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The Canadian Entomologist.

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No. 4.

PROFESSOR J. HOYES PANTON, M. A., F. G. S.

It is our sad duty to record the death of Professor Panton, which took place at Guelph, on the 2nd of February, after a long and very painful illness, which he bore with the utmost patience and resignation. He was born at Cupar, in Fifeshire, Scotland, and was brought out to Canada when a child; his father settled in Toronto at first, and removed, after some years, to Oshawa. He was educated at the Whitby High School and Toronto University, where he graduated with honours in Natural Science in 1877. The following year he was appointed Professor of Chemistry in the Ontario Agricultural College, but after a few years resigned the position and removed to Winnipeg, where he became principal of the Collegiate Institute. In 1885 he accepted the invitation of the Ontario Government and returned to Guelph, where he filled the position of Professor of Natural History and Geology in the Agricultural College till the time of his death. His work there had special relation to economic entomology and botany, on which subjects he issued many useful bulletins to farmers and fruit-growers. He also published two small works on Economic Geology and "Insect Foes," which are valuable manuals of an elementary character. In 1896 Professor Panton attended for the first time the annual meeting of the Entomological Society of Ontario, though he had long been a member, and on that occasion read very interesting and useful papers on "Entomology for Rural Schools" and "Two Insect Pests of 1896—the Army Worm and the Tussock Moth." At the recent annual meeting in October, 1897, he was elected vice-president of the Society, but was unable to attend owing to the illness which had already seized upon him. The following resolution of condolence was adopted at a meeting of the Council held last month: "The members of the Council of the Entomological Society of Ontario have heard with profound regret of the death of their highly respected colleague and vice-president, J. Hoyes Panton, M.A., F. G. S., Professor of Biology and Geology in the Ontario Agricultural College, Guelph. They desire to place on record their admiration for his talents and attainments in natural

science, and their deep sense of the loss which economic entomology in this Province has sustained by his removal in the maturity of his powers and at an age when he was capable of performing much useful work. They beg to offer to Mrs. Panton and family their respectful sympathy in the great bereavement which has befallen them."

SOME RECENT ADDITIONS TO THE INSECT FAUNA OF OHIO.*

BY F. M. WEBSTER, WOOSTER, OHIO.

In the year 1889, Mr. Henry Tryon, Assistant Curator of the Queensland, Australia, Museum, in a report on the insect and fungus pests, published as report No. 1, by the Department of Agriculture of Queensland, pp. 89-91, describes a species of scale insect found on the

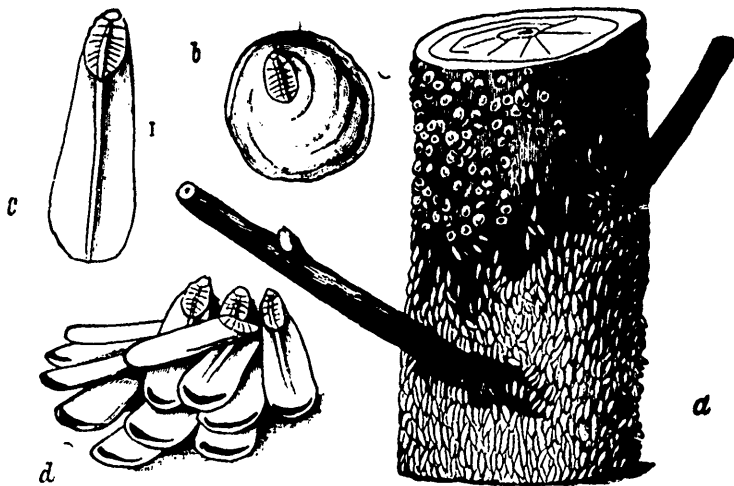


FIG. 7.—*Diaspis amygdali*, Tryon: *a*, branch covered with male and female scales, natural size; *b*, female scale; *c*, male scale; *d*, group of male scales, enlarged. (After Howard.)

peach, as the White Scale, *Diaspis amygdali* (fig. 7), and reported its occurrence both at Brisbane, Queensland, and Sydney, New South Wales. Although described as the White Scale, the author continually refers to it as the peach scale, in his paper, and the latter name has been adopted in America for the species. Of its habits Mr. Tryon states that: "At first its presence is betrayed by small white spots or patches on the bark of the smaller branches; but as the insect increases these soon become

* Read before the Ohio State Academy of Science, December 29, 1897.

in many places confluent, and the individual scales overlap one another, or are contorted by being squeezed together closely, or even appear to lie one over the other, and where the male scale insects crowd together these spots present a more finely chaffy appearance. As it will occur quite up to the tips of the branches, the complete destruction of any tree subjected to the attack of the peach scale, and owing to it, is only a matter of time. When already in patches on the branchlets prior to the formation of the leaves and fruit, in early spring, it does not hinder their formation; the leaves are green as usual, the fruit sets, but is soon retarded in its growth and shrivels up." Writing me under date of November 7th, 1897, however, Mr. Tryon has this to say of its present condition in Queensland: "This Coccid is far from being generally distributed in Queensland, and nowhere have I observed it to act very prejudicially to the trees that it attacks."

In March, 1897, a consignment of Japan Flowering Cherry, both the single and double varieties, was received direct from Japan by the importers in Ohio. A few months later, it was discovered that some of the double flowering variety were infested by a species of scale insect, which proved to belong to this species, and which had not before been known in Ohio. A thorough spraying with kerosene emulsion did nothing more than to check its increase, and did not exterminate it. (It has since been found on *Prunus pandula* and *P. pseudo-ceraceus*, also recently from Japan.)

The distribution of *Diaspis amygdali* and its food plants are also of interest. Mr. T. D. A. Cockerell has given an extended list of the food plants of the species*, and others have since been reported. It is now known to attack *Hibiscus (Abelmoschus) esculentus*, L., and *Gossypium barbadense*, or Jamaica cotton, about Kingston, Jamaica. Cultivated Pelargoniums; the grapevine †, dwarf peach and cherry ‡ (cited as *Diaspis amygdali*, Putnam, in Proc., but correctly in CAN. ENT.), on *Bryophyllum calycinum*; *Carica papaya*; Persimmon; *Jassium*, in Jamaica; Oleander; *Calotropis procera*, *Capsicum*, *Argyria speciosa* when under cultivation in Jamaica, also Acanthus, and *Cycus media*. Mr. E. E. Green found it on *Callicarpa lanata* and *Tylophora asth-*

*Food Plants of Scale Insects (Coccidæ), by T. D. A. Cockerell, Proc. U. S. Nat. Mus., Vol. XIX., pp. 725-785, No. 1122.

† Townsend, Jour. Inst. Jamaica, 1893, pp. 283, 378.

