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Contribution to the knowledge of the Coccidæ of Egypt,

by

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CONTENTS.

INTRODUCTION.

The results of a further year's work on the COCCIDÆ of Egypt are here published. It will be seen that 20 new records are quoted of which 14 are new to science. This brings up the list of Egyptian Coccidæ to 123. All except one of the new species described are of desert habitat and many are extremely interesting forms. It is unfortunate that the difficulties of penetrating into the desert preclude the possibility of more frequent visits as it is quite certain that the desert is a rich collecting ground.

I have to acknowledge my thanks to Mr. E. E. Green for his continued assistance and to Mr. Harold Morrison of the Bureau of Entomology, Washington, for clearing up my difficulties in respect of three species. It is also my duty to express my indebtedness to Mr. N. D. Simpson, Botanist to the Irrigation Department of the Ministry of Public Works and to Dr. Debski for their kind assistance in the identification of desert plants.

Cairo, May 15th, 1926.

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PART I.—RECORDS OF COCCIDÆ NEW TO EGYPT WITH DESCRIPTIONS OF NEW SPECIES.

106. Monophlebus gymnocarpi SP. NOV.

(Plate I and Plate II Figs 1–9.)

ADULT FEMALES TAKEN ON *Haloxylon schweinfurthii.*

Broadly oval in shape narrowed in front with a flattened frons; broadly rounded behind with a flattened posterior extremity; highly convex above and flat below. Colour orange some specimens being yellower and others redder. Antennæ and limbs black. Segmentation distinct owing to thin black intersegmental markings which broaden into a conspicuous dark spot midway between the median line and the margin afterwards becoming thin again and finally ending near the margin in a dark spot with two or three others scattered in the vicinity. The general impression is of a longitudinal line of dark spots midway between the median line and the margin and another similar line submarginally on either side.

Just behind the frons is a well marked V shaped dark marking resting on a short transverse dark band. The abdominal markings whilst being carried through into the thorax are not quite so regularly arranged in that region.

Length 7 millimetres, Breadth 4 millimetres.

ADULT FEMALES TAKEN ON *Gymnocarpus decander.*

Smaller, of a brick red general colouration with a wide longitudinal submarginal dark stripe. In this case the insect did not show a flattened frons or posterior extremity. The difference in colour and the absence of dark spots give a different appearance from the specimens taken on *Haloxylon schweinfurthii.*

Length 4·5 millimetres, Breadth 3 millimetres.

The single example collected on *Nitraria retusa* resembled those from HALOXYLON but was of rather a reddish hue.

Adult male salmon pink to brick red in colour. Antennæ and limbs shiny black. Caudal appendages, well developed, concolourous with the abdomen. Wings at rest held horizontally over the body. Costal nervure salmon pink. Colour of wings greyish or very pale dull brown, rugose. Body salmon pink with a little white secretionary matter. Mesonotal plates black with a dark red central area. Head and thorax red. Eyes black.

Adult Female.—Adult female with antennæ of 11 segments with the basal segment very stout but subequal in length to the 2nd and 11th. The remaining segments are subequal and shorter with a tendency for the 3rd, 4th and 5th to be shorter and the 6th, 7th and 8th to be longer. The 4th is usually the shortest. All segments liberally clothed with hairs. In one example one antenna was normal whilst the other was 6 segmented with the 4th and 6th showing partial division.

Limbs well developed, trochanter large with indications of a transverse fold, femora stout about $^4/_5$ the length of the tibiæ, tarsi $\frac{1}{2}$ or slightly less than that of the tibiæ. Joints clothed with short hairs, those on the inner surface of the femur being rather stout; the inner surface of the tibiæ and tarsi with short stout spines. Ungual digitules short, tarsal digitules shorter and very fine.

Dermis covered with many longer and shorter spiniform setæ, the dorsal and ventral setæ being of equal size. Dermal pores distributed over both surfaces with either a simple or biloculate central orifice surrounded by 10 to 15 well defined cells. A very few trilocular and quadrilocular pores also occur, the former more particularly in the neighbourhood of the anal orifice.

Anal aperture large and simple surrounded by setæ of a rather shorter and finer type than those found elsewhere on the dermis. This broad ring of hairs is sometimes obscure in the adult female, it is much better seen in the præadult stage.

A cicatrix of irregular shape occurs towards the posterior extremity of the abdomen but this is not obvious in all specimens.

Thoracic spiracles supported by a thick chitinous band. Abdominal spiracles seven on either side with conspicuous transverse corrugations but without pores in the atria. Eyes conspicuous. Mentum short and stout somewhat pointed and clothed with many hairs in the apical region.

Præadult Female.—Antennæ stout either 8 or 9 segmented, basal segment stout; terminal segment the longest followed by the 2nd,

the 3rd is only very slightly shorter than the 2nd and the remaining segments are subequal and only slightly shorter than the 3rd. One example had one antenna with 6 segments and the other with 10.

Other characters the same as in the adult female on a smaller scale with the exception of the dermal setæ which are of the same size but differ on the dorsal surface, particularly in the thoracic region, in being blunted. This does not apply to the longest type of setæ which is always spiniform.

Length 3 millimetres. Breadth 2 millimetres.

A portion of the cast skin of an earlier stage was adhering to one specimen of the præadult stage and from this it appears that, whilst the dermis is covered with setæ as in the other stages, the setæ are short, much blunted and of a much more uniform size.

Male.—Adult male with antennæ of 10 segments, the basal segment short with a few scattered small hairs, the 2nd about the same length but narrower with scattered long hairs; remaining segments, elongate, trinodose with a whorl of long hairs in the neighbourhood of each node. The segments become successively slightly shorter towards the terminal segment. Eyes compound with large facets and a conspicuous ocellus on the inner edge of each eye.

Limbs with a marked transverse fold in the trochanter, tarsi curved slightly inwards; tarsal digitules short and simple, ungual digitules rather longer and stouter.

A well developed caudal appendage on either side with about 9 long stout setæ arising from its distal extremity. A group containing one long and 3 or 4 shorter setæ is found at the margin of each abdominal segment.

Abdominal spiracles present, the caudal pair being very conspicuous whilst the others, which are of the same type but a little smaller, are comparatively obscure. The spiracles are of a similar structure to those found in the adult female. Dermal pores very few, scattered, of 3, 4, 5 and many locular types. Abdominal segments with a few setæ of varying lengths. Halteres with 5 stout curved bristles at their distal extremities.

Length 3·5 millimetres. Wing expanse 7 millimetres.

Host Plants.

