotch and Casey do not recognize this as a variety, however, since it is the extreme variation of the species it may be mentioned here for the purpose of identification. It certainly is not entitled to recognition as more than a variation.

Specimens examined: 1 Ramsey County (Lugger Collection); 1 June 20, 1912, Lake City; 2 June 29, 1926, New London (C. E. Mickel); 1 August 13, 1914, Lake Itasca; 3 July 27, 1927, Two Harbors (M. H. Hatch); 1 July 18, 1922, Ottawa (W. E. Hoffman).

Coccinella monticola Mulsant

1850 *Coccinella monticola* Mulsant, Spec. des Coleoptères, 115:24
1852 *Coccinella lacustris* Leconte, Proc. Phil. Acad. vi:131
1899 *Coccinella monticola* Casey, Jour. N. Y. Ent. Soc. vii:89
1903 *Coccinella monticola* Leng, Jour. N. Y. Ent. Soc. xi:198

This is a northern and western species and is only occasionally found in Minnesota. There are many specimens from Montana, Alberta, and other northwestern regions in the collection of the University of Minnesota. The two specimens from this state are both from the northern portion.

Specimens examined: 1 Lake Vermillion (Lugger Collection); 1 July 3, 1928, Lake Itasca (L. W. Orr).

Genus *Cycloneda* Crotch

Cycloneda munda (Say)

1835 *Coccinella munda* Say, Bost. Jour. Nat. Hist. 1:202
1850 *Daulis munda* Mulsant, Spec. des Coleoptères, p. 324
1874 *Coccinella munda* Crotch, Rev. Cocc. p. 107
1899 *Cycloneda munda* Casey, Jour. N. Y. Ent. Soc. vii:93

Leng (1903) and Blatchley (1910) give *C. munda* the status of a variety of *Cycloneda sanguinea* (Linnaeus). *C. sanguinea* is a southern species and is very much more shining and brilliant than *C. munda*. The punctuation of the elytra and thorax is also more distinct and the differences are great enough to warrant giving *C. munda* specific rank.

1920 *Cycloneda munda* Leng, Catalog of the Coleoptera

This is the only species of the genus found in Minnesota. The records are mainly from the southern half of the state and it probably is not common in the coniferous belt of the state. It is a rather small very convex species with immaculate elytra and can be easily recognized by these characters and the pale lunules on the thorax. It is usually fairly common wherever there are aphids on field crops and weed patches.

Specimens examined:

Males: 2 July 17, 1923, Lesueur County near Fish Hatchery (Sam Kepperley); 1 July 17, 1922, Lesueur County near Minnesota River (W. E. Hoffman); 5 July 27, 1922, St. Peter near Fish Hatchery (W. E. Hoffman); 2 July 15, 1911, Chisago County; 1 July 29, 1910, Marshall County; 1 July 12, 1922, Hokah (C. E. Mickel); 1 August 2, 1923, Norman County (A. A. Nichol); 1 July 1, 1923, Winnebago, Sibley County (W. E. Hoffman); 1 August 29, 1918, University Farm, St. Paul (A. W.); 1 June 23, 1922, St. Anthony Park, St. Paul (H. H. Knight); 1 September 2, 1925, St. Paul (Allen McIntosh); 2 August 9, 1924, Ramsey County; 1 August 7, 1922, Willow River (H. H. Knight); 1 July 7, Chisago County (Zoology Collection); 1 June 5, 1930, Minneapolis (W. C. Stehr); 2 July 12, 1930, Minneapolis (W. C. Stehr); 22 July 17, 1930, Minneapolis (W. C. Stehr); 2 July 28, 1930, St. Paul (W. C. Stehr).

Females: 1 June 13, Hennepin County (Zoology Collection); 5 Traverse County (Zoology Collection); 1 Big Stone County (Zoology Collection); 3 July 10, Chisago County (Zoology Collection); 1 June 22, 1929, Glenwood Park, Minneapolis (W. C. Stehr); 1 August 1, 1929, St. Paul (W. C. Stehr); 1 July 22, St. Peter near Fish Hatchery (W. E. Hoffman); 1 July 27, 1922, St. Peter near Fish Hatchery (W. E. Hoffman); 2 June 16, 1922, Mora (W. E. Hoffman); 2 July

17, 1923, Lesueur County near Fish Hatchery (Sam Kepperley); 1 July 26, 1922, Lesueur County (W. E. Hoffman); 4 August 9, 1921, Albert Lea (W. E. Hoffman); 1 June 20, 1910, Faribault County; 4 June 19, 1922, Faribault (W. E. Hoffman); 2 June 21, 1922, Owatonna (W. E. Hoffman); 1 June 23, 1922, Owatonna (W. E. Hoffman); 1 June 25, 1923, Owatonna (P. L. Keene); 2 July 11, 1923, Eagle Bend (W. E. Hoffman); 1 July 11, 1923, Winnebago (P. L. Keene); 1 June 20, 1922, Medford (W. E. Hoffman); 2 June 18, 1922, Minneapolis (A. T. Hertig); 1 May 29, 1920, Crystal Lake; 1 Hennepin County (Lugger Collection); 1 June 14, 1922, Hennepin County (W. E. Hoffman); 1 August, 1926, Hennepin County (J. E. Hill); 1 July 30, 1918, Lake Independence, Hennepin County; 1 August 19, 1918, University Golf Course, Ramsey County (A. W.); 2 June 22, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 July 7, 1923, Ramsey County (R. W. Dawson); 2 August 9, 1924, Ramsey County; 1 September 14, 1925, Ramsey County (Sam Kepperley); 1 August 9, 1922, Two Harbors (H. B. Hungerford), 1 August 2, 1925, Taylor Falls (Sam Kepperley); 1 August 10, Washington County; 1 August 1, 1922, Scott County near Jordan (W. E. Hoffman); 1 July 20, 1926, Blue Earth (F. M. Wadley); 2 May 29, 1930, Frontenac (W. C. Stehr); 1 June 14, 1930, Minneapolis (W. C. Stehr); 7 June 19, 1930, Minneapolis (W. C. Stehr); 7 June 23, 1930, Minneapolis(W. C. Stehr); 6 July 1, 1930, Minneapolis (W. C. Stehr); 3 July 12, 1930, Minneapolis (W. C. Stehr); 29 July 17, 1930, Minneapolis (W. C. Stehr); 4 July 24, 1930, Minneapolis (W. C. Stehr); 1 July 28, 1930, St. Paul (W. C. Stehr).