‡ Cockerell, CAN. ENT., 1895, p. 260.

matica, at Punduloya, India*, and Mr. W. M. Maskell received it on Geranium from Hong Kong †. Mr. D. W. Coquillett found it at Los Angeles, California, on dwarf flowering almond, recently imported from Japan ‡, and the case on dwarf peach and cherry, previously noted, also occurred on trees from Japan. Dr. L. O. Howard reported it some years ago as occurring in an orchard at Molino, Florida, and in another orchard at Bainbridge, Georgia. It was first discovered in this country on some seedling peach trees on the grounds of the Department of Agriculture, at Washington, in 1892. Besides inhabiting Jamaica, it is also found in Trinidad, Martinique, Grand Cayman, Barbadoes and San Domingo.§

Under the caption of "The White Peach Scale," Mr. Charles P. Lounsbury, Government Entomologist for Cape Colony, South Africa, includes the species as one of the insect pests of that Colony. He gives the Fiji Islands as an additional habitat, and states that there is no doubt but that it has been in South Africa for at least fifteen years, and good reasons for believing it to have been there double that length of time. Mr. Lounsbury characterizes the insect as a highly injurious one, the favourite food plants of which are the peach and mulberry, the apricot and plum being severely attacked and sometimes killed, the cherry being liable to be severely attacked, while the pear has been slightly infested. *Myoporum insulare*, Yellow Jessamine, *Jasminum sp. ?* Granadilla, *Passiflora edulis*, *Polygala myrtifolia*, Morning Glory, *Ipomaea sp. ?* Fuchsias and Geraniums all may become very badly infested, while the Cape Gooseberry and other Solanaceous plants suffer to a less degree.||

Four species of Lady beetles and a Chalcid fly, the latter apparently identical with *Aspidiotophagus citrinus*, Craw., attack the species in Africa. None of these parasites, however, seem powerful enough to hold the scale insect in check.

In October two of the most seriously infested of the trees imported from Japan into Ohio were dug and transplanted to the Insectary of the Experiment Station at Wooster, and one of them enclosed in a breeding cage. Early in December a very minute parasite was reared, and the

* Indian Museum Notes, Vol. IV., p. 4, 1895.

† Trans. New Zealand Inst., 1896, p. 299.

‡ Insect Life, VI., p. 290.

§ Year Book of the U. S. Dept. Agr., 1894, pp. 265-267.

|| Report of the Government Entomologist for the year 1896, Cape of Good Hope, pp. 76-83.

females were observed in the act of ovipositing in the bodies of the scales on the tree. On these parasites being referred to Dr. L. O. Howard, of the United States Department of Agriculture, he at once pronounced the species as belonging to both a new genus and species, he having previously drawn up a manuscript description from species reared in Paris, France, by Dr. Paul Marchal, who had reared it from *Diaspis ostreaformis*. It has since been discovered that the same insect was reared in Ceylon by E. E. Green, from *Chionaspis vitis*, and it has also been reared from a species of *Aspidiotus* on sweet gum from Savannah, Georgia. The species will now be known as *Archenomus bicolor*, Howard, the description having appeared in the Proc. Ent. Soc., Washington, Vol. IV., No. 2., page 136. There can hardly be a doubt but that this parasite was imported with its host from Japan, and well illustrates the wide distribution of insects, both injurious and beneficial, in articles of commerce. Both the scale insect and its parasite are new to Ohio. While it is almost impossible to determine the native home of *Diaspis amygdali* at the present time, it is likely that this honour will fall either upon Japan or the West Indies, though it might have been first diffused from the East Indies. That the little parasite, *Archenomus bicolor*, Howard, should be reared at such widely separated points as Paris, France; Ceylon; Savannah, Georgia; and Wooster, Ohio, with the probability of the species having been imported into Ohio from Japan, is somewhat surprising, and well illustrates the almost universal diffusion of some of our parasitic insects.

Another scale insect, probably new to Ohio, is the apricot scale, *Lecanium armeniacum*, Craw. I have not been able to find any record of the occurrence of this insect outside of California, where it is found on the apricot, prune and plum especially, but also occurring on the cherry and pear.* My specimens, which seem to be a variety, were found on the Spanish Chestnut, in great abundance.

*California State Board of Horticulture, Division of Entomology. Destructive Insects, Their Natural Enemies, Remedies and Recommendations. By Alexander Craw, Quarantine Officer and Entomologist, Sacramento, California, 1891, pp. 12-13.

GENUS EUSCHAUSIA.

Schausia, Dyar (Arctiidæ), CAN. ENT., XXIX, 212 (1897), is pre-occupied by *Schausia*, Karsch (Agaristidæ), Entom. Nach., XXI., 346 (1895). The Arctiid genus may be called *Euschausia*.

HARRISON G. DYAR.

NOTES ON THE EXTERNAL CHARACTERS OF THE SAN JOSE SCALE, CHERRY SCALE, AND PUTNAM'S SCALE.

BY W. G. JOHNSON, COLLEGE PARK, MARYLAND.

March 14th, 1898.—During the last two or three weeks, I have received inquiries from Georgia, Iowa, Kansas, and Canada, regarding the structural external characters of the San José scale (*Aspidiotus perniciosus*), Cherry scale (*A. Forbesi*), and Putnam's scale (*A. ancylus*). I present, therefore, a few notes on these species, which I hope may be of some use to my fellow workers.

It is not a very difficult matter at this time of the year to separate these species at a glance. As is well known, *perniciosus* winters as a partially matured insect, and when the insects are perfectly normal, they are almost always uniformly blackish, with the exuvie or nipple-like prominences, very conspicuously surrounded by a circle, of the same general colour, as a rule, as the rest of the scale. Of course, on trees badly infested with this insect, there are always many scales of the old males, females, and young, which were not sufficiently covered to protect them at the time cold weather set in; but where a sufficient number of young in good condition can be found, the above character does not vary much, and rarely, if ever, are the pupæ of the males to be found at this time of the year.

Forbesi also winters in a partially matured condition, but male pupæ are conspicuously present at this season, or even very much earlier. The colour of the scales varies considerably, but usually conforms somewhat to the colour of the bark. The nipple-like prominence is very conspicuous and is of an orange, brick-red or purplish tinge. The exuvie are usually covered with a delicate film or membrane of rather light colour, but are ruptured in most cases, exposing the bright coloured centres. The scales of the males and females are not uniform in colour, being much lighter around the border of the young female and at the caudal end of the male scale. The conspicuousness of the exuvie and the presence of the pupæ at this time of the year are characters which almost always distinguish this species from *perniciosus*.

The female of *ancylus*, in this location at this season, is much more developed than either of the foregoing species. The young females are usually not so convex as *perniciosus* or *Forbesi*. The exuvie are lighter than *perniciosus*, and not nearly so bright as in *Forbesi*, varying in

colour from amber to grayish. The general colour of the scale varies also from nearly black to a grayish tinge, depending largely upon the plants upon which it is found. The scale is very delicate, more uniform in general colour, approaching *perniciosus* nearer than it does *Forbesi* in this respect.

The structural characters of the mature females are very marked. In *perniciosus*, the two pairs of anal lobes and the absence of spinnerets are very characteristic. In *ancylus*, while there are two pairs of lobes also, they are usually very broad and flattish, the second pair being widely separated from the first. The presence of the spinnerets is also a distinctive mark for this species, and if the lobes are carefully examined, this species need not be confounded with either *perniciosus* or *Forbesi*. In *Forbesi*, the two pairs of anal lobes approach *perniciosus* much more than they do *ancylus*, but *Forbesi* can be distinguished readily from *perniciosus* by the presence of conspicuous thickenings of the body wall, forming club-shaped masses between the lobes. The spinnerets are always present, usually arranged in five groups in the mature female. In this connection, I might say that I have never seen spinnerets in any of the immature forms of either *ancylus* or *Forbesi*.

There are a few characters presented by the plant which will serve as a mark for identifying the species. On most of our deciduous fruit trees there is a purplish tinge formed about the scales of all three species on young succulent wood. This tinge varies considerably, and depends largely upon the trees, showing more plainly upon some varieties than upon others. With *perniciosus* the purple extends into the bast, and on some very badly infested apple trees I have seen even the young tender wood coloured to bright carmine. I have also seen the fruit of peach badly spotted on account of the attacks of *perniciosus*, and on some varieties the colour extended into the flesh, sometimes to a depth of a quarter of an inch. The purplish tinge caused by *ancylus* and *Forbesi* is usually not so marked as in *perniciosus*. The bast is brightly coloured at times by both these species, but this does not occur as often as with *perniciosus*.