Caryophyllaceæ	*Gymnocarpus decander.*
Chenopodiaceæ	*Haloxylon schweinfurthii.*
Zygophyllaceæ	*Nitraria retusa.*

PART OF PLANT ATTACKED.

The young branches.

REMARKS.

Collected originally on *Gymnocarpus decander* in Wadi Ibtadi and Wadi Gerrawi (Eastern Desert, 2 days camel ride from Helwan) on May 4th and 6th, 1925. This host plant is a low growing shrub of a stiff and impenetrable nature, an unpleasant plant to examine. The first specimen was a male taken whilst sweeping one of these shrubs and although many were examined after this no further specimens were taken until two days later a female was taken again by sweeping. This was in a small *cul de sac* off Wadi Ibtadi containing about 30 of these shrubs. A careful and prolonged examination of these plants resulted in the capture of about a dozen females and a male. The larval stage and 1st stage nymph were not taken.

No further specimens were captured until the end of February and beginning of March 1926. A single specimen was taken on *Haloxylon schweinfurthii* near the top end of Wadi Suarka (Eastern Desert) February 24th, 1926 and later on March 4th, it was found to be relatively common on the same host plant in Wadi Araba (Eastern Desert 55 miles east of Beni Suef). No males were found. No specimens were found on *Gymnocarpus decander* during this trip but then it was so early in the year that this plant was only just beginning to show signs of life.

On April 2nd 1926, I was fortunate enough to find a female in copulation on *Nitraria retusa* in Wadi Ourag (east of Saff). There were two males in attendance on the female and another on a twig close by. A careful examination ot this and other *Nitraria* bushes in the vicinity failed to reveal the presence of any further specimens either male or female.

107. Phenacoccus cyperi SP. NOV.

(Plate IV.)

Adult female elongate ovate with relatively rather small antennæ of 9 segments, the 1st and 9th being subequal and the longest; the 2nd, 5th, 6th, 7th and 8th are also subequal and slightly shorter than the 1st and 9th whilst the 3rd and 4th are again subequal and the shortest. In most examples the only segments that stand out as being of markedly different length to the rest are the 3rd and 4th and that is not always true. One individual had an 8 segmented antenna the 4th segment being incompletely divided.

Limbs relatively rather small, femora and tibiae of hind pair subequal with the tarsi $\frac{5}{8}$ the length of the tibiæ. Claw with a minute denticle on its inner surface, this is so minute that in some cases it is not discernible at all. Tarsal digitules very fine and simple, ungual pair rather stouter and minutely knobbed. Limbs sparsely hairy with no translucent pores on the hind pair.

Rostral loop very short extending to midway between the 1st and 2nd coxæ. Anterior and posterior osteoles present. Eyes rather prominent. Cerarii wanting. Caudal setæ of approximately the same length as the anal setæ but with a tendency to be less stout. Anal ring with the outer ring of minute pores wanting or only represented by two or three pores anteriorly.

Dermis with relatively few pores even at the posterior extremity, large ring shaped pores predominate on both surfaces and a few minute pores also occur. The former are smaller than usual and the latter are so small that it is difficult to make out their true structure and to state whether they are of the trilocular type usually found or not. Body hairs short and few in number.

Length of adult female 2·5–3 millimetres. Breadth 1·25–1·5 millimetres.

HOST PLANT.

Cyperaceæ ... ... *Cyperus* sp.

PART OF PLANT ATTACKED.

Under the leaf sheath.

REMARKS.

Collected by Mohamed Taha at Kharga Oasis on December 10th, 1925. This species is quite unlike any other found in Egypt. It resembles *Phen. inermis* Hall in having no cerarii but it is of more elongate form and differs in the nature of the anal ring and setæ and the fact that it has fewer body setæ and dermal pores. Unfortunately the characters of the living insect cannot be given as the material was brought in spirit.

The "type" of *Phenacoccus cyperi* is rather smaller than the fully developed adult female.

108. Phenacoccus zillæ SP. NOV.

(Plate V.)

Adult female oval, greyish yellow, with moderate amount of mealy secretionary matter. Segmentation indistinct. Body very

soft. Ovisac elongate with fibres composing it slightly elastic. Eggs and larvæ pale brown.

Antennæ of adult female 9 segmented, the 2nd and 3rd being subequal and the longest followed by the 9th which is only very slightly shorter, the 1st, 4th and 5th are also subequal and next longest whilst the 6th, 7th and 8th are again subequal and the shortest.

Limbs well developed with coxæ somewhat elongated. Tibiæ of hind limbs a little longer than the femora and the tarsi slightly more than $\frac{1}{3}$ the length of the tibiæ. Translucent pores wanting. Claw with a large and conspicuous denticle on its inner surface. Tarsal digitules short, very fine and simple ; ungual digitules rather longer, stouter and minutely knobbed.

Rostral loop extending to midway between the 1st and 2nd coxæ. Anterior and posterior osteoles present. Eyes large and conspicuous.

Caudal setæ long with another seta $^{2}/_{5}$ its length in close proximity. Anal setæ rather more than half the length of the caudal setæ. Cells of the anal ring not contiguous and surrounded by a ring of minute pores two or three deep.

Anal lobes well developed. Eighteen pairs of cerarii present, the anal pair consisting of a pair of small slender spines surrounded at the base by a small group of small trilocular pores. The spines in the other cerarii are smaller but of uniform size and shape throughout. Practically all my specimens show 3 spines in either the 2nd or 3rd cerarian group on either side counting the 1st pair as that on the frons. The spines are associated with from 3–6 small trilocular pores, 4 or 5 being the number more usually found except in the pair on the penultimate segment where 8 or 9 may be found. Auxiliary setæ wanting.

Dermis with many moderately large multilocular discoid pores and small trilocular pores. On the ventral surface the former occur in groups of 2, 3 or 4, (except at the posterior extremity of the abdomen), associated with two or three of the latter. The discoid pores are much more numerous on the ventral surface whilst the trilocular pores are more or less evenly distributed over both surfaces. The grouping of the discoid pores on the ventral surface is marked. Dermis with scattered hairs of various lengths some of those on the frons being long.

A cicatrix occurs medio-ventrally between the 2nd and 3rd abdominal segments.

Length of adult female 3–3·25 mm. Breadth 1·75–2 mm.

Host Plant.

Cruciferæ ... ... *Zilla spinosa.*

PART OF PLANT ATTACKED.

The small branches.

REMARKS.

This interesting species was collected at Fayed near Suez on the 5th October 1925 by Mahmoud Eff. Hosni. The nature of the anal ring and the grouping of the multilocular discoid pores at once separate it from any other Egyptian species.