Genus *Olla* Casey

There is but one Minnesota species of this genus. It is a small very convex species with pale yellow elytra with black dots on the elytra and thorax. The records are from the southwestern portion of the state only. It is evidently not very common in the state.

Olla abdominalis (Say)

1824 *Coccinella abdominalis* Say, Jour. Acad. Phil. iv:95
1850 *Daulis abdominalis* Mulsant, Spec. des Coleptères, p. 316
1871 *Cycloneda sayi* Crotch, Catalog of Cocc. p. 6
1874 *Cycloneda abdominalis* Crotch, Rev. Cocc. p. 163
1899 *Olla abdominalis* Casey, Jour. N. Y. Ent. Soc. vii:93
1903 *Olla abdominalis* Leng, Jour. N. Y. Ent. Soc. xi:205
1910 *Olla abdominalis* Blatchley, Coleoptera of Indiana

Specimens examined: 1 June 25, 1925, Luverne (H. L. Sweetman); 1 Traverse County (Zoology Collection).

Genus *Adalia* Mulsant

Key to the Minnesota Species

1 Thorax with a broad M-shaped median black design, with pale margins; elytra red with black spots 2
Thorax with narrow pale apical and lateral margins; elytra black with red spots ..... *Adalia humeralis* (Say)

2 (1) Pale margins of the thorax immaculate, one round discal black spot on each elytron ..... *Adalia bipunctata* (Linnaeus)
A black spot in the pale margins of the thorax, two or more black spots or markings on each elytron 3

3 (2) Two round black spots on each elytron ..... *Adalia frigida* (Schneider)
Elytra with two black bands .... *Adalia frigida* var. *disjuncta* (Randall)

Adalia bipunctata (Linnaeus)

1758 *Coccinella bipunctata* Linnaeus, Syst. Nat. p. 364
1792 *Coccinella dispar* Schneider, Mag. für Ent. p. 172
1846 *Idalia bipunctata* Mulsant, Securipalpes, p. 61
1824 *Coccinella bioculata* Say, Jour. Acad. Phil. iv:94
1873 *Adalia bipunctata* Crotch, Trans. Am. Ent. Soc. iv:372
1874 *Adalia bipunctata* Crotch, Rev. Cocc. p. 102
1899 *Adalia bipunctata* Casey, Jour. N. Y. Ent. Soc. vii:85
1903 *Adalia bipunctata* Leng, Jour. N. Y. Ent. Soc. xi:195

This is the only species of *Adalia* that is at all common in Minnesota. It can be found at all times of the summer in the southern half of the state. In the spring of the year it is very commonly feeding on aphids on shade trees such as box-elder, poplar, elm, and basswood. It also occurs on many other plants infested with aphids. In the fall this species is the one that commonly enters houses seeking a place for hibernation. I, at one time, found 54 specimens under a defective window casing where they had gone into hibernation. It ranks as one of the most efficient of the aphid-destroying species in the state.

Specimens examined: 2 Hennepin County (Zoology Collection); 1 May 3, Hennepin County (Zoology Collection); 4 May 10, Hennepin County (Zoology Collection); 1 July 27, Hennepin County (Zoology Collection); 1 August 1 (Zoology Collection); 1 October 4, Hennepin County (Zoology Collection); 20 June 26, 1929, Minneapolis (W. C. Stehr); 1 May 10, 1922, State Fair Grounds, St. Paul (W. E. Hoffman); 1 May 22, 1922, State Fair Grounds, St. Paul (W. E. Hoffman); 1 May 20, 1922, Battle Creek, Ramsey County (A. T. Hertig); 7 July 10, 1921, White Bear (W. E. Hoffman); 4 July 1, Minneapolis; 1 May 26, 1920, Minneapolis; 11 June 18, 1922, Minneapolis (A. T. Hertig); 3 June 12, 1921, Lake Calhoun, Minneapolis (W. E. Hoffman); 2 June 4, 1922, Lake Calhoun, Minneapolis (W. E. Hoffman);

1 July 6, 1910, Hennepin County; 2 June 1, 1920, Hennepin County (E. H.); 1 August, 1926 (J. E. Hill); 1 June 13, 1923, Fridley sand area, Anoka County (W. E. Hoffman); 1 July 22, 1922, St. Peter near Fish Hatchery (W. E. Hoffman); 3 July 26, 1922, St. Peter near Fish Hatchery (W. E. Hoffman); 1 August 6, 1922, Taylor Falls (W. E. Hoffman); 1 May 21, 1921, Faribault; 1 August 9, Washington County; 3 June 25, 1925, Luverne (R. W. Dawson); 2 June 30, 1922, Alexandria (W. E. Hoffman); 1 May 30, 1910, St. Anthony Park, St. Paul; 1 August 5, 1920, St. Anthony Park, St. Paul; 10 June 3, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 June 4, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 June 8, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 5 June 22, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 June 24, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 2 June 23, 1922, St. Anthony Park, St. Paul (H. H. Knight); 1 August 29, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 4 August 9, 1924, St. Anthony Park, St. Paul; 1 April 22, 1922, Ramsey County (W. E. Hoffman); 1 May 2, 1922, Ramsey County (W. E. Hoffman); 1 June 28, 1922, Ramsey County (W. E. Hoffman); 4 July 9, 1923, Ramsey County (W. E. Hoffman); 4 July 10, 1922, Ramsey County (W. E. Hoffman); 2 June, 1921, Bussey's Pond, St. Paul (W. E. Hoffman); 2 June 22, 1921, University Farm, St. Paul (W. E. Hoffman); 1 August 23, 1921, University Farm, St. Paul (W. E. Hoffman); 1 August 29, 1918, University Farm, St. Paul (A. W.); 1 May 1, 1922, University Farm, St. Paul (W. E. Hoffman); 1 May 9, 1922, University Farm, St. Paul (W. E. Hoffman); 1 May 18, 1922, University Farm, St. Paul (W. E. Hoffman); 1 May 19, 1922, University Farm, St. Paul (A. T. Hertig); 3 May 19, 1922, University Farm, St. Paul (W. E. Hoffman); 1 June 13, 1922, University Farm, St. Paul (W. E. Hoffman); 4 April 27, 1922, University Farm, St. Paul (C. E. Mickel); 1 April 28, 1923, University Farm, St. Paul (A. T. Hertig); 1 July 23, 1924, University Farm, St. Paul (Sam Kepperley); 1 August 21, 1926, University Farm, St. Paul (C. T. Schmidt); 1 June 14, 1927, University Farm, St. Paul (C. T. Schmidt); 1 October 6, 1899, St. Anthony Park, St. Paul (Lugger Collection); 1 June 10, 1912, St. Anthony Park, St. Paul; 1 July 1, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 4 June 2, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 March 25, 1922, St. Anthony Park, St. Paul (W. E. Hoffman); 1 June 28, 1922, St. Anthony Park, St. Paul (W. E. Hoffman); 3 May 29, 1930, Frontenac (W. C. Stehr); 50 June 5, 1930, Minneapolis (W. C. Stehr); 4 June 19, 1930, Minneapolis (W. C. Stehr); 2 July 1, 1930, Minneapolis (W. C. Stehr).