Forbesi also causes a peculiar rough, pitted appearance upon peach and apple that is not usually produced by either *ancylus* or *perniciosus*. The insect seems to retard the cellular growth of the plant immediately surrounding it, and it is not an uncommon thing to find isolated matured females in rather deep depressions. This character is especially prominent on apple and peach in the nursery.

COLLECTING AT LIGHT.

I have read with much interest a couple of papers by Mr. Hanham, of Winnipeg, on the capturing of insects "at light." I had adopted this method in the Old Country with much success, and last season in this district, near the head of Lake Manitoba, I employed the same means and secured a goodly number of specimens. There is no doubt that light is most efficacious in securing to the one who makes use of it many insects that would otherwise be only rarely met with, but while engaged in thus making captures one cannot help being struck—a point to which Mr. Hanham alludes—with the effect light has upon many of the Lepidoptera, or rather with the different effects it has upon different individuals. Now, it seems to me that a careful observation on the part of entomologists in this respect might in due time throw fresh "light" on the habits or even structure of the insects observed. *Why*, I may ask, should light have such a different effect upon insects of the same class? As there is a reason for everything, so there must be here. A casual observer may note that while light acts upon some individuals as an irresistible attraction, to others it is simply repellant, and in the case of others both these effects are combined. Then, again, some are evidently thrown into a kind of stupor under the effect of the glare, and settling down near the attractive force, remain immovable for hours; while yet again others are frantic in their struggles to reach the source of their fascination. This difference of effect, while it points to a dissimilarity of temperament, would seem to indicate a difference of structure, if anywhere, in the eye. Is this known to be a fact; or, if this be not the case, in what does it consist? It seems to me that here is a wide field for investigation, and it might not be lost labour if, during the coming season, those entomologists who adopt light as a means of capture would, as far as possible, classify the insects taken in regard to the effect the light has upon them.

I may say that when using light, I place it before a closed window on the ground floor, and stand outside, and with a net I am able to capture many insects which do not apparently ever settle on the glass, but simply approach within range of the light and then fly away rapidly at an angle, acting much in the same manner as a comet is said to do in regard to the sun.

H. HUTCHINSON, Kinosota, Manitoba.

ERRATUM.

CAN. ENT., 1898, p. 15, line 8, for "*not* commonly" read "*most* commonly."

NEW SPECIES OF CHIONASPIS AND NOTES ON
PREVIOUSLY KNOWN SPECIES.

BY R. A. COOLEY, B. S., AMHERST, MASS.

In the CANADIAN ENTOMOLOGIST, Vol. XXVII., page 33 (1895), Professor T. D. A. Cockerell stated that Dr. James Fletcher had just sent him a species of *Chionaspis* from Charlottetown, Prince Edward Island -- very abundant on the bark of *Betula papyrifera* -- and that in comparing it with Prof. Comstock's description of *C. Lintneri* he believed it to be that species. Following the description of the Prince Edward Island specimens, Prof. Cockerell drew attention to a few probable points of difference between it and Prof. Comstock's description, but as he could find no positive differences he did not separate the form on *Betula*, inferring that the discrepancy was due either to variation in his specimens or the incompleteness of Prof. Comstock's description. I have since received specimens of the form on *Betula papyrifera* from Prof. Comstock and Dr. J. A. Lintner, and the latter gentleman has also lent me Prof. Comstock's co-types of *C. Lintneri*. On comparing the two I was at once convinced that they were distinct, and upon giving Prof. Cockerell my reasons for thinking that the two insects could not be identical, he advised me to separate the form on *Betula*.

While the insect is distinct from *Lintneri*, Comst., I believe it to be only a variety of that species, and have described it as such below.

CHIONASPIS LINTNERI BETULÆ, n. var.

Scale of Female.—Widely pyriform, flat, covered with the very thin epidermis of the bark, giving a brownish tinge to the snow-white scale. Exuviae bright orange-brown, contrasting strongly with the secreted portion. Texture of scale compact. Length of exuviae about .8 mm.; total length of the scale about 2 mm.

Compared with typical *Lintneri*, the variety is .5 to 1 mm. shorter, proportionately broader, firmer in texture, with the exuviae orange-brown instead of yellowish-brown.

Scale of Male.—Of the normal form and colour of the genus, with a distinct but feeble median keel and pale yellow exuviae. Length about .8 mm.

Unfortunately I have no typical male scales of *Lintneri* with which to compare those of this variety.

Female.—Elongated, with the segmentation moderately distinct.

Pygidium with three pairs of lobes visible; median pair large and well developed, second pair smaller, third pair rudimentary. Median pair contiguous at the base, their inner edges diverging at about a right angle, each lobe being bluntly pointed. Lobes of the second pair each composed of two rounded lobules, of which the inner is the larger. Third pair only slightly produced. A distinct spine at the base of each median lobe, and a small plate and obscure marginal gland opening between the median and second lobes. A large spine above and a small one below the outer lobule of the second lobe. A plate and marginal gland opening between the second and third lobes. Following the third lobe, two spines, two plates, a marginal gland opening, and, after a space, a group of one to three plates, followed first by a marginal gland opening and then by a terminal group of five to nine plates. Dorsal rows of oval gland openings present.

Groups of circumgenital glands compact. Median, 13 to 18; anterior laterals, 25 to 42; posterior laterals, 19 to 28.

Male.—Unknown.

It is impossible to separate the two insects by their pygidia.

Chionaspis Lintneri, Comst., and this variety both belong to the group of *salicis* L., *ortholobis*, Comst.

CHIONASPIS CARYÆ, n. sp.

Scale of Female.—Inconspicuous on the bark of the host plant; elongated, rather irregular in form, of a dirty white colour with brown exuvia. Anterior and smaller exuvia easily distinguished, the posterior and larger one completely hidden from view by the copious secretion that covers it. Length, 1.7 to 2. mm. Breadth, about .8 mm.

Scale of Male.—Very small and white, with a very indistinct median keel. The pale brown exuvia extending about one-third the total length. Length, .5 to .7 mm.

Female.—Elongated, narrowed toward the anterior end, being broadest toward the posterior end. Segmentation distinct, the posterior segments being produced laterally and bearing numerous gland openings. Rudimentary antennæ distinct, the distance between them about equal to the width of the mouth-parts. Pygidium brown, somewhat triangular, with the first and second pairs of lobes well developed, the third pair being more or less rudimentary. Median pair large, conspicuous, with their inner edges fused together for about half their length, forming one solid piece. Lobes of the second pair each divided into an inner,

oblique, lobule which is sometimes serrated, and an outer straight one, the inner one being larger. Third pair of lobes broad and only slightly produced, with the outer edge serrated. A distinct spine above at the base of each median lobe, and between the median and second lobes a short plate and an obscure marginal gland opening. A large spine above the outer lobule of the second lobe and a smaller one below, and between this lobule and the third lobe a plate and a marginal gland opening. A marginal gland opening at the base of the third lobe, and, outside this lobe, a large spine above and a small one below, followed first by a plate and then by a notch in which is a marginal gland opening. Following this is a spine, one or two plates, and, after a space, the terminal group of about seven plates. Dorsal rows of oval gland openings present.

Circumgenital glands arranged in five groups: Median, 12 to 19; anterior laterals, 21 to 29; posterior laterals, 15 to 22.

Male.—Unknown.

This species also belongs to the *salicis* group, but may be readily distinguished from all others of the genus by the peculiar fusion of the inner edges of the median lobes.

Habitat.—On *Carya* from Washington, D. C.