109. Pseudococcus alhagii SP. NOV.

(Plate VI.)

Adult female oval in outline colour usually pinkish but some examples straw coloured. Mealy secretionary matter sparse but evenly distributed. Segmentation distinct. Marginal filaments confined to the last two abdominal segments the caudal pair being $\frac{1}{3}$ the length of the body. No ovisac was observed.

Antennæ of adult female 8 segmented with the terminal segment the longest followed by the 1st, 2nd and 3rd which are subequal, the 7th is the next longest with the 5th and 6th subequal and only very slightly shorter and the 4th the shortest. In some cases the 4th, 5th and 6th are subequal and in others the 5th, 6th and 7th. Three examples were 7 segmented owing to the imperfect division of the 4th segment.

Limbs well developed with the tibiæ of the hind pair slightly longer than the femora. Tarsi slightly more than $\frac{1}{3}$ the length of the tibiæ. Trochanter with the usual long seta at the apex represented by a short and inconspicuous one. Tarsal digitules very fine and simple; ungual digitules fine and minutely knobbed. Tibiæ of hind limbs swollen and carrying on their outer halves, except at the base, numerous conspicuous areolets. These are circular but in some cases two, three or even four have fused; they are very conspicuous.

Mentum relatively large and rostral loop extending to the median coxæ. Anterior and posterior osteoles present.

Caudal setæ long. Anal setæ about $^3/_5$ the length of the caudal setæ. Anal ring large and of normal type. Anal lobes well developed and broadly rounded. Eighteen pairs of cerarii are present. The anal pair consist of a pair of stout spines with numerous trilocular pores more or less evenly distributed over the whole lobe and not in any way concentrated round the base of the spines. The lobes

also carry a few scattered setæ. The cerarii on the penultimate segment consist of 2 to 4 spines of a smaller size than those of the anal cerarii; where 2 occur these are usually of equal size but where more than two occur the additional ones are smaller. A few trilocular pores are scattered round the base of the spines. The spines in the other cerarian groups are usually two in number and very small and they are extremely difficult to detect in the frontal and thoracic regions owing to their minute size and the fact that they are only associated with two or three trilocular pores. In most cases not more than 9 or 10 groups can be readily made out and in these the cerarii have 5 or 6 trilocular pores.

Dermis with large ring shaped pores and numerous small trilocular pores the former are relatively few except on the ventral surface of the posterior abdominal segments where they are numerous. A few circular pores of an intermediate size also occur on both surfaces. Body hairs very short and conspicuous; a few longer hairs on the frontal area.

Length of adult female 2·5–3·5 mm. Breadth 1·75–2·5 mm.

Host Plants.

Compositæ... ... ... *Echinops spinosus.*
Leguminose ... ... *Alhagi maurorum.*

Part of Plant attacked.

The roots.

Remarks.

Collected on the edge of the desert at Masara and Heliopolis by Mohd. Taha in February and April 1926.

This species is well characterized by the conspicuous areolets on the tibiæ of the hind limbs and by the nature of the anal lobes and cerarii. An easily recognizable species under the microscope.

On *Alhagi maurorum* it was associated with *Phenacoccus inermis* Hall from which it could be readily distinguished by the presence of a few marginal filaments near the caudal extremity, the absence of the felted sac with which *inermis* surrounds itself prior to oviposition and the difference in colour.

110. Pseudococcus citri VAR phenacocciformis BRAIN.

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Brain., The Coccidae of South Africa, Trans. Roy. Soc. of South Africa, Vol. V, Part 2, p. 116, (1915).

This species is identical with *Pseud. citri* RISSO in external appearance. Egyptian examples differ from *citri* in :—

(1) The antennæ are usually 9 segmented. My series shows every stage from the terminal segment being entire through partial division to complete division. Only a very few specimens have both antennæ 8 segmented, but many have one or both antennæ 8 segmented with the terminal segment showing incomplete division. In the 9 segmented examples the 1st, 2nd and 3rd are subequal and the longest (in some examples the 2nd is slightly longer than the 3rd whilst in others the reverse is the case), the terminal segment is the next longest with the 7th and 8th subequal and only very little shorter. The 4th, 5th and 6th are subequal and the shortest.

(2) The osteoles, particularly the posterior pair, are better developed than in the case of *citri*. In this respect they more nearly approach *P. bromeliae* BOUCHÉ.

(3) The chitinous rod on the caudal tubercles appears to be shorter and more irregular than in typical *citri*. The claw to the limbs carries no small denticle on its inner surface.

Length of adult female 3–3·5 mm. Breadth 2–2·25 mm.

HOST PLANTS.

Bignoniaceæ ... ... *Tecoma capensis.*
Leguminosæ ... ... *Trifolium alexandrinum.*

PART OF PLANT ATTACKED.

The roots.

REMARKS.

This obscure species was collected at Mataria in April 1926. There seems little doubt that Egyptian material is referable to Brain's species.

111. Ripersia artemisiæ SP. NOV.

(Plate VIII.)

Adult female broadly ovate varying from dull rose to a palish dirty yellow green in colour ; specimens of the latter hue predominate and have a somewhat waxy appearance. Covering of white secretionary matter thin. Marginal filaments wanting. Just prior to oviposition the adult female becomes entirely enclosed in a thin leathery sac within which the eggs are laid. Eggs yellowish.

Antennæ of adult female short 6 segmented, the terminal segment being the longest followed by the 3rd with the 2nd only slightly shorter ; the 4th is the shortest with the 5th subequal or slightly longer. In most examples the 2nd and 3rd segments, particularly the 3rd, are markedly stouter than the 4th and 5th. Segments clothed with short stout hairs.

Limbs relatively small. In the hind pair the femora and tibiæ are subequal with the tarsi slightly more than $\frac{1}{2}$ the length of the tibiæ. The anterior pair are somewhat smaller with the median pair intermediate in size. There is a tendency for the tibiæ and tarsi of the hind limbs to be slightly swollen. Hind limbs with apparently no translucent pores. Tarsal digitules short, very slender and simple ungual digitules longer and obscurely knobbed. Claw with a distinct denticle on its inner edge.