Adalia frigida (Schneider)

1792 *Coccinella frigida* Schneider, Mag. für Ent. p. 172
1799 *Coccinella hyperborea* Paykull, Fauna Suec. ii:39
1850 *Adalia hyperborea* Mulsant, Spec. des Coleoptères, p. 53
1850 *Adalia melanopleura* Leconte, Proc. Phil. Acad. p. 286
1874 *Adalia frigida* Crotch, Rev. Cocc. p. 101
1899 *Adalia frigida* Casey, Jour. N. Y. Ent. Soc. vii:86
1903 *Adalia frigida* Leng, Jour. N. Y. Ent. Soc. xi:195

This species is never very common and I have seen only one specimen from Minnesota. Its variety, *humeralis,* is much more frequently encountered. *A. frigida* and its varieties have the same general distribution as *A. bipunctata,* to which species they are very closely related.

Specimen examined: 1 July 16, 1918, Chisago County.

Adalia frigida var. *disjuncta* (Randall)

1838 *Coccinella disjuncta* Randall, Bost. Jour. Nat. Hist. ii:33
1899 *Adalia disjuncta* Casey, Jour. N. Y. Ent. Soc. vii:87
1903 *Adalia frigida* var. *disjuncta* Leng, Jour. N. Y. Ent. Soc. xi:195
1920 *Adalia frigida* var. *disjuncta* Leng, Catalog of the Coleoptera

Specimen examined: 1 July 5, 1922, Eagle Bend (W. E. Hoffman).

Adalia frigida var. *humeralis* (Say)

1824 *Coccinella humeralis* Say, Jour. Acad. Phil. iv:95
1874 Crotch places it as synonym of *A. bipunctata* (L) Rev. Cocc. p. 102
1899 *Adalia humeralis* Casey, Jour. N. Y. Ent. Soc. vii:85
1903 *Adalia humeralis* Casey, Jour. N. Y. Ent. Soc. xi:195
1920 *Adalia frigida* var. *humeralis* Leng, Catalog of the Coleoptera

This species can be distinguished from other black species in Minnesota by the rectangular red areas on the anterior lateral margins of the elytra.

Specimens examined: 1 July 12, 1922, University Farm, St. Paul (Clayton Johnson); 1 June 19, 1919, St. Anthony Park, Ramsey County (H. H. Knight); 1 June 16, 1922, Mora (W. E. Hoffman); 1 March 30, 1920, Norman County; 1 October 1, 1922, Norman County (A. A. Nichol); 1 July 5, 1922, Eagle Bend (W. E. Hoffman); 1 June 20, 1923, Northfield (P. L. Keene); 1 June 21, 1928, Winona (L. B. Reed); 2 May 29, 1930, Frontenac (W. C. Stehr).

Genus *Cleis* Mulsant

(Key to the Species)

1 Elytra with sharply defined narrow black markings, a longitudinal bar on each elytron and two small irregular spots which may either be separated or joined to the bar; patterns of the elytra never joined to each other .....*Cleis picta* var. *hudsonica* Casey

2 Elytra immaculate (males) or with rather nubilous markings; patterns of the two elytra very commonly confluent.....*Cleis picta* (Randall)

Cleis picta (Randall)

This species is not very common and is found only in the northern portion of the state. It is much more common in the states from Montana to Oregon and Washington.

1838 *Coccinella picta* Randall, Bost. Jour. Nat. Hist. ii:51
1847 *Coccinella concinnata* Melsheimer, Pro. Phil. Acad. iii:177
1850 *Harmonia contexta* Mulsant, Spec. des Coleoptères, p. 87
1874 *Coccinella picta* Crotch, Rev. Cocc. p. 105
1873 *Harmonia picta* Crotch, Trans. Am. Ent. Soc. iv:373
1899 *Cleis picta* Casey, Jour. N. Y. Ent. Soc. vii:95
1903 *Harmonia picta* Leng, Jour. N. Y. Ent. Soc. xi:205
1920 *Cleis picta* Leng, Catalog of the Coleoptera

Specimens examined: 1 Ottertail County (Lugger Collection); 1 August 21, 1922, Lake Itasca (H. B. Hungerford); 2 July 12, Cass County (Zoology Collection); 1 Koochiching County (Zoology Collection).

Cleis picta var. *hudsonica* Casey

1899 *Cleis hudsonica* Casey, Jour. N. Y. Ent. Soc. vii:96
1903 *Harmonia picta* var. *hudsonica* Leng, Jour. N. Y. Ent. Soc. xi:206
1920 *Cleis picta* var. *hudsonica* Leng, Catalog of the Coleoptera

Specimen examined: 1 Lake Vermilion (Lugger Collection).

Genus *Anisocalvia* Crotch

(Key to the Species)

1 Elytra dark, with or without pale spots.....
Anisocalvia 14-guttata (Linnaeus)
Elytra pale, with large round or oval black spots.....
Anisocalvia 12-maculata (Gebler)

This is not a common genus in the state and all the records I have seen are from the northern counties.

Anisocalvia quatuordecimguttata (Linnaeus)

1758 *Coccinella 14-guttata* Linnaeus, Syst. Nat. p. 367
1846 *Calvia 14-guttata* Mulsant, Securipalpes, p. 140
1871 *Anisocalvia 14-guttata* Crotch, Cat. Cocc. p. 4
1874 *Anisocalvia 14-guttata* Crotch, Rev. Cocc. p. 144
1903 *Anisocalvia 14-guttata* Leng, Jour. N. Y. Ent. Soc. xi:206

Major Casey (1899) reserves this name for the European species and gives specific rank to the varieties *A. similis* (Randall) and *A. cardisce* (Randall)

Specimens examined: 1 June 28, 1927, Two Harbors (M. H. Hatch); 1 Lake Itasca; 2 August 26, 1914, Lake Itasca.