CHIONASPIS LOUNSBURYI, n. sp.

Scale of Female.—Elongated, sometimes narrow like *Mytilaspis* and sometimes broadened posteriorly like *Chionaspis*; straight, very firm in texture, silvery-white with the exuviae yellowish or brownish. Secretion covering the second exuvia firm and persistent. Scale more or less covered with a brown bloom, which occurs naturally on the surface of the leaves of the host-plant. Length of exuviae about 1 mm.; total length, 2.4 to 3 mm.

Scale of Male.—Very loosely constructed and fragile; median keel present, but very indistinct, invisible, in fact, except in the more perfect specimens. White, with the exuvia pale yellowish or colourless. Length, 1.2 to 1.5 mm.

Female.—Elongated, narrowed at the anterior end, but with the abdominal segments of about equal width; mouth-parts occupying fully one-half the width of the body at the anterior end. Pygidium with a median notch, the two sides being formed by the first pair of lobes, which are large and well developed in some individuals, or small and rudimentary in others. Second pair present, third pair obsolete. Median lobes

when well developed rounded on the posterior extremities, sometimes faintly serrate, with a pair of spines in the notch; when rudimentary, only slightly produced, with the pair of spines in the notch often inconspicuous or absent. Second lobe composed of two lobules, inner large and rounded, outer smaller and bluntly pointed. Two spines anterior to the outer edge of each median lobe. A well-developed plate and a marginal gland opening between the median and second lobes. Two spines at the base of the second lobe, and outside this lobe, a second plate, followed by a deep notch in which is a marginal gland opening. Then two spines and a third plate followed by a second notch in which is a marginal gland opening, and, after a short space, the fourth and last plate. Dorsal rows of oval gland openings present.

Five groups of circumgenital glands: median, 5 or 6; anterior laterals, 10 to 13; posterior laterals, 13 to 27.

Male.—Unknown.

This species may be distinguished from other known members of the genus by the characteristic appearance of the scales, particularly those of the female. It belongs to the group of *eugenie* (Green), *chinensis* (Ckll.), etc., or those having a terminal median notch in the pygidium.

Habitat.—On an unidentified plant from Ceres, Cape Colony, South Africa, sent by the Government entomologist, Mr. Charles P. Lounsbury, to Dr. L. O. Howard, at Washington, and also to the writer. The female scales are indiscriminately distributed over both surfaces of the leaves, while the male scales occur in groups chiefly on the under surface.

I take pleasure in naming this insect after its discoverer, Mr. Lounsbury, who is doing very valuable and praiseworthy work in economic entomology.

CHIONASPIS HOWARDI, n. sp.

Scale of Female.—Elongated, narrow, sides nearly parallel. White, with the exuviae variable in colour, being yellow, brown or green; two parts of the same exuvia often of different colours. Second exuvia obscured by the waxy secretion that covers it. Length of exuviae about .7 mm.; total length of the scale, 1.5 to 1.7 mm.

Scale of Male.—Elongated, sides parallel, with a distinct median keel; creamy white with the exuvia of about the same colour. Length about 1.2 mm.

Female.—Elongated, very slightly broadened posteriorly, with the segmentation not pronounced, the posterior segments having numerous

gland openings on the sides. Pygidium cleft at intervals and having the margin distinctly denticulate, more plainly so in some specimens than in others. Median and second pairs of lobes well developed, often with thickenings of the body wall extending anteriorly from them; third pair wholly wanting. Median pair separated by a distance about equal to the width of one of the lobes. Each lobe of the second pair composed of two distinct and separate lobules, the inner one being larger and often approximating the median lobes in size. Interval between the median lobe occupied by two more or less distinct teeth, anterior to which is a transverse oval gland opening. Two spines anterior to each median lobe, and immediately outside each median lobe, a large plate, anterior to which is a spine. An oval gland opening between this plate and the second lobe, and, outside this lobe, a second plate, a denticulate space with two marginal gland openings and a spine, then one or two plates, followed by another denticulate space with two marginal gland openings and a spine, and, lastly, the terminal group of two plates.

Five groups of circumgenital glands; median, 5 to 7; anterior laterals, 9 to 14; posterior laterals, 7 to 14.

Male.—Unknown.

Habitat.—On East Indian bamboo from the Department of Agriculture, Washington, D. C.

I take pleasure in naming this insect after Dr. L. O. Howard, United States Entomologist, the extent and value of whose work is well known by all workers in entomology.

CHIONAPSIS LINTNERI, Comst.

Since this species was described in 1882, in Prof. Comstock's second Report of the Department of Entomology of the Cornell University Experiment Station, no mention has been made of its having been discovered in other localities, except in the instance mentioned in a previous paragraph of this paper. On January 12, 1898, Mr. A. F. Burgess, an assistant in the scientific department of the work of extermination of the Gypsy moth, found a *Chionaspis* abundant on *Alnus* in a swamp in Stoneham, Mass. I made an examination of these specimens and found them to be *C. Lintneri*, Comst. The specimens occur only at the bases of the young trees.

CHIONASPIS MINOR, Mask.

In the fall of 1897, Prof. A. L. Quaintance sent me a piece of a branch of a "China-tree" (*Melia azedarach*) badly infested with a white

Chionaspis, which, on examination, proved to be *Chionaspis minor*, Mask. From the appearance of the branch, it occurred to me that the species might be doing harm, and, on writing to Prof. Quaintance, I was informed that it was severely attacking the "China-trees" at Braidentown, Florida, having apparently killed many trees on the main street of the town. This is the first time this species has been reported from the United States, so far as I can learn, and as it has quite a large number of food plants, its introduction is an important matter.

Chionaspis minor was originally described from New Zealand, and is quite generally distributed in the West Indies. Mr. Alexander Crow has also sent me specimens which arrived at San Francisco, Cal., on an unidentified plant from Panama. The species is known to attack Palm, *Vitis vinifera*, *Rhipogonum scandens*, *Persoonia*, *Hibiscus*, *Capsicum*, *Erythrina*, and *Melia azedarach* (China-tree).

A NEW GRASSHOPPER FROM ONTARIO.

BY E. M. WALKER, TORONTO.

Melanoplus abortivus, new species.— Size rather small, especially the male. Female nearly as large as *M. femur-rubrum*, but proportionately much stouter.

Frontal costa nearly reaching the clypeus, subequal, though sometimes a little contracted toward the vertex, plane except a slight depression at the ocellus, or in the male generally slightly sulcate from just above the ocellus, rather thinly punctate. Vertex with the margins slightly elevated, gently expanding in front of the eyes for a distance about equal to or somewhat less than that between the eyes in the female, rather greater in the male. Interspace between the eyes rather broader than the first antennal joint in the male, nearly twice as broad in the female. Eyes rather prominent, especially in the male, of moderate size. Top of head moderately prominent, evenly convex. Antennæ about as long as the head and pronotum. Anterior margin of pronotum truncate or very slightly emarginate, posterior margin obtusely rounded. Sides of pronotum in the male sub-parallel, only slightly divergent posteriorly on the metazona; in the female distinctly divergent throughout their entire length, so that the width of the pronotum is about one-third greater at the posterior than at the anterior margin. Dorsum of pronotum broadly convex and more or less distinctly and finely punctate on the metazona. Median carina entirely obliterated or very indistinct on the prozona, distinct and