Anal ring of normal type. Caudal setæ slightly shorter and stouter than the anal setæ, associated with a seta $\frac{2}{3}$ its length and 3 or 4 of $\frac{1}{2}$ its length. Anal lobes rounded and inclined to be rather prominent in some examples. There are 6 to 8 pairs of cerarii represented by spines only, the anal pair consists of 1 to 4 spines (usual number 3) of different sizes, two at least being stout, associated with one or two stout setæ. The penultimate pair consists of 1 to 3 spines of varied sizes but smaller than those of the caudal pair with one or sometimes two stout setæ. Other cerarii consist of two spines or more usually of one spine with one seta in the vicinity, this seta can be traced through into the thoracic region where the spine is wanting. The spines are short and stout, smaller than the stoutest spine of the penultimate pair, all more or less the same size with a tendency in some examples to get slightly smaller in the anterior cerarii.

Dermis dorsally with a few scattered obscurely trilocular pores and ventrally with many large ring shaped pores and a very few of the trilocular type found on the dorsal dermis.

Dermis with numerous short and rather stout hairs. Rostral loop extending to just beyond the insertion of the median coxæ. Mentum rather large with several short divergent hairs at the apex.

Anterior and posterior osteoles wanting or very obscure. Eyes rather prominent.

Length of adult female 2·5–3 millimetres. Breadth 2–2·25 millimetres.

HOST PLANT.

Compositæ... ... ... *Artemisia monosperma.*

PART OF PLANT ATTACKED.

The roots.

REMARKS.

Collected at the 6th Tower Suez Road on April 5th 1925 by Hassan Bey Efflatoun.

This is a particularly interesting species quite unlike any other so far known from Egypt. It is extremely doubtful if it is a true RIPERSIA, in some respects it is suggestive of the genus NAIACOCCUS. Mr. Green points out that in the matter of cerarii it approaches *R. palmarum* EHR. which is equally not a true RIPERSIA. I have placed it provisionally in this genus but it will probably require separation from it if the genus is revised.

Since the original material was collected I have examined *Artemisia monosperma* on many occasions both on the Suez Road and elsewhere but I have not been able to find it again.

112. Trionymus angustifrons SP. NOV.

(Plate VII.)

Adult female ovate, rounded behind but markedly narrowed in front. Colour pinkish. Mealy secretionary matter sparse. Segmentation very distinct. No marginal filaments. Eggs pale orange.

Antennæ of adult female set close together of 8 segments of which the terminal is the longest followed by the 2nd, 3rd and 5th which are subequal. In some examples the 3rd is slightly longer than the other two, in others there is a tendency for the 5th to be the longer. In three cases the 5th showed signs of a partial division. The 1st, 4th and 6th are subequal with the 7th either subequal or a little longer. The 4th is sometimes shorter than the others and in one or two cases is markedly the shortest segment.

Limbs well developed and hairy, the tibiae of the hind pair slightly longer than the femora and about $2\frac{1}{2}$ times the length of the tarsi. Claw with minutely knobbed digitules; tarsal digitules very slender and simple. Translucent pores apparently absent.

Rostral loop extending to midway between the 1st and 2nd coxæ. Anterior and posterior osteoles present.

Anal setæ $\frac{2}{3}$ the length of the caudal setæ. Anal ring normal. Cerarii confined to 5 or 6 groups on either side of the posterior abdominal segments. The anal pair consists of a pair of stout spines surrounded at the base by a group of trilocular pores and a faintly chitinized area ; 8 or 9 setæ of varying lengths are associated with this group. The penultimate group consists of a smaller pair of spines surrounded at the base by a smaller group of pores and 3 setæ. In the other groups the spines are slightly smaller with 3 to 6 pores and no setæ. In one or two cases three spines occur in a group and the anterior group is sometimes represented by a single spine and three or four pores.

Ventral dermis with large ring shaped pores, these are scarce except on the posterior abdominal segments. Both surfaces with scattered trilocular pores and moderately hairy.

Length of adult female 3–4 millimetres. Breadth 2·5–3 millimetres.

HOST PLANTS.

Compositæ... ... ... *Ambrosia maritima*, *Sonchus oleracea.*

PART OF PLANT ATTACKED.

The roots.

REMARKS.

Collected by Mohamed Effendi Tewfik at the Barrage on July 10th 1925. The unusually narrowed anterior extremity is characteristic and the nature of the cerarii enables it to be easily differentiated from other Egyptian species.

113. Aclerda panici SP. NOV.

(Plate II Figs. 10–15 and Plate III.)

Adult female.—Adult female irregular elongate oval in shape with the posterior extremity, in old adults, distorted. Old adult females so heavily chitinized that it is difficult to make out the characters accurately. The posterior abdominal segments become chitinized first and these later become thrown into irregular thickened folds and wrinkles more particularly in the marginal region. The

characters can be best ascertained from a study of the early adult female.

Antennæ very minute consisting of one segment carrying a number of hairs. In some cases a basal segment is doubtfully present. Mouth parts set well back from the frons. Rostral loop apparently very short. Eyes apparently wanting. Spiracles large the aperture of each with numerous small pores.

Limbs are present and represented by a minute claw with 4–6 minute pores and 4–6 minute setæ round the base. The actual position of these is shown in Fig. I. In old specimens the heavy chitinization of the dermis makes it extremely difficult to recognize them.

Anal extremity with a distinct anal cleft. Valves of the anal operculum comparatively well defined; they are roughly triangular in shape and separate the one from the other. There is a median deeply divided plate ventrally; the two rounded lobes of this plate each carry a number of long and stoutish hairs. The dorsal view shows a median broadly rounded plate with a median tubercle which carries three moderately stout hairs on either side. Anal tube extending to well beyond the margin and breaking up into very many flattened filaments or hairs. Posterior margin in the vicinity of the anal cleft with numerous long stout setæ.

Margin with small club shaped spines at intervals all round. These are not very numerous. Stigmatic clefts wanting and stigmatic spines not differentiated.

Dermal pores scarce, a few large short tubular spinnerets occur in the marginal area more particularly towards the posterior extremity and a few short tubular spinnerets which occur very sparsely all over the dermis but are again more numerous in the marginal area. Dermis with a very few minute hairs.

Length of old adult female 3·5–4·5 millimetres. Breadth 2–2·5 millimetres.

Nymph.—Elongate oval, mouth parts not set so far back from the frons as in the case of the adult female. Antennæ, spiracles and limbs as in the adult but smaller, the spiracles associated with a smaller group of pores. Shape of insect regular with the end of the abdomen protruding and the only part showing marked chitinization.

Anal cleft well marked. Valves of the anal operculum triangular and apparently very elongate. Between these are two rounded lobes each carrying three stout spines.

Margin at posterior extremity without hairs but with very short bulbular spines at intervals. These occur all round the margin

together with a more pointed form but are not very numerous, the latter form are more numerous in the thoracic region.