Anisocalvia duodecim-maculata (Gebler)

1832 *Coccinella 12-maculata* Gebler, Mem. Mosc. ii:76
1850 *Harmonia 12-maculata* Mulsant, Spec. des Coleotères, p. 86
1873 *Anisocalvia 12-maculata* Crotch, Trans. Am. Ent. Soc. iv:274
1874 *Anisocalvia 12-maculata* Crotch, Rev. Cocc. p. 110
1899 *Anisocalvia 12-maculata* Casey, Jour. N. Y. Ent. Soc. vii:97
1903 *Anisocalvia 12-maculata* Leng, Jour. N. Y. Ent. Soc. xi:207

Specimens examined: 1 August 6, 1915, Ely; 1 Lake Superior (Lugger Collection); 1 July 21, 1929, Poplar Lake, Cook County (L. W. Orr).

Genus *Anatis* Mulsant

(Key to the Species)

1 Elytra yellow to red-brown with eight black spots on each.....
Anatis 15-punctata (Olivier)
Elytra red-brown with pale rings around the eight black spots.....
Anatis 15-punctata var. *mali* (Say)

Anatis quindecimpunctata (Olivier)

These are the largest *Coccinellidae* in Minnesota and can be easily distinguished from any others by the size and the margined elytra as well as the maculation.

1808 *Coccinella 15-punctata* Olivier, Ent. iv:1027
1850 *Anatis 15-punctata* Mulsant, Spec. des Coleoptères, p. 133
1874 *Anatis 15-punctata* Crotch, Rev. Cocc. p. 124
1899 *Anatis 15-punctata* Casey, Jour. N. Y. Ent. Soc. vii:98
1903 *Anatis 15-punctata* Leng, Jour. N. Y. Ent. Soc. xi:207

Major Casey (1899) gives *Coccinella labiculata* (Say) as a synonym of *Anatis 15-punctata* (Olivier).

Specimens examined: 1 July 6, Cass County (Zoology Collection); 1 Kittson County (Zoology Collection); 1 Koochiching County (Zoology Collection); 1 Minnesota (Zoology Collection); 1 July 5, 1923, La Crescent (P. L. Keene); 1 July 15, 1923, Jordan (H. H. Knight); 1 August 6, 1922, St. Peter (R. R. Holland); 1 June 28, 1920, Rush City (Ben Kienholz); 1 July 10, 1912, Lake City; 1 July 17, 1923, Lake City (P. L. Keene); 1 July 1, Minneapolis; 2 Hennepin County (Lugger Collection); 1 June 5, 1911, Ramsey County; 1 June 21, 1923, Ramsey County (W. E. Hoffman); 1 July 10, 1924, Ramsey

County (H. H. Knight); 1 June 30, 1922, New Brighton, Ramsey County (C. E. Mickel); 2 July 8, 1922, St. Paul (Florence Defiel); 1 St. Anthony Park, St Paul (Lugger Collection); 1 June 7, 1911, St. Anthony Park, St. Paul; 2 Itasca County; 1 June 23, 1923, Lesueur County (W. E. Hoffman); 1 July 11, 1922, Rochester (C. E. Mickel); 1 June 30, 1923, Red Wing (A. T. Hertig); 1 July 20, 1920, Gray Cloud Island (H. H. Knight); 1 Ottertail County (Lugger Collection); 1 Duluth (Lugger Collection); 1 June 14, 1922, Lakeland (H. H. Knight); 3 May 29, 1930, Frontenac (W. C. Stehr).

Anatis 15-punctata var. *mali* (Say)

1824 *Coccinella mali* Say, Jour. Acad. Phil. iv:93
1874 *Anatis 15-punctata* Crotch, Rev. Cocc. p. 124 (synonym)
1899 *Anatis mali* Casey, Jour. N. Y. Ent. Soc. vii:98
1903 *Anatis 15-punctata* var. *mali* Leng, Jour. N. Y. Ent. Soc. xi:208
1920 *Anatis 15-punctata* var. *mali* Leng, Catalog of the Coleoptera

The variety *mali* appears to be about as common as *A. 15-punctata* itself and has practically the same distribution.

Specimens examined: 3 Itasca Park; 5 June 27, 1911, Itasca Park; 1 June 23, 1911, Itasca Park; 2 June 24, 1911, Itasca Park; 1 August 30, 1919, Kawishiwi River (H. H. Knight); 1 July 10, 1915, Ely; 3 Duluth (Lugger Collection); 1 July 16, 1918, Duluth (R. V. H.); 1 June 27, 1927, Two Harbors (M. H. Hatch); 1 Hennepin County (Lugger Collection); 1 Minnesota (Lugger Collection); 1 July 10, Cass County (Zoology Collection); 1 July 11, Cass County (Zoology Collection); 1 July 15, Cass County (Zoology Collection); 1 July 6, Chisago County (Zoology Collection); 1 August 10, Chisago County (Zoology Collection); 3 Kittson County (Zoology Collection); 1 Lake of the Woods (Zoology Collection).

Genus *Neomysia* Casey

Neomysia pullata (Say)

This is the only species of the genus thus far recorded from Minnesota. It is found only in the northern pine area. Mr. Orr collected his specimen from pine infested with *Lecanium* scales and pine aphids. The pigmentation is very heavy in all of the Minnesota specimens I have seen.

1825 *Coccinella pullata* Say, Jour. Acad. Phil. v:301
1838 *Coccinella notans* Randall, Bost. Jour. Nat. Hist. ii:49
1850 *Mysia notans* Mulsant, Spec. des Coleoptères, p. 137
1874 *Mysia pullata* Crotch, Rev. Cocc. p. 125
1899 *Neomysia pullata* Casey, Jour. N. Y. Ent. Soc. vii:99
1903 *Neomysia pullata* Leng, Jour. N. Y. Ent. Soc. xi:209

Specimens examined: 1 Lake Vermilion (Lugger Collection); 1 July 25, Cass County (Zoology Collection); 1 June 21, 1929, Hubbard County (L. W. Orr).