somewhat elevated on the metazona. Lateral carinæ distinct except towards the posterior margin of the metazona. Posterior margin of the lateral lobes very oblique, forming an angle of about sixty degrees with the dorsum, more or less distinctly angulate with the sinuous lower margin; metazona densely punctate, prozona glabrous and shining. Prosternal spine short, bluntly conical, slightly bent backward, transverse in the female. Tegmina not longer than the pronotum, generally distinctly shorter, ovate in outline, the greatest breadth being about two-thirds the length; sometimes barely meeting on the dorsum, but more often separated by a space of variable width, which is occasionally equal to nearly half the greatest width of the tegmen. Wings reduced to mere scales which do not quite reach the tympanum. Cerci of the male not quite reaching to the tip of the supra-anal plate, simple, about two-thirds as broad at the base as long, tapering to a blunt rounded point, which is not or scarcely bent inwards, outer margin nearly straight, inner slightly sinuate; under surface slightly convex near the base. Supra-anal plate with a narrow median furrow and a broader one of about equal depth on each side; triangular in outline, with rounded sides; width at base about two-thirds the length. Furcula minute, not more than about one-sixth length of the supra-anal plate, about as broad as long, slightly approximate and somewhat constricted in the middle. Sub-genital plate narrow, elongate, entire, terminating in a blunt point. Hind femora stout, reaching beyond the tip of the abdomen in the male, not quite to the end as a rule in the female. Colour of dried specimens: Above, dull grayish-brown, somewhat paler on the abdomen in the female, more or less distinctly speckled with darker gray. A shining black band runs from the posterior border of the eye across the upper half of the lateral lobe of the pronotum and downward to the middle coxa, and also backward along the side of the abdomen, fading away near the last segment. It encloses an oblique whitish spot running from the base of the tegmen to the hind coxa. Below this black band the whole of the head and thorax is yellowish-white in well-preserved specimens, deeper yellow on the metasternum. There is also in the female generally a short whitish line along the lateral carina of the pronotum, which is sometimes continued downward and forward in an interrupted line across the black band. Venter pale yellow, darker in the female. Hind femora yellowish-brown, under surface reddish-yellow, crossed on both outer and inner surfaces by two oblique, more or less distinct, dusky bands. Hind tibiæ coral-red. Fore and

middle legs yellowish, fleeced with reddish-brown. Antennæ dusky paler at base.

- Length of antenna: ♂ 5.5 to 7 mm., ♀ 6.8 to 7.5 mm.
 " " head and pronotum: ♂ 6 to 7 mm., ♀ 6.8 to 8 mm.
 " " hind femora: ♂ 9 to 9.5 mm., ♀ 10 to 12 mm.
 " " tegmen: ♂ 3 to 3.5 mm., ♀ 3.5 to 5.5 mm.
 " " body: ♂ 14.5 to 16.7, ♀ 20 to 24 mm.

This species is very closely allied to *M. mancus*, Smith, from which it can be distinguished as follows: In *mancus* the cerci of the male are much longer than in *abortivus*, reaching quite to the end of the supra-anal plate, sometimes beyond it, while in *abortivus* they are always distinctly shorter. In *mancus* they are fully twice as long as broad, generally more than this, the apex considerably expanded and distinctly incurved; the furcula is much longer than in *abortivus*, being a fourth as long as the supra-anal plate, while in the latter they are never more than one-sixth as long. In *abortivus* they are about as broad as long, slightly convergent and constricted in the middle, while in *mancus* they are distinctly longer than broad and somewhat divergent. The females are extremely difficult to separate from those of *mancus*, there being scarcely one permanent distinguishing character.

The lateral carinæ of the pronotum are more prominent in *abortivus*, there being a distinct angle between the dorsum and lateral lobes, while in *mancus* this angle is rounded off. In *abortivus* the posterior margin of the pronotum is more or less angulated with the lower margin, in *mancus* there is generally no semblance of an angle here.

Described from fifty-five specimens, of which twenty-five are males and thirty females. Most of these were taken at De Grassi Point, Lake Simcoc, Ontario, and in neighboring localities. The only other locality where I have seen it is Aurora, Ontario, about 22 miles further south. It is found in openings in rich shady woods and on their borders, especially where the timber is of a coniferous growth. I have found it most common in paths in swampy woods composed of spruce, balsam fir, tamarack, paper birch, etc. Seldom more than one or two are seen at once, though by diligent search specimens can be secured any day during the proper season, which lasts from the first week in July, or a little later, to the beginning of October. The earliest date upon which I have taken a specimen is July 2, 1896.

Figures of this species will appear later, in connection with my "Notes on Some Ontario Acridiidae."

NEW SPECIES OF NORTH AMERICAN MYRMELEONIDÆ.—I.

BY ROLLA P. CURRIE, WASHINGTON, D. C.

Brachynemurus Coquilletti, new species.

Male.—Length, 33 mm.; expanse of wings, 44 mm.*; greatest width of anterior wing, 5.6 mm.; length of antenna, 6 mm.; luteous, marked with dark fuscous; clothed with white hairs, thickly so on abdomen; apical segments of abdomen with some black hairs among the white ones.

Face flat, luteous, bordered above by a pitchy-black band separating the antennæ and narrowly bordering them in front and on the outer side; a longitudinal median black line extends from this band almost to the clypeus. Circum-ocular area luteous, except along the anterior portion of the vertex, where it is fuscous, and on the margin next the eye, opposite the middle of anterior joint of maxillary palpiger, where there is a fuscous spot. Clypeus rather short, luteous, on either side anteriorly an impressed spot; above, a few black bristles. Labrum transverse, luteous; rounded laterally and narrowed anteriorly, nearly straight in front, where it is sparsely clothed with light-coloured hairs. Mandibles piceous, black at tips.

Maxillary palpi of moderate length, luteous; first two joints short, about as broad as long, subequal; third joint a little longer than first two together, somewhat curved, enlarged apically; fourth joint a little shorter than third; last joint as long as third, slightly fusiform (a little swollen medially), apically piceous; tip truncate, pale.

Labial palpi about same length as maxillary, luteous; first joint twice as long as broad; second joint about twice as long as first, curved, enlarged apically; apical joint as long as second, fusiform, strongly narrowed apically, where it is piceous; sparsely clothed with dark hairs; tip fine, truncate, pale.

Maxillary palpigers luteous. Labium and labial palpigers luteous. Mentum luteous, with a longitudinal median dark line, at the posterior end of which is a long bristle†. Gula luteous.

Antennæ clavate, as long as head and thorax, luteous, joints with a fuscous ring at base, clothed with some very short dark hairs or bristles; the two basal joints luteous, clouded with piceous; basal joint set in a yellow ring which is widest in front.

*One specimen, a co-type, collected at San Simon, Arizona, July 5, 1897, by Mr. H. G. Hubbard, expands only 41 mm.

†This bristle is not apparent in some specimens.

Vertex elevated behind, rounded, luteous; post-antennal area fuscous; two transverse fuscous bands on elevated portion; these bands merge into one along the middle third*; a short fuscous prolongation posteriorly along the longitudinal median furrow.

Pronotum as broad as long, narrowed anteriorly, sparsely clothed with rather long white hairs, more thickly so on margins; sides sinuate, front emarginate; anterior angles rounded; luteous, a longitudinal fuscous band each side of middle line; these bands are approximate or coalescent behind the transverse furrow, more widely separated before it; another longitudinal fuscous band on the outer side of each middle one, behind the transverse furrow. Lateral carinæ luteous. Beneath luteous, a longitudinal fuscous streak on each side near carina.

Mesothorax sparsely clothed with white hairs; lobes of dorsum strongly elevated; anterior lobe fuscous, a spot each side, and one at posterior margin medially, luteous; lateral lobes fuscous, a few luteous spots near the articulation of wings; on each of these lateral lobes a luteous triangle whose apex terminates near the mid-dorsal line; posterior lobe luteous, a longitudinal median fuscous streak which is wider anteriorly; posterior angles luteous, each with a U-shaped fuscous streak. Below mostly fuscous, at base of wings and legs luteous.