Dermal pores and hairs as in the adult female.

Length 1·75 millimetres, Breadth 0·75 millimetres.

Larva.—The body of one old adult female contained many larvæ but owing to the chitinization of the dermis and the twisted or folded nature of the larvæ it is a little difficult to make out the characters correctly.

Larva elongate oval with well developed 6 segmented antennæ of which the 3rd is the longest followed by the 6th. The 2nd is the shortest. Limbs well developed, tarsal and ungual digitules long and slender. Posterior extremity with two well marked lobes each carrying a seta of rather more than ½ the length of the body. Between these two lobes there appear to be two other elongate lobes but I cannot make out this structure accurately. I can discern nothing resembling valves.

Abdominal sements with two marginal very short bulbular spines. These are continued at more or less regular intervals all round the margin but are a little more numerous on the frons. Posterior abdominal segment with two much narrower blunted spines on either side and one at the base of each lobe near its inner face. Anal orifice small. Abdominal segments with a few moderately long hairs.

The important characters in the larvæ which have not yet been satisfactorily determined are :—

(1) Whether the terminal antennal segment carries a very long seta or not.

(2) The exact structure occurring between the caudal lobes.

It is hoped that when further material has been collected it will be possible to settle these points definitely.

Host Plant.

Gramineæ ... ... *Panicum turgidum.*

Part of Plant attacked.

The parent stem beneath the leaf sheaths.

REMARKS.

The presence of this species was first pointed out to me by Mr. Green who found a single specimen on some *Panicum turgidum* infected with *Odonaspis panici* HALL that I had sent him. This material had been collected between the 4th and 5th Towers on the Suez Road on the 8th December 1925. The PANICUM at the same spot was carefully examined on the 29th March 1926 with the result that 2 old adult females (one containing larvæ) 2 young adults and 1 nymph were taken. All the specimens were dark brown and naked with the exception of either the nymph or one of the young adult females that was flesh coloured with a tinge of mauve.

A panici is an extremely interesting form of an aberrant genus. The presence of vestigial limbs is not typical but the other characters seem to leave no doubt that it is correctly placed in the genus ACLERDA. The "type" of *A. panici* is a young adult female.

114. Ctenochiton artemisæ SP. NOV.

(Plate IX.)

Adult female broadly ovate, highly convex and dull green in colour. Dorsum moderately leathery speckled with small patches of glassy matter. These patches are small and not conspicuous but they give a speckled and rugose appearance to the dorsum.

Young stages flattish, grass green with broad longitudinal median carina the colouration being slightly deeper in the grooves on either side of the carina.

Length of adult female 2·5–3·5 millimetres. Breadth 1·75–2·5 millimetres.

Antennæ of adult female variable being either 8 or 9 segmented. Eight segmented examples with the 3rd and 8th subequal and the longest followed by the 1st, 2nd and 5th which are subequal and only slightly shorter, the 4th and 7th are again subequal and slightly shorter with the 6th the shortest. The terminal segment carries two hairs of a length equal to that of the segment and two short blunted spines one of each terminally and the other two midway down the segment one on either side. The 2nd and 3rd segments each with a similar spine arising from midway down the segment on the same side. The 4th with 4 hairs one being much longer than the others. A similar long hair occurs also on the 2nd.

In 9 segmented examples the 3rd and 9th are the longest followed by the 1st, 2nd, 4th and 8th with the 5th, 6th and 7th the shortest. In some cases the 7th is slightly longer than the other two. The

hairs and spines on the 4 terminal segments are the same as in the case of 8 segmented specimens. In some 8 segmented examples the 5th shows incomplete division.

Limbs well developed with coxæ inclined to be elongate, tibiæ of hind pair subequal with the femora, tarsi nearly $\frac{3}{4}$ the length of the tibiæ. Tarsi curved inwards. Claw with very minute denticle on its inner surface. Tarsal digitules long, slender and minutely knobbed; ungual digitules slightly stouter and minutely knobbed.

Rostral loop short. Spiracles normal with well marked series of pores running to the margin. Stigmatic clefts wanting but 2–4 (usually 3) stigmatic spines present; these are slightly shorter and more blunted than the marginal spines. In one example the stigmatic spines were not apparent. Margin with long, somewhat blunted, spines with a row of shorter spines of a similar type just within the margin and a row of hairs just within that. The spines tend to be very slightly longer in the posterior region.

Body chitinized with the abdominal segmentation very distinct except submarginally where all trace of it is lost. Submarginal area with many long tubular spinnerets (Fig 6.) and abdominal segments medioventrally with many large circular pores of the type figured (Fig 7.).

Valves of the anal operculum roughly triangular with the base and outer edge subequal and with four short hairs near the apex.

Host Plant.

Compositæ... ... ... *Artemisia judaica.*

Part of Plant attacked.

The roots.

Remarks.

This species was found to be very common on the roots of *A. judaica* at the end of February and beginning of March 1926 in the wadis east of Beni Suef. It was found in Wadis Sennur, Askhar North, Askhar South, Araba, Abu Rimh, Ghorab etc. The specimens were for the most part on the young side but of the hundreds of individuals examined some were apparently well developed and no trace of an ovisac was observed. I am assigning this species provisionally to the genus Ctenochiton in the apparent absence of any ovisac.

The "type" of *C. artemisiæ* is a young adult female.

115. Ctenochiton haloxyloni SP. NOV.

(Plate X Fig 1–11.)

Adult female broadly ovate to circular in outline, highly convex almost hemispherical. Ventral surface flat. Margin with a series of stout rays some of which are often broken off in old adults. Dorsum rugose with a submarginal suture that runs posteriorly into the anal plates. Dorsum with waxy plates each plate being mound shaped and surmounted by a little irregularly shaped glassy mass suggesting granulated sugar. The plates themselves appear to have some sort of arrangement but this is obscure. The granular masses surmounting the plates give a characteristic appearance. Anal plates dark brown. General colouration of dorsum grey with a tinge of yellow green, in some specimens pink. Old adult females turn darker in colour.

Dorsal dermis very leathery. Ventral dermis with abdominal segmentation very marked in the median area, the submarginal region is without any trace of segmentation but with an inward fold at the junction with the median area. Ventral tissues extremely soft and easily ruptured. Stigmatic pores discernible by a little white secretionary matter. Boiled in potash the insect gives a bottle green colouration to the solution.

Diameter of adult female 2·5–3·5 millimetres.