Tribe *Psylloborini*

Genus Psyllobora Chevrolat

Psyllobora viginti-maculata (Say)

This is the only species of the tribe and genus found in Minnesota. It is a very small species, pale yellow in color with many black or brownish spots. It can be easily distinguished from *Anisosticta bitriangularis* (Say) by its very round and convex form, whereas *A. bitriangularis* is oval and somewhat depressed.

1824 *Coccinella 20-maculata* Say, Jour. Acad. Phil. iv:96
1850 *Psyllobora 20-maculata* Mulsant, Spec. des Coleoptères, p. 183
1857 *Psyllobora 20-signata* Boheman, Eugen. Resa. p. 203
1857 *Psyllobora interspersa* Boheman, Eugen. Resa. p. 203
1874 *Psyllobora 20-maculata* Crotch, Rev. Cocc. p. 141
1899 *Psyllobora 20-maculata* Casey, Jour. N. Y. Ent. Soc. vii:101
1910 *Psyllobora 20-maculata* Blatchley, Coleoptera of Indiana

Specimens examined: 2 July 5, Cass County (Zoology Collection); 3 July 10, Chisago County (Zoology Collection); 2 July 31, 1929, Hennepin County (W. C. Stehr); 7 May 29, 1920, Crystal Lake, Hennepin County; 1 September 14, 1925, Ramsey County (Sam Kepperley); 1 April 15, 1922, Battle Creek, Ramsey County (W. E. Hoffman); 1 St. Anthony Park, St. Paul (Lugger Collection); 1 June 22, 1911, St. Anthony Park, St. Paul; 1 June 4, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 July 21, 1921, St. Paul (W. E. Hoffman); 1 July 10, 1921, White Bear (W. E. Hoffman); 1 August 28, 1919, Kawishiwi River (H. H. Knight); 1 June 20, 1922, King's Bluff, Winona County (H. H. Knight); 3 July 1, 1921, Whitefish Lake (H. B. Hungerford); 1 July 5, 1923, La Crescent (P. L. Keene); 4 September 13, 1923, Norman County (A. A. Nichol); 1 August 20, 1920, Beaver Bay (H. H. Knight); 1 July 17, 1921, Princeton (W. E. Hoffman); 1 August 27, 1910, St. Louis County; 2 June 28, 1927, Two Harbors (M. H. Hatch).

Tribe *Chilocorini*

Key to the Genera of *Chilocorini*

1 Front tibiae with a small tooth on the outer margin near the base; thorax pubescent toward the sides; length less than 6 mm. ..... *Chilocorus* Leach

Front tibiae without a tooth; thorax not pubescent toward the side margins 2

2 (1) Body convex, not depressed nor excavated beneath; size small, not over 3.5 mm. 3
Body very convex, sub-compressed above, excavated beneath for the femora; size large, 6 mm. or more.....*Axion* Mulsant
3 (2) Claws strongly toothed..*Exochomus* subgenus *Exochomus* Redtenbacher
Claws feebly toothed or not toothed.....
Exochomus subgenus *Brumus* Weise

Genus *Chilocorus* Mulsant

1850 *Chilocorus bivulnerus* Mulsant, Spec. des Coleoptères, p. 460

There has been no confusion of this name in the literature and all authors seem to be in agreement. This is the only species of the genus found in Minnesota. All records are from the southern portion of the state. I have taken but one specimen in Minnesota but have taken many in apple orchards in Wisconsin. It is probably fairly common in the southern part of Minnesota as well.

Specimens examined: 1 Minnesota (Lugger Collection); 1 April 28, St. Anthony Park, St. Paul (Lugger Collection); 1 June 5, 1923, St. Anthony Park, St. Paul (H. H. Knight); 1 July 10, 1923, St. Paul (W. E. Hoffman); 1 May 8, 1926, Fort Snelling (C. T. Schmidt); 1 July 11, 1927, Lake City (C. E. Mickel); 1 July 22, 1911, Washington County; 3 July 17, 1920, Lakeland (Ben Kienholz); 1 August 6, 1922, St. Peter (R. R. Holland); 1 July 20, 1920, Gray Cloud Island (H. H. Knight); 1 May 29, 1930, Frontenac (W. C. Stehr).

Genus *Exochomus* subgenus *Brumus* Weise

Exochomus (Brumus) davisi Leng

1908 *Brumus septentrionis* var. *davisi* Leng, Jour. N. Y. Ent. Soc. xvi:42

1908 *Brumus septentrionis* Casey, Can. Ent. 4:409 & 412

Major Casey considers the *B. davisi* of Leng as a synonym of *B. septentrionis* Weise

1920 *Exochomus (Brumus) davisi* Leng, Catalog of the Coleoptera

Specimens examined: 1 July 10, 1918, Duluth (R. H.); 3 June 21, 1929, Hubbard County (L. W. Orr).

The subgenus *Exochomus* Redtenbacher and the genus *Axion* Mulsant are not represented in the collections of the University of Minnesota by specimens from within the state. There are, however, specimens from Iowa, Wisconsin, and Nebraska and it is probable that they occur in the southern portion of Minnesota.

Tribe *Hyperaspini*

Key to the Genera of *Hyperaspini*

1 Front tibiae with a strong spine on the outer edge near the middle; eyes with a small emargination in front....*Brachyacantha* Chevrolat

Front tibiae without spines; elytral spots well-defined and usually few in number; eyes entire.....*Hyperaspis* Chevrolat

Genus *Hyperaspis Chevrolat*

(Key to the Species)

1 Elytra with one red discal spot on each.....*H. binotata* (Say)
Elytra with yellow or reddish yellow markings..... 2
2 (1) Elytra with a marginal band of yellow, or band and spots..... 3
Elytra with yellow spots only..... 5
3 (2) Elytra with a marginal yellow band, the posterior part of which may form a separate spot; no discal spot present.....
H. fimbriolata Melsheimer
Elytra with a marginal band which may be broken to form three marginal spots, and a separate discal spot on each elytron..... 4
4 (3) Discal spot round, body broadly oval.....*H. undulata* (Say)
Discal spot elongate-oval, body elongate-oval...*H. disconotata* Mulsant
5 (2) Elytra with one sub-apical spot; discal spot absent; sides of the thorax with a large round orange spot.....*H. bigeminata* (Randall)
Elytra with two sub-apical spots, discal spot present, sides of the thorax yellow .....*H. proba* (Say)

Hyperaspis bigeminata (Randall)

1838 *Coccinella bigeminata* Randall, Bost. Jour. Nat. Hist. ii:32
1850 *Hyperaspis guexi* Mulsant, Spec. des Coleoptères, p. 687
1874 *Hyperaspis bigeminata* Crotch, Rev. Cocc. p. 234
1899 *Hyperaspis bigeminata* Casey, Jour N. Y. Ent. Soc. vii:122
1910 *Hyperaspis bigeminata* Blatchley, Coleoptera of Indiana

Specimens examined: 1 Ottertail County (Lugger Collection); 5 Lake Superior (Lugger Collection).