Metathorax sparsely clothed with white hairs; dorsum with lobes less elevated than those of mesothorax; anterior lobe luteous, with a U- or V-shaped fuscous marking; lateral lobes each with a luteous triangle similar to those on corresponding lobes of mesonotum; base of wings above fuscous; posterior lobe similar to that of mesonotum. Sides and below mostly fuscous; bases of legs and wings, and a few spots, fuscous.

Abdomen longer than wings, slender, thickly clothed with white hairs, a few black ones apically, fuscous, the basal segments above luteous with a median black line.

Appendages short, half as broad as long, one-fourth the length of last segment, cylindrical, obtuse on tip, luteous; clothed with long black hairs or bristles; between the appendages below, a short triangular luteous plate.

*In one specimen, a co-type, collected in Los Angeles County, California, by Mr. Albert Koebele, the bands are interrupted at the longitudinal median furrow; in another co-type, collected July 5, 1897, at San Simon, Arizona, by Mr. H. G. Hubbard, these bands are almost entirely merged into one.

Legs of moderate length, luteous, sparsely sprinkled with black or brownish-black at bases of hairs and spines; sparsely clothed with dark hairs and beset with long black spines. Tibial spurs as long as first three tarsal joints, moderately curved, rufo-piceous. Apices of tarsal joints black, third and fourth joints entirely so. Claws as long as fifth tarsal joint, moderately curved, rufo-piceous.

Wings somewhat falcate at tips, hyaline, clothed on venation, and sparsely on membrane, with dark hairs; posterior borders of wings subapically strongly arcuate, almost angulate, making the wings quite broad before tips. Pterostigma luteous, on inner side a black spot formed by junction of sub-costal and median veins; before the pterostigma a few intercostals forked. Principal longitudinal veins luteous, interrupted at junctures of transversals with black; a longitudinal vein between median and submedian entirely luteous; other longitudinal veins and transversals fuscous, interrupted with luteous.

Anterior wings with the anterior transversals springing from the submedian vein above, and some other veins posterior to it, with small fuscous spots; posterior wings shorter than anterior, immaculate. Posterior borders of both wings fringed with dark hairs.

Female.—Length, 25 mm.; expanse of wings, 44 mm.; greatest width of anterior wing, 6 mm.; length of antenna, 5 mm.*

Antennæ more clavate than in male. Abdomen a litter shorter than anterior wings, not luteous on basal segments above; tip luteous; superior parts split, clothed with long dark hairs and beset with coarse black spines at apex; below, two short, cylindrical appendages, clothed with long dark hairs.

Type.—No. 3814, U. S. National Museum. One male, collected July 5, 1897, at San Simon, Arizona, by Mr. H. G. Hubbard.

No. 3814a, U. S. National Museum. One female collected in San Bernardino County, California, by Mr. D. W. Coquillett.

Cotypes.—Collection U. S. National Museum. Two males, one with antennæ and apical segments of abdomen gone, collected July 5, 1897, at San Simon, Arizona, by Mr. H. G. Hubbard; one male with fragmentary abdomen, collected in August, in Los Angeles County, Cali-

*This is a small specimen; a female, co-type, from Los Angeles County, California, collected in August by Mr. Albert Koebele, is 29 mm. in length and expands 51 mm. A third specimen, also a female co-type, from the same locality, collected in July by the same person, is slightly smaller than this latter.

ifornia, by Mr. Albert Koebele : two females collected by the latter in Los Angeles County, California, one in July the other in August.

This species is peculiar chiefly through the shape of the wings, and through the very slender abdomen. Luteous is the prevailing colour in the males, fuscous in the females. The male appendages are very similar, in size and shape, to those of *B. longipalpis*.

CONCERNING TICKS.

BY REV. W. J. HOLLAND, PH. D., LL. D., CHANCELLOR OF THE WESTERN UNIVERSITY OF PENNSYLVANIA.

The other day a distinguished artist friend of mine called upon me with a small bottle containing some whiskey, which by its odour I judged was good, when he first took it from his flask, and in it was what he denominated a "bug." He told me that he had experienced "one of the most wonderful adventures of his life" in connection with the specimen he put before me, and went on to tell me that during the past summer, while sketching in the mountains, he had discovered one evening, when undressing, a small, dark swelling on his breast. He thought it to be a little abnormal growth on the skin and paid no attention to it. From time to time he noticed it afterwards, when retiring, and found to his considerable alarm that it was gradually growing larger, and evil thoughts of cancer, tumors, and what not, began to float through his mind. Finally, after some two weeks had passed, one evening, as he expressed it, "while fooling with the darned thing it came off." He laid it down on the dressing-case before him and was presently astounded to see it slowly crawling away from the spot. Then a small bottle was sought out, the whiskey flask was brought into requisition, and the "bug" was safely bottled, to be referred to me for an explanation. This proved not difficult to give. The specimen was a well-developed example of *Ixodes albipictus*, Packard. We had a hearty laugh together, and my friend assured me that he "would know better the next time, and not let such creatures establish such a lengthy abode upon his person." His adventure recalled to me a letter which I have long had in my possession, intending to publish it, as it is very well written, and adds a touch of humour to the subject. The specimen referred to in the letter is in my collection, and proves to be an example of *Ixodes bovis*, a very common plague in the south-western part of this country. The writer of the letter, a young friend of mine, says :

"I had no idea that my bug was of interest to anybody but myself, but I assure you I was glad to let him go.

" We sleep on the ground all summer here in New Mexico, with no protection and but little covering. Bugs of all kinds, and even centipedes, crawl under and into our beds for shelter. I was on the Rio Gila, near the Arizona line, sleeping on the sand, with a blanket under me and my boots for a pillow, when I absorbed the specimen you have now in your collection. It was probably smaller at that time, as the pain and irritation gradually increased for about two weeks.

" I was seventy-five miles from a physician, and had no idea of consulting one, until the pain became unbearable. In the meantime, I had used all the common domestic remedies which were at hand, for what I thought was earache. Finally the pain destroyed sleep and annoyed me constantly during the day, and I was driven against my will to consult a physician. He examined my ear, told me it was much inflamed, gave me a 'wash,' which I used twice without effect, and I carried the thing two weeks longer. The hearing in my right ear was affected from the very first, but during the last week I lost the ability to hear in both ears, and the pain became almost intolerable. I went to Trinidad and consulted a doctor there, who after a very thorough examination told me it was polypus. In his efforts to remove this he dragged out the bug. My hearing was at once restored, but the irritation remained for some time.

" I have heard of two other cases of the same kind, which were relieved by the injection of tobacco-juice, in one instance after the man had become frantic with pain. These creatures are often found in the ears of cattle and occasionally of horses.

" All results flowing from my enforced connection with the bug have disappeared, the inflammation has vanished, my hearing is as good as ever, and when a tick next gets into my ear I will try the tobacco cure at once, notwithstanding Aunt Beck's objection to its use in any form."

The genus *Ixodes* is of considerable extent, but, so far as is known to the writer, without taking especial pains to look up the entire literature, has not received revisional treatment during the past forty years. A search of the Entomological Record shows that many species have been described in the time which has elapsed since this valuable publication was commenced, but no student has apparently addressed himself to the task of monographing this genus and its allied genera. A thorough revision of the *Ixodidæ* is a desideratum, which it is to be hoped some enthusiast may before long undertake to give us.

MANITOBA BUTTERFLIES.