Antennæ of adult female short, stout, tapering and 8 segmented with the 1st, 3rd and 8th subequal and the longest followed by the 2nd and 4th only slightly shorter and the 5th, 6th and 7th the shortest. The 7th is sometimes a little longer than the other two. Terminal segment broadly rounded with a few hairs; the 6th and 7th each with one hair; other setæ apparently wanting.

Limbs very poorly developed but stout with very short joints. Tarsi and tibiæ fused; an incomplete tibio tarsal suture is usually present. Trochanter just discernible. Coxæ stout. Claw with very fine simple digitules extending beyond the apex of the claw; tarsal digitules short, very fine and simple. Limbs with very few minute hairs.

Rostral loop extending to the hind coxæ. Spiracles normal. Stigmatic clefts and spines wanting. Valves of the anal operculum triangular with outer edge longer than the base.

Margin with stout acute spines. Submarginal area with numerous tubular spinnerets, these have a marked swelling in the tube at one end. Dorsally, immediately anterior to the anal valves, is a group of small but conspicuous pyramidical spines. Ventral surface

of abdominal segments with the usual large circular pores particularly on the posterior segments.

Microscopic preparations show that the marginal rays are each supported by a chitinous rod. Old adults heavily chitinized, it is easier to make out the characters in a younger adult female.

HOST PLANT.

Chenopodiaceæ ... ... *Haloxylon schweinfurthii.*

PART OF PLANT ATTACKED.

The roots.

REMARKS.

This interesting species was found in large numbers between the 5th and 6th Towers Suez Road on the 8th December 1925. It was later found on the same host plant in Wadi Araba (60 miles in the desert east of Beni Suef) on the 3rd March 1926 so it would appear to be widely distributed in the desert. Mr. Green points out that it bears a slight resemblance to C. *dacrydii* MASK, but is undoubtedly distinct.

The "type" of *C. haloxyloni* is a young adult female.

116. Lecanium berberidis SCHR.

BIBLIOGRAPHY.

Schrank., Faun, 11, Part 1, p. 146 (1801).

Adult female elongate ovate, highly convex and dark brown in colour with a definite longitudinal median dorsal keel.

Younger stages vary from straw coloured in the very young stages gradually darkening as the insect develops.

Length of adult female 4–8 millimetres. Breadth 3–5 millimetres.

HOST PLANT.

Moraceæ ... ... *Morus alba.*

PART OF PLANT ATTACKED.

The smaller branches.

Remarks.

A heavy infestation was found at Marg in May 1925.

This species is not unlike *L. persicæ* Geoff. from which it differs in the character of the marginal hairs which are long and setiform instead of being short and spiniform. It is also well characterized by the submarginal series of large and conspicuous tubular pores.

117. Pulvinaria psidii Mask.

Bibliography.

Green., Cocc. of Ceylon Vol. IV. p. 264 (1909).
Brain., Cocc. of South Africa, Bull. Ent. Res. Vol. XI, p. 21 (1920).

Egyptian material agrees closely with this species as described and figured by Green (*l.c.*) I quote an extract of the description there given.

"Adult female at first ovoid; moderately convex above; afterwards much shrivelled and contracted; elevated behind by the mass of eggs and enveloping secretion. Colour green, more or less obscured by a white, powdery secretion; median area becoming brownish with age, the whole scale turning brown after death. Eyes black, conspicuous during life. Anal operculum dark brown. After gestation a mass of white cotton-like matter is secreted from the ventral area and pushed out from the margin. The insect then rests on a cottony cushion which projects on all sides and is eventually recurved over the margin. Ovisac profuse, highly convex, white cottony with an inconspicuous median furrow_____ Immature female more elongate and with stigmatic indentations more marked. Sometimes mottled with olive brown on discal area _____."

Egyptian examples appear to be a little smaller than typical *psidii* with the median longitudinal furrow of the ovisac of the adult female more marked in some specimens. In all specimens the transverse ridging is more or less marked.

Length of adult female 2–3 millimetres. Ovisac 3·5–5 millimetres.

Host Plants.

Moraceæ ... ... *Ficus glomeratus, F. rubiginosa*

PART OF PLANT ATTACKED.

The leaves and smaller branches.

REMARKS.

This destructive species was found in the Zohria (Introduction) Garden at Gezireh in December 1925. A tree of *F. glomeratus* 6 metres high was heavily infected and the foliage was quite black from a fungus growing in the "honey dew." This species apparrently produces much "honey dew." Egyptian examples appear to be typical.

118. Aspidiotus artemisiæ SP. NOV.

(Plate X Fig 12.)

Scale of adult female highly convex but approximately circular in outline. Pellicles usually eccentric pale green in colour this colour being obscured by a film of white secretionary matter. The area surrounding the 2nd pellicle is white shading off into chocolate with the margin again whitish. The general chocolate colouration with white centre is conspicuous in most examples but in some cases the chocolate colouration is only faintly developed whilst in others it is entirely absent rendering the scale uniformly white.

Ventral scale entire, dense white, usually remaining attached to the host plant, or at least the median portion of it by which it is attached to the plant. In a few cases the ventral scale came away entire with the dorsal scale.

Adult female very pale green.

Male scale white with pellicle greenish obscured by white secretionary matter.

Diameter of scale of adult female 1·25–1·5 millimetres.

Adult female approximately circular, antennæ reduced to minute tubercles carrying two stout bristles of equal length. Parastigmatic glands wanting. Free abdominal segments with many minute tubular spinnerets, margin of thoracic segments also with a few. Pygidium broadly rounded. Circumgenital glands confined to 0–4 in the anterior lateral group, usual number 1 or 2, often obscure owing to the chitinization of the tissues immediately surrounding. Median lobes large, set close together, with parallel sides rounded at the tip with a dent towards the outer edge. Lateral lobes present but very obscure. Only two squames are present and these are set close together between the median and 1st lateral lobes on either side. In a very few examples a pair of very small squames occurs between

the 1st and 2nd lateral lobes. Dorsal tubular spinnerets numerous with circular orifices and a few similar pores on the ventral surface in the marginal area beyond the 2nd lateral lobes.

Host Plants.

Compositæ... ... ... *Achillea fragrantissima.*
Artemisia monosperma.
Artemisia judaica.

Part of Plant attacked.

Found on the roots but in cases of heavy infection specimens may be found low down on the aerial growth.

Remarks.