Hyperaspis binotata (Say)

1825 *Coccinella binotata* Say, Jour. Phil. Acad. v:302
1825 *Coccinella normata* Say, Jour. Phil. Acad. v:302
1847 *Hyperaspis leucopsis* Melsheimer, Proc. Phil. Acad. iii:179
1874 *Hyperaspis leucopsis* Crotch, Rev. Cocc. p. 234
1899 *Hyperaspis binotata* Casey, Jour. N. Y. Ent. Soc. vii:124
1910 *Hyperaspis signata* var. *binotata* Blatchley, Coleoptera of Indiana

Some authors, especially Leng in his Catalog of the Coleoptera, have considered *H. binotata* (Say) a synonym of *H. signata* (Olivier). All of the Minnesota specimens that I have seen are of the type described by Say as *H. binotata*. I have seen none that answer the description of the typical *H. signata* (Olivier). Specimens submitted to Dr. Chamberlain, of the United States National Muesum, were identified by him as *H. binotata* (Say). The specimens in the collections at Minnesota are labelled *H. signata* var. *binotata* (Say), for the collections are arranged according to Leng's Catalog of the Coleoptera and in this *H. binotata* (Say) is considered a synonym of *H. signata* (Olivier).

This species is fairly common in the state and is found feeding on the *Lecanium* scales on pines. At Lake Vadnais this species was very effective in checking the scale during the summer of 1929. I have examined many specimens from Lake Vadnais, Ramsey County, both adult and larvae, and in all cases the individuals were *H. binotata*. L. W. Orr brought great numbers of larvae and adults from Hubbard County during the summer of 1929. There, also, they had been feeding on *Lecanium* scale. They were reared and all were *H. binotata* (Say). There is no sign of intergrading toward *H. signata* (Olivier). I am firmly convinced that *H. binotata* (Say) deserves specific rank. In several thousand specimens examined there was no deviation from the type. The specimens recorded below are in the collections, about 500 more were placed in student material for class use and the rest were examined alive and liberated.

Specimens examined: 1 Minnesota (Lugger Collection); 1 July 29, 1921, Princeton (W. E. Hoffman); 1 May 30, 1920, Chisago County; 1 August 5, 1920, St. Anthony Park, St. Paul; 1 June 5, 1921, St. Anthony Park, St. Paul (W. E. Hoffman); 1 May 19, 1922, University Farm, St. Paul (A. T. Hertig); 1 March 8, Ramsey County; 1 May 20, 1922, Battle Creek, Ramsey County (A. T. Hertig); 1 July 8, 1911, Washington County; 1 July 28, 1910, Marshall County; 4 June 20, 1929, Lake Vadnais, Ramsey County (W. C. Stehr); 20 June 21, 1929, Hubbard County (L. W. Orr); 18 June 29, 1929, Lake Vadnais, Ramsey County (W. C. Stehr); 1 May 29, 1930, Frontenac (W. C. Stehr); 1 July 21, 1930, St. Paul (W. C. Stehr).

Hyperaspis proba (Say)

1825 *Coccinella proba* Say, Jour. Acad. Phil. v:503
1850 *Hyperaspis proba* Mulsant, Spec. des Coleoptèras, p. 674
1899 *Hyperaspis proba* Casey, Jour. N. Y. Ent. Soc. vii:123
1910 *Hyperaspis proba* Blatchley, Coleoptera of Indiana

Specimen examined: 1 May 5, 1920, Crystal Lake, Hennepin County.

Hyperaspis fimbriolata Melsheimer

1846 *Hyperaspis fimbriolata* Melsheimer, Proc. Phil. Acad. iii:180
1850 *Hyperaspis rufomarginata* Mulsant, Spec. des Coleoptères, p. 661
1899 *Hyperaspis fimbriolata* Casey, Jour. N. Y. Ent. Soc. vii:126
1910 *Hyperaspis fimbriolata* Blatchley, Coleoptera of Indiana

Specimens examined: 1 June 5, 1911, St. Anthony Park, St. Paul; 1 August 31, 1925, St. Paul (Sam Kepperley); 1 Traverse County (Zoology Collection); 1 September 1, 1929, Nisswa (O. E. Storm); 10 August 9, 1929, Rosebush Township, Cook County (W. C. Stehr); 2

August 8, 1929, Kadunce Creek near Lake Superior, Cook County (W. C. Stehr).

Hyperapsis disconotata Mulsant

1850 *Hyperaspis disconotata* Mulsant, Spec. des Coleoptères, p. 653
1874 *Hyperaspis disconotata* Crotch, Rev. Cocc. p. 235
1899 *Hyperaspis disconotata* Casey, Jour. N. Y. Ent. Soc. vii:127

Specimens examined: 2 May 30, 1922, Battle Creek, Ramsey County (A. T. Hertig).

Hyperaspis undulata (Say)

This species is an aphid- and scale-destroying species and is commonly found by sweeping in apple orchards. The large series from Frontenac was in a lake drift on the shore of Lake Pepin.

1824 *Coccinella undulata* Say, Jour. Acad. Phil. iv:92
1873 *Hyperaspis undulata* Crotch, Trans. Am. Ent. Soc. iv:381
1874 *Hyperaspis elegans* Crotch, Rev. Cocc. p. 233
1899 *Hyperaspis undulata* Casey, Jour. N. Y. Ent. Soc. vii:128
1910 *Hyperaspis undulata* Blatchley, Coleoptera of Indiana
1920 *Hyperaspis undulata* Leng, Catalog of the Coleoptera

Specimens examined: 1 August 5, 1923, Norman County (A. A. Nichol); 1 September 13, 1922, Norman County (A. A. Nichol); 1 August 25, 1922, St. Paul (A. T. Hertig); 1 May 20, 1922, Battle Creek, Ramsey County (A. T. Hertig); 1 July 15, 1911, Chisago County; 2 July 16, 1911, Chisago County; 1 July 8, 1911, Washington County; 2 July 21, 1911, Washington County; 1 July 22, 1911, Washington County; 1 June 23, Hennepin County (Zoology Collection); 1 July 9, Hennepin County (Zoology Collection); 2 Big Stone County (Zoology Collection); 1 Chisago County (Zoology Collection); 2 Traverse County (Zoology Collection); 1 September 1, 1929, Nisswa (O. E. Storm); 1 July 30, 1929, St. Paul (W. C. Stehr); 66 May 29, 1930, Frontenac (W. C. Stehr); 5 August 2, 1930, St. Paul (W. C. Stehr).