As the result of last year's work I have an addition to make to the list of Manitoba Diurni, which appeared in this magazine about two years ago. On July 3rd, when driving across an outlying portion of my farm, in a flowery glade amongst some scrub I saw an unusual looking "*fritillary*" hovering over and settling together with *Argynnis Lais* upon some lillies in bloom. On netting it I found it to be a "green wing," which has been determined by my friend, Dr. Fletcher, to be *A. Edwardsii*. In a short time I secured three or four more examples of this Western species from the same place. On the 7th July I found it again in a similar locality, about a mile south of where I had originally seen it, and secured some more specimens, all of which, except perhaps a couple whose wings were slightly chipped, were in good condition. I went out again on the 10th, but though *Lais* and *Cybele* were on the wing, I did not see *Edwardsii*. A correspondent at Brandon (in this Province), Mr. Boger, writes me that he also took one or two "green wings" this summer; Brandon being 60 or 70 miles to the N. W. of me. He was, when writing, under the impression that his was *A. Nevadensis*. It would be a very curious fact if both species (?) visited Manitoba at the same time, and it would look very much as though they were only varieties of one species. I have just noticed among my series one specimen that varies slightly from the majority, and is somewhat like the description given of *A. Nevadensis*. *Colias Cæsonia* did not again present itself, though I saw in 1896 at least half a dozen specimens besides the two I caught.

Mr. A. W. Hanham, of Winnipeg, has referred to my collection in the very useful list of Manitoba moths which commenced in the December number of this magazine. I am sorry to say that I am unable to give him any assistance worth mention, through the bulk of my collection being unnamed. This is to be regretted, as I think I might be able to make some additions, and the list should be as complete as possible. He has kindly offered his assistance in naming my insects, and anything he finds new amongst them can appear in a supplementary list at some future date. We poor collectors in the Wild West labour under many and very great difficulties. Not only do specimens suffer more or less in transit through the post, but boxes do not always receive due care and attention "at the other end." The practice, too, of specialists annexing all new and rare species and interesting varieties is much to be

deprecatd. I think entomologists might be more generous to one another. For my own part I would gladly pay handsomely in specimens to anyone who would name for me what I send, but I do not like parting with *unique* specimens. I collect only Manitoba insects, and have several species of which I have only seen single examples during the seventeen years I have been in the country. I have them annexed by some specialist. What then? I might, having taken the species, replace it by specimens from Nevada or Colorado, let us say. But they would not be Manitoban specimens, and very likely would present certain minor differences. All thanks and credit being given to those who, through greater advantages and opportunities, have acquired a knowledge which it is impossible for many of their brethren who are less favourably situated to gain, and impart that knowledge, but they exact too heavy a price for it, and by so doing, instead of encouraging the study of entomology, confine it within narrow limits by their action.

E. FIRMSTONE HEATH, Cartwright, Manitoba.

TRYPETA SOLIDAGINIS.

BY MRS. A. J. SNYDER, BELVIDERE, ILLINOIS.

A year ago last autumn, while rambling about the fields, we took especial notice of the galls upon the golden-rod. We saw that there were two kinds, the elongated and the round. We knew that from the former came a tiny moth, well-known to us, and from the latter a fly with which we were not familiar, or, if familiar, not known to come from this gall. The elongated galls were all empty, but the round ones we found upon examination contained each a small white grub. We gathered a quantity of the galls and placed them in a jelly glass on the writing table where they would be constantly before us for observation.

On the following twenty-first of April we noticed something peculiar about one of the galls. There was a movement at one little spot that soon looked like a tiny drop of water. We were on the alert instantly, and with microscopes in hand awaited developments. Upon closer investigation the "drop of water" looked more like a membranous bubble (ptilinum, I think is the correct term for this sac-like organ). With the naked eye it could be seen to expand and relax, and upon it were observed tiny drops of water or some liquid substance,—sweat drops as we shall call them.

The following is a minute description (for an amateur) of the emergence of the fly as seen through a hand lens. In the first place

there seemed to be a depression and ridge like the arcs of a great circle cutting each other at right angles and dividing the sac into quarters. The "sweat drops" stood out upon the ptilinum like little beads as it expanded and relaxed gently.

Suddenly the ptilinum apparently withdrew into the aperture of the gall, being almost out of sight, and then it as suddenly swelled out; at the same time there was a change in the position of the "sweat drops," and they were larger than before.

After this great relaxation and emergence the fly came out rapidly until the eyes were visible. The ptilinum extended far out above the eyes, overshadowing them. The appearance of the visible part of the fly at this period reminded one strongly of a back view of a head that is bald, the eyes of the fly taking the place of the ears. Under the magnifier the eyes were distinctly purplish.

After the head and part of the body were out of the gall the relaxations of the sac were shown by depressions. These depressions were across the top of the sac — laterally — and were four in number. There were also three depressions at the back — horizontally. Sometimes the fly did not seem to gain much in an effort after a relaxation, and at other times the amount of emergence was quite noticeable. When the mouth-parts became visible they were seen to open and the ptilinum to relax simultaneously with each effort. When the fly had nearly emerged the efforts became greater, and the ptilinum sank very much at each relaxation.

After a final struggle the fly crawled slowly out upon the gall and rested. The ptilinum partially collapsed, relieving the fly of its top-heavy appearance, and gradually, and at the same time almost unnoticeably, it was all seemingly absorbed, and a very natural looking fly was before us. We noticed the emergence of a number of these insects, with the same results, as far as we could determine.

The disappearance of the ptilinum at the final stage was almost a mystery. It would seem to be gradually disappearing, and yet, all at once, it was gone and there was not the slightest trace of it. Perhaps a stronger microscope would have revealed more.

We opened some of the galls before the flies emerged to see how heavy a door they had to open. We found the pupa in a small excavation at the centre of the gall, and a circular channel, less than two millimeters in diameter, leading from it to the outside of the gall, only the mere skin of the enlarged stem serving as a covering.

A NEW BOMBYCID.

BY R. OTTOLENGUI, NEW YORK.

Cisthene striata, nov. sp.—Antennæ and palpi black. Head, prothorax and patagia creamy, the prothorax of a deeper shade. Thorax above dull gray. Abdomen rose coloured above and laterally, gray ventrally. Legs brownish-gray.

Primaries, upper side, dull gray, the veins all of a deeper shade, giving the wings a striated appearance. Three narrow longitudinal stripes of creamy colour cross the wing. The first along the costa narrowing and disappearing at the apex. The second along the median vein, arising near the base and reaching the outer margin; this stripe is widest centrally and pointed at each end. The third is between this and the inner margin. It begins at the base and terminates at the upper edge of a distinct yellow spot near the angle. There is also a narrow yellow streak along the inner margin from the base to the spot mentioned. Under side, gray, the more distinct marks of the reverse showing faintly except the spot near the angle which is distinct and rosy instead of yellow.

Secondaries, upper side, rosy with gray apices. Reverse the same. Expanse 17 mm. Described from one male in the collection of the author. Taken at Miami, Florida, by Mr. Brownell.

COCKERELL ON PANURGUS AND CALLIOPSIS.

BY CHARLES ROBERTSON, CARLINVILLE, ILLINOIS.