This anomalous species was collected on *Artemisia monosperma* in December 1925 between the 4th and 5th Towers Suez Road. Later it was found to be very common near the top end of Wadi Suarka (25–2–26) Wadi Askhar North (27–2–26) Wadi Askhar South (2–3–26) on *Artemisia judaica.* A few specimens were also found on *Achillea fragrantissima* near the top end of Wadi Suarka (25–2–26). All the above mentioned wadis are to the east of Beni Suef; Wadi Askhar South where the material was collected was 75 miles out.*

A. artemisiæ is an anomalous species bearing a strong resemblance to a Targionia from which it differs in the presence of two squames just beyond the median lobes and two or three circumgenital glands. Mr. Green points out that in appearance it is closest to *dearnessi* Ckll and *helianthi* Parr.

119. Aspidiotus herzlianus Bod.

(Plate XI Fig. 1, 2.)

Bibliography.

Bodenheimer., Cocc. of Palestine., Zionist Agric. Expt. Station Bull. No. 1 p. 30 (1924).

This species was originally described from Palestine by Dr. Bodenheimer in 1924. I have since collected it in Egypt.

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* One lot of material collected on *A. judaica* in Wadi Askhar North (27–2–26) was identical in external appearance with *A. artemisiæ* but much to my surprise proved to be *Targionia nigra* Sign. when examined under the microscope. The chocolate and white colouration of the scales which I thought to be so typical of *A. artemisiæ* were reproduced exactly, in fact, the description of the scale of *A. artemisiæ* would fit these specimens perfectly.

Owing to certain differences observed in my material (and in Palestine material received from Dr. Bodenheimer himself) from the species as described I was doubtful for some time whether the material received from Palestine (which was identical with my Egyptian material) was really *A. herzlianus*. Dr. Bodenheimer kindly sent me his type to study thus enabling me to be quite certain that they were the same and also making it quite clear that the original description and figure was incorrect in at least one important detail *e.g.* that the 4 groups of circumgenital glands described were not present.

Egyptian examples (and all Palestine examples I have examined) are pale grey brown in general colouration with orange pellicles. Ventral scale thin, white, remaining adherent to the host plant when the scale is removed.

Diameter of scale of adult female 1–1·25 millimetres.

Adult female usually broadly ovate to almost circular (very rarely kidney shaped). The pygidium is triangular in shape rounded at the apex. Three pairs of lobes present, relatively small and notched on their outer edges. Two plates present between the median lobes, two between the median and 1st lateral lobes and three between the 1st and 2nd lateral lobes on either side. Median pair with apical fringes others with deep lateral serrations.

Dorsal pores numerous with long tubular spinnerets these are chiefly confined to two series running one from between the 1st and 2nd lateral lobes and the other from beyond the 2nd lobe towards the base of the pygidium. Free abdominal segments with a few minute tubular spinnerets near the margin, these are more numerous on the posterior abdominal segments. Circumgenital glands wanting. Anterior spiracles with no parastigmatic glands.

Host Plant.

Umbelliferæ ... ... *Pithyranthus tortuosus.*

Part of Plant attacked.

The stems.

Remarks.

Collected on the 4th May 1925 in Wadi Ibtadi (Eastern Desert) 2 days camel ride from Helwan. It is curious that although I have examined this plant on numerous occasions since I have not found this species again. It was originally described from material taken on *Asparagus aphyllus* also a desert plant.

120. Aulacaspis rosæ Bouché.

Bibliography.

Bouché., Naturg. Ins. p. 14 (1834).
Newstead., Mon. Brit. Cocc. Vol. 1 p. 168 (1901).
Leonardi., Mon. Cocc. Ital. p. 207 (1920).

Scale of adult female in Egyptian examples large, approximately circular, opaque white and not very convex. Pellicles small and straw coloured. Secretionary covering very thin and transparent giving a waxy appearance to the scale. Ventral scale a thin white film remaining attached to the plant.

Male scale much smaller with sides subparallel; strongly tricarinate. Pellicle straw coloured.

Diameter of scale of adult female 2–2·25 millimetres.

Host Plant.

Rosaceæ ... ... *Rosa sp.*

Part of Plant attacked.

Chiefly the stems.

Remarks.

A heavy infection of rose trees in the Nouzha Gardens at Alexandria was found on the 8th October 1925. It is curious that this species has not been collected before as it must have been present in these gardens for some time. Egyptian material appears quite typical of this cosmopolitan species.

121. Coccomytilus farsetiæ sp. nov.

(Plate XI Fig. 3–8.)

Scale of adult female large, broadly pyriform in outline and unusually convex. First pellicle usually bare and straw coloured, second pellicle orange but obscured by secretionary matter. General colouration of scale a drab dust colour. Ventral scale thin but entire coming away usually with the dorsal scale.

Length of scale of adult female 2·5–3·25 millimetres. Breadth 1·5–2 millimetres.

Adult female pear shaped with abdominal segmentation very marked. Antennæ reduced to minute tubercles with one very stout

spine, a very much less stout spine and two minute hairs. Anterior spiracles with 4–9 parastigmatic glands, posterior pair with 2–4. Just caudad of the anterior spiracles on either side is a conspicuous group of spine glands. Pygidium broadly rounded. Median lobes only represented, these are large set very close together, squat, broadly rounded with a notch towards the outer edge. Two moderately stout hairs occur between the median lobes, one just beyond and one on each of the 1st two abdominal segments on either side. Dorsal surface with many short tubular spinnerets, these have no very apparent arrangement. Free abdominal segments with many minute tubular spinnerets in the marginal area. These are continued into the thoracic region and on to the frons but are less numerous than on the abdominal segments.

HOST PLANT.

Cruciferæ ... ... *Farsetia ægyptiaca.*

PART OF PLANT ATTACKED.

The small stems.

REMARKS.

Collected on the edge of the desert at Masara on the 6th April 1926 by Mohd. Taha. An unusually large species easily recognizable both in the living state and under the microscope. Quite unlike any other Egyptian species.

122. Coccomytilus retamæ SP. NOV.

(Plate XII Fig. 1.)

Scale of adult female small ovoid narrowed in front broadest across the middle rounded behind. General colouration a dull dark brown darkest in the middle and shading off through a paler reddish brown to very pale almost white behind. The scale is covered by a thin film of white secretionary matter, the pellicles are very large and heavily chitinized and shiny reddish brown in colour. The 1st pellicle is very nearly $\frac{1}{2}$ as long as the 2nd pellicle which is very nearly as large as the whole scale.

Male scale white, with straw coloured almost golden pellicle, narrow and slightly expanded behind.

Length of scale of adult female 0·75–1 millimetres.

Adult female with antennæ reduced to minute tubercles carrying two or three stout bristles and a similar number of shorter hairs. Rostral loop short. Anterior spiracles with 1–3 parastigmatic glands.