Genus *Brachyacantha* Chevrolat

(Key to the Species)

1 Elytra dark, each with five clearly defined pale spots, two basal, two in a transverse line near the middle, and one subapical; the humeral spot is constant in both sexes..... 2
Elytra pale, each with two black spots, one anterior and one posterior.. *B. albifrons* (Say)

2 (1) Elytral spots except the humeral well developed and subequal in size; body 2.75 to 3.75 mm. in length.....*B. ursina* (Fabricius)
Elytral spots unequal, the two median ones smaller than the apical and basal spots; body 1.8 to 2.5 mm. in length.....
B. 10-pustulata (Melsheimer)

Brachyacantha ursina (Fabricius)

1787 *Coccinella ursina* Fabricius, Mantissa, i:61
1850 *Brachyacantha ursina* Mulsant, Spec. des Coleoptères, p. 532
1874 *Brachyacantha ursina* Crotch, Rev. Cocc. p. 211
1899 *Brachyacantha ursina* Casey, Jour. N. Y. Ent. Soc. vii:117
1910 *Brachyacantha ursina* Blatchley, Coleoptera of Indiana

Specimens examined: 5 Minnesota (Lugger Collection); 4 June 20, 1925, St. Paul (F. C. Hottes); 1 St. Anthony Park, St. Paul (Lugger Collection); 1 July 6, 1923, Princeton (P. L. Keene); 1 June 20, 1923, Norman County (A. A. Nichol); 1 June 16, 1925, La Crescent (C. B. Phillip); 8 Traverse County (Zoology Collection); 1 June 27, 1930, Fridley sand area (W. C. Stehr); 3 June 7, 1930, Fridley sand area, Anoka County (R. Macy).

Brachyacantha decempustulata (Melsheimer)

1846 *Hyperaspis 10-pustulata* Melsheimer, Proc. Phil. Acad. iii:179
1873 *Brachyacantha ursina, B. 10-pustulata* was considered as a race of the foregoing, Crotch, Trans. Am. Ent. Soc. iv:378
1874 *Brachyacantha 10-pustulata* Crotch, Rev. Cocc. p. 211
1899 *Brachyacantha 10-pustulata* Casey, Jour. N. Y. Ent. Soc. vii:117
1910 *Brachyacantha 10-pustulata* Blatchley, Coleoptera of Indiana

Specimens examined: 2 Minnesota (Lugger Collection); 2 May 5, 1922, Battle Creek, Ramsey County (A. T. Hertig); 1 July 6, 1919, Ramsey County); 2 June 19, 1922, Marshall (C. E. Mickel); 8 July 10, Cass County (Zoology Collection); 1 Chisago County (Zoology Collection); 12 August 6, Traverse County (Zoology Collection); 1 May 4, 1929, sand dunes, Anoka County (V. E. Romney).

Brachyacantha albifrons (Say)

1824 *Coccinella albifrons* Say, Jour. Acad. Phil. iv:94
1873 *Brachyacantha ursina, B. albifrons* was regarded as a race of the preceding, Crotch, Trans. Am. Ent. Soc. iv:378
1874 *Brachyacantha albifrons* Crotch, Rev. Cocc. p. 212
1899 *Brachyacantha albifrons* Casey, Jour. N. Y. Ent. Soc. vii:119
1920 *Brachyacantha albifrons* Leng, Catalog of the Coleoptera

Specimens examined: 1 June 20, 1925, St. Paul (F. C. Hottes); 1 July 1, 1923, Ramsey County (R. W. Dawson).

Tribe *Scymnini*

Key to the Genera

1 Clypeus prolonged for a considerable distance before the eyes; the sides converging; prosternum flat, generally bicarinate.....
Scymnus Kugelmann

Clypeus extremely short before the eyes, truncate with rounded angles; prosternum convex, not carinate, forming a protection for the mouth in repose.....*Stethorus* Weise

Genus *Stethorus* Weise

Stethorus punctum (Leconte)

1852 *Scymnus punctum* Leconte, Proc. Phil. Acad. vi:114
1874 *Scymnus punctum* Crotch, Rev. Cocc. p. 269
1899 *Stethorus punctum* Casey, Jour. N. Y. Ent. Soc. vii:136
1910 *Stethorus punctum* Blatchley, Coleoptera of Indiana

Specimen examined: 1 July 27, 1929, St. Paul (W. C. Stehr).

Genus *Scymnus* Kugelmann

Key to the Species

1 Form broadly oval, the margins of the thorax and the elytra continuous; elytra uniform in coloration on the disc, not considering the apex... 2
Form oblong; thorax narrower at the base than the base of the elytra; elytra black, each with a small red spot at the center of the disc... *S. punctatus* Melsheimer

2 (1) Elytra pale at the apex, either merely bordered with yellow or with a pale apical area 3
Elytra entirely black, thorax black, legs uniformly colored black or brownish 6

3 (2) Apical third of the elytra reddish or yellowish..... *S. haemorrhous* Leconte
Elytra narrowly pale at the apex..... 4

4 (3) Pale margin of the elytra yellowish..... 5
Pale margin of the elytra rufous, legs red.....*S. consobrinus* Leconte

5 (4) Legs entirely reddish yellow.....*S. collaris* Melsheimer
Tibiae, tarsi, and tip of the femora pale.....*S. fraternus* Leconte

6 (2) Last segment of the male feebly impresso-emarginate..... *S. tenebrosus* Leconte
Last segment of the male deeply impresso-emarginate..... *S. lacustris* Leconte

Scymnus fraternus Leconte

1852 *Scymnus fraternus* Leconte, Roc. Phil. Acad. vi:138
1874 *Scymnus fraternus* Crotch, Rev. Cocc. p. 264
1895 *Scymnus fraternus* Horn, Trans. Am. Ent. Soc. 22:101
1899 *Scymnus fraternus* Casey, Jour. N. Y. Ent. Soc. vii:140
1910 *Scymnus fraternus* Blatchley, Coleoptera of Indiana

Horn (1905) places *S. haemorrhous* Lec. as a synonym of *S. fraternus* Lec. I believe the differences are great enough to warrant giving both specific rank.