Prof. Cockerell's treatment of these genera is likely to create an erroneous impression, which should be corrected wherever his statements are made. In Trans. Am. Ent. Soc., XXIV., 150, he says: "It is perfectly evident that the so-called species of *Panurgus* of North America are not all of the same genus." In the Dec. CAN. ENT., p. 287, he says: "The result is extremely interesting, and seems to show that we have for many years been placing bees in genera to which they by no means belong." To those acquainted with the literature and the bees in question this has been clearly understood, at least since it was distinctly stated by Cresson ten years ago. In the Synopsis, page 134, Cresson says: "The genera *Panurgus*, *Calliopsis* and *Perdita* have been made the receptacle for a number of species which do not properly belong to either of these genera, and have been placed there provisionally until more abundant material can be obtained, when a more careful study may be made of their characters." Mr. Cresson wisely intended to save himself and others from fabricating such genera as *Pseudopanurgus* and *Hemihalictus*.

A NEW EGG-PARASITE OF THE PERIODICAL CICADA.

BY L. O. HOWARD, WASHINGTON, D. C.

The Chalcidid subfamily Trichogrammatinae is composed entirely of species parasitic in the eggs of other insects. A synopsis of the genera has recently been published by Dr. Chr. Aurivillius in "Entomologisk Tidskrift" for 1897, pp. 249-256, apropos to the establishment of a new genus (*Oophthora*) for a species which he has reared in Sweden from the eggs of *Semblidis lutariae*. In this synopsis of the genera Dr. Aurivillius makes *Lathromeris*, Förster (Hymenopt. Stud., 1856, 2, pp. 87-89) a synonym of *Chaetostricha*, Haliday (An. and Mag. Nat. Hist., Ser. 2, Vol. 7, 1851, p. 212).

Without being able to consult types, it is obvious to the writer, from comparison of Haliday's original description with that of Förster, that the two genera cannot be synonymous since *Lathromeris* has a compact 4-jointed club, whereas *Chaetostricha* is described as having the 3rd joint broad, with the 4th, 5th and 6th forming the club (3-jointed). Moreover, *Lathromeris* has a ring-joint which was not mentioned in the description of the Halidayan genus. The following description, therefore, may be considered as reviving the genus *Lathromeris*. The additional "kleines griffelförmiges endglied" which Förster states appears to be present with *Lathromeris* is not present with the following species, but the club bears several long apical hairs which, were they moistened and stuck together, would have the appearance described by the famous German hymenopterologist.

LATHROMERIS CICADÆ, new species.

Female.—Length, .74 mm.; expanse, 1.48 mm.; greatest width of fore wing, .21 mm. Body long and slender, abdomen acuminate and longer than head and thorax together; antennæ short, clavate, scape rather stout, pedicel still stouter and half as long as scape, ring-joint very minute, almost imperceptible, club stouter than pedicel and as long as scape, compact but rather plainly divided into 4 subequal joints, the apical one being slightly the longest, fusiform in shape and with rather long delicate hairs, especially toward the tip; wings ample, with short marginal cilia; stigmal vein not curved and extending into disk of wing at an angle of about 45 degrees from costa. Colour sordid yellowish, occiput black; pronotum dusky, black at sides; abdomen dark at sides; eyes coral red; ocelli very dark red, almost claret coloured; antennæ slightly dusky.

Male.—Slightly shorter than female; abdomen with parallel sides and rounded at tip; antennæ with a dark blotch at base of club.

Described from two males, two females, reared from eggs of *Cicada septendecim*, collected by T. Pergande, in Virginia, just across the Potomac River from the City of Washington, in July, 1895. All four specimens mounted on a single slide. Type No. 3850, U. S. Nat. Mus.

NOTES ON SOME BEES OF THE GENUS ANDRENA FROM HARTFORD, CONNECTICUT.

BY T. D. A. COCKERELL, N. M. AGR. EXP. STA.

The following notes are based on specimens collected by Mr. S. N. Dunning, all at Hartford:—

(1) *Andrena Dunningi*, n. sp.—♀. Length 12 mm.; black, with ochraceous pubescence. Facial quadrangle broader than long; lateral facial depressions covered with appressed pubescence; clypeus shining, with large close punctures, median line impunctate; front below ocelli irregularly striate, a keel descending from middle ocellus; vertex minutely roughened, with ili-formed punctures; antennæ reaching to tegulæ, wholly dark, first joint of flagellum a little longer than the two following together; mandibles dark, rufescent at extreme tip; *process of labrum broad and low, but very large, gently curved*; thorax, even the metathorax at base, quite densely covered with long fulvo-ochraceous hair, that on pleura like that above; *mesothorax minutely tessellate or lineolate, with strong deep punctures*: enclosure of metathorax granular, ill-defined; tegulæ shining, dark brown; wings strongly flavescent, not darkened at apex, stigma . . . ruginous, nervures dark brown; *second submarginal cell very broad, nearly as large as the third*, receiving the first recurrent only just beyond the middle; legs black, the small joints of the tarsi dark reddish-brown; *pubescence of femora, and of hind tibiae, ochraceous; that of the other tibiae, and all the tarsi, very dark chocolate brown*, shining paler in certain lights; abdomen shiny, minutely tessellate, *with quite numerous but very small and weak punctures; surface of abdomen bare, without bands; apex densely clothed with fulvous hair*; venter with long fulvous hairs.

Hab.—Hartford, Connecticut, May 26, 1895 (S. N. Dunning). Superficially this species looks much like *A. vicina*, but the pubescence of the apex of the abdomen at once separates it. It is very much like *A. pruni*, but that has the punctures of the abdomen much stronger, the basal joint of the hind tarsi is longer and narrower, and the colour of the tarsal pubescence is entirely different.

- (2) *A. Forbesii*, Rob.—♀. April 19. Beside the colour of the pubescence, *Forbesii* is distinguished from *rugosa* by the smaller and more numerous ridges on the base of the metathorax; about 20 in *Forbesii*, about 12 or 14 in *rugosa*. The abdominal hair-bands of *Forbesii* may be practically obsolete.
- (3) *A. Cressonii*, Rob.—♂, April 30; ♀, April 19. The ♂ is not quite typical in the face-markings.
- (4) *A. bipunctata*, Cress.—Many males, April 19 to May 18.
- (5) *A. vicina*, Sm.—April 21 to June 18. Very many. None are var. *errans* (*A. errans*, Sm.). At Olympia, Washington State, Mr. T. Kincaid takes the typical form and var. *errans* together, the variety being the most numerous.
- (6) *A. fimbriata*, Sm.—♀, Sept. 9 and 15. ♂, Sept. 9. The male is smaller and more slender than the ♀; face wholly dark, with long yellow hair; flagellum faintly ferruginous beneath; process of labrum bifid; apex of abdomen with yellowish-white hair; pubescence of legs pale.

BOOK NOTICE.

SOME CONSIDERATIONS ON THE NATURE AND ORIGIN OF SPECIES.—By J. W. Tutt, F. E. S.

This is the title of the presidential address delivered before the City of London (England) Entomological and Natural History Society, December, 1897, published in a pamphlet of 20 pages. Mr. Tutt interestingly reviews the recent theories as to the causes of species formation, touching on the presence of variation in organic beings, action of natural selection, origin of local races by adaptation to differing environment, etc., and comes to the conclusion that all generic and specific characters are due to the past or present action of natural selection. Comparatively fresh points are made in that specialization of genital organs does not necessarily accompany other specialization, and that isolation may be brought about by difference in time of emergence, difference in habit or in the hours of mating, as well as by geographical conditions.

Mr. Tutt does not believe that climate, food, sexual selection (in insects at least), isolation or laws of growth can produce specific characters; all such must be utilitarian. This is the position so ably defended by Wallace, but nevertheless certainly untenable.

The reviewer would refer Mr. Tutt to the case of *Datana*, where all the specific characters seem so evidently due to the action of isolation alone, as most recently lucidly explained by Romanes. In this case the isolation is due principally to different food plants.

HARRISON G. DYAR.