Specimens examined: 1 August 5, 1923, Norman County (A. A. Nichol); 1 Ottertail County (Lugger Collection); 1 Brown County

(Lugger Collection); 2 July 15, Chisago County (Zoology Collection); 4 May 29, 1930, Frontenac (W. C. Stehr); 3 August 2, 1930, St. Paul (W. C. Stehr).

Scymnus haemorrhous Leconte

1852 *Scymnus haemorrhous Leconte,* Proc. Phil. Acad. vi:138
1895 *Scymnus haemorrhous* Leconte is a synonym of *S. fraternus* Leconte, Horn, Trans. Am. Ent. Soc. 22:101
1899 *Scymnus haemorrhous* Casey, Jour. N. Y. Ent. Soc. vii:140
1920 *Scymnus haemorrhous* Leng, Catalog of the Coleoptera

Specimens examined: 14 May 29, 1930, Frontenac (W. C. Stehr).

Scymnus consobrinus Leconte

1852 *Scymnus consobrinus* Leconte, Proc. Phil. Acad. vi:139
1874 *Scymnus consobrinus* Crotch, Rev. Cocc. p. 266
1899 *Scymnus consobrinus* Casey, Jour. N. Y. Ent. Soc. vii:142

Dr. Horn (1895) places *S. consobrinus* Leconte as a synonym of *S. collaris* Melsheimer. The specimen recorded below is certainly not *S. collaris* and fits only the description of *S. consobrinus* as given by Leconte and Casey.

Specimen examined: 1 October 1, St. Anthony Park, St. Paul (Lugger Collection).

Scymnus collaris Melsheimer

1847 *Scymnus collaris* Melsheimer, Proc. Acad. Phil. p. 180
1895 *Scymnus collaris* Horn, Trans. Am. Ent. Soc. 22:103
1899 *Scymnus collaris* Casey, Jour. N. Y. Ent. Soc. vii:144
1910 *Scymnus collaris,* Blatchley, Coleoptera of Indiana

Dr. Horn places *S. chatchas* Mulsant; *S. fastigatus* Mulsant; *S. caudalis* Leconte; *S. consobrinus* Leconte, as synonyms of *S. collaris* Melsheimer. Major Casey (1899) places *S. socer* Leconte as a synonym of *S. collaris* Melsheimer.

Specimen examined: 1 July 12, 1922, Hokah (C. E. Mickel).

Scymnus tenebrosus Mulsant

1850 *Scymnus tenebrosus* Mulsant, Spec. des Coleoptères, p. 989
1852 *Scymnus tenebrosus* Leconte, Proc. Phil. Acad. vi:140
1874 *Scymnus tenebrosus* Crotch, Rev. Cocc. p. 268
1895 *Scymnus tenebrosus* Horn, Trans. Am. Ent. Soc. 22:106
1899 *Scymnus tenebrosus* Casey, Jour. N. Y. Ent. Soc. vii:148
1910 *Scymnus tenebrosus* Blatchley, Coleoptera of Indiana

Specimens examined: 1 Minnesota (Lugger Collection); 1 June 20, 1929, Lake Vadnais, Ramsay County (W. C. Stehr); 4 June 17, 1929,

Battle Creek Park, St. Paul (W. C. Stehr); 1 May 29, 1930, Frontenac (W. C. Stehr).

Scymnus lacustris Leconte

1850 *Scymnus lacustris* Leconte, Lake Superior, p. 239
1850 *Scymnus lacustris* Mulsant, Spec. des Coleoptères, p. 989
1850 *Scymnus nigrivestris* Mulsant, Spec. des Coleoptères, p. 990
1952 *Scymnus lacustris* Leconte, Proc. Phil. Acad. vi:140
1874 *Scymnus lacustris* Crotch, Rev. Cocc. p. 268
1895 *Scymnus lacustris* Horn, Trans. Am. Ent. Soc. 22:106
1899 *Scymnus lacustris* Casey, Jour. N. Y. Ent. Soc. vii:149

Specimens examined: 1 June 11, Hennepin County (Zoology Collection); 2 June 27, Hennepin County (Zoology Collection); 1 August 16, Cass County (Zoology Collection); 1 Chisago County (Zoology Collection); 1 Swift County (Zoology Collection); 2 Traverse County (Zoology Collection); 1 May 5, 1929, Hennepin County (W. C. Stehr); 7 August 9, 1929, Rosebush Township, Cook County (W. C. Stehr); 1 August 7, 1929, Devil's Track River near Lake Superior, Cook County (W. C. Stehr); 1 September 1, 1929, Nisswa (O. E. Storm).

Scymnus punctatus Melsheimer

1847 *Scymnus punctatus* Melsheimer, Proc. Acad. Phil. p. 180
1895 *Scymnus punctatus* Horn, Trans. Am. Ent. Soc. 22:108
1899 *Scymnus punctatus* Casey, Jour. N. Y. Ent. Soc. vii:153
1910 *Scymnus punctatus* Blatchley, Coleoptera of Indiana

Specimen examined: 1 June 7, St. Anthony Park, St. Paul (Lugger Collection).

Tribe *Coccidulini*

Genus *Coccidula* Kugelmann

Coccidula lepida Leconte

1852 *Coccidula lepida* Leconte, Proc. Acad. Phil. p. 232
1874 *Coccidula lepida* Crotch, Rev. Cocc. p. 301
1895 *Coccidula lepida* Horn, Trans. Am. Ent. Soc. xxii:113
1899 *Coccidula lepida* Casey, Jour. N. Y. Ent. Soc. vii:162
1910 *Coccidula lepida* Blatchley, Coleoptera of Indiana

This species can be easily recognized by the very elongate oval form and the very coarsely facetted eyes. It is the only species of the tribe recorded from Minnesota.

Specimens examined: 1 October 1, St. Anthony Park, St. Paul (Lugger Collection); 1 Minnesota (Lugger Collection).

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