Free abdominal segments with many small tubular spinnerets; series of similar spinnerets run from the margin to both the anterior and posterior spiracles. Pygidium broadly rounded. Median lobes small, rounded and set rather more than their width apart. Other lobes wanting. Four marginal pores occur on either side of the median lobes. Spiniform squames are arranged one pair between the median lobes, one between the median lobes and 1st marginal pore, another between the 1st and 2nd marginal pores and another between the 2nd and 3rd pores on either side. Dorsal pores slightly smaller than the marginal pores and scattered with no apparent arrangement. Circumgenital glands wanting. Anal orifice situated near the base of the pygidium.

Host Plant.

Leguminosæ ... ... *Retama raetam.*

Part of Plant attacked.

The young stems.

Remarks.

Collected on the 3rd May 1925 in Wadi Ibtadi (Eastern Desert) 2 days camel ride from Helwan. The bush was very heavily infected. Also found on the same host plant in small numbers near the top end of Wadi Suarka (24–2–26) and Wadi Araba (26–2–26) both in the Eastern Desert east of Beni Suef. I have also recently received specimens on the same host plant from Palestine collected by Dr. Bodenheimer. It, therefore, appears that it is widely distributed in the desert although not very common as I have examined very many Retama bushes without finding a trace of it.

It is a species well characterized by its very large and heavily chitinized 2nd pellicle and the nature of the pygidium.

123. Diaspis zamiæ Morg.

Bibliography.

Morgan., Ent. Mon. Mag. Vol. XXVI p. 44 (1890).
Newstead., Mon. Brit. Cocc. Vol. 1 p. 165 (1901).
Leonardi., Mon. Cocc. Ital. p. 215 (1920).

Scale of adult female in Egyptian examples approximately circular, convex, and semitransparent white in colour. The 1st

pellicle obscured by a thin covering of semitransparent white secretionary matter. Ventral scale very thin but entire remaining attached to the host plant. Puparium waxlike in appearance.

Male scale not seen.

Diameter of scale of adult female 1·5 millimetres.

HOST PLANT.

Cycadaceæ... ... ... *Cycas revoluta.*

PART OF PLANT ATTACKED.

The leaf fronds.

REMARKS.

Collected at Alexandria on the 29th November and 23rd February 1926. The infection was slight in both cases. Egyptian material appears to be typical.

124. Odonaspis panici SP. NOV.

(Plate XII Fig. 3.)

Scale of adult female large, elongate, broadened in front and somewhat narrowed behind, flattish and white in colour. Pellicles near one end naked and orange. Ventral scale entire, dense white and continuous with the dorsal scale. Where the specimens are crowded the scales are fused at their edges forming one mass.

Male scale smaller, elongate with subparallel sides. Pellicle orange. Width of scale rather more than the width of the pellicle.

Length of scale of adult female 2·5–3 millimetres, Breadth 1·5–1·75 millimetres.

Length of scale of male 1 millimetre. Breadth 0·5 millimetre.

Adult female closely resembling that of *O. ruthae* EHR. The only differences I can detect are :—

(1) It is a much larger insect.

(2) The parastigmatic glands are much less numerous. Examination of 25 samples showed from 2–9 glands to the anterior spiracles and 1–4 to the posterior pair. Egyptian examples of *O. ruthae* EHR. very rarely show less than 20 to the anterior and 10 to the posterior pair.

O. panici and *O. ruthae* can be at once separated by the nymphs. The pygidium of the former shows 2 distinct pairs of lobes the median

pair, at least, being conspicuous whilst in *ruthæ* no obvious lobes exist at all.

In recording *O. ruthae* EHR.—Min. Agric. Bull. No. 64 p. 15 (1925)—the length of the scale of the adult female was given as 2–3 millimetres. The great majority of specimens are nearer to 2 millimetres whilst in *panici* the great majority are nearer to 3 millimetres. The actual female of *ruthæ* is very much smaller than that of *panici*.

HOST PLANT.

Gramineæ ... ... *Panicum turgidum.*

PART OF PLANT ATTACKED.

Aerial.

REMARKS.

Collected originally at Abu Sueir by Mahmoud Eff. Hosni in June 1925 but since found to be common on the Suez Road and in the wadis east of Beni Suef. Obviously a species of wide distribution. Its large size and ærial habitat made me suspicious that it might not be *ruthae* which in Egypt I have always found to be subterranean but it was not until I had examined the nymphs that it became clear that it was a different although closely allied species.

125. Targionia haloxyloni SP. NOV.

(Plate XIII Figs. 1–3.)

Scale of adult female small, irregularly circular, convex, dead white in colour owing to a thick covering of white secretionary matter. The 1st pellicle is straw coloured when denuded and the 2nd pellicle large and black. The white secretionary matter is easily knocked off coming away in one piece and revealing the black nymphal pellicle. It is this fact which makes the scale easy to detect, if it were not so they would be difficult to see. Both the 2nd pellicle and adult female strongly and often asymmetrically chitinized. Ventral scale well developed but usually remaining attached to the host plant.

Diameter of scale of adult female 1·25–1·75 millimetres.

Old adult female with all but the free abdominal segments heavily chitinized. Thoracic region much swollen and of irregular shape. Early adult females elongate, only slightly broader in the thoracic region, with only the pygidium showing signs of chitinization.

Antennæ reduced to minute tubercles carrying one curved bristle. Parastigmatic glands wanting. Pygidium roughly triangular and broadly rounded. Three pairs of lobes present. Median pair conspicuous and toothlike, set close together; laterals small and inconspicuous. Two minute hairs between the median lobes, one between the median and 1st lateral lobes, 1 between the 1st and 2nd lateral lobes, 1 just beyond the 2nd lateral and two more towards the base of the pygidium on either side. Circumgenital glands wanting. Dorsal pores small, arranged more or less in 4 series, one running from between the median and 1st lateral lobes, one between the 1st and 2nd laterals and two towards the base of the pygidium on either side. A few similar pores occur ventrally towards the base of the pygidium. Pygidium heavily chitinized in old examples with a number of unchitinized or only partially chitinized areas.The nature and arrangement of these is more or less consistent in all examples. Free abdominal segments with a few minute tubular spinnerets. Anal orifice difficult to detect in old examples.

Host Plant.

Chenopodiaceæ ... ... *Haloxylon schweinfurthii.*

Part of Plant attacked.

Aerial and subterranean-chiefly the latter.

Remarks.

Collected in Wadi Askhar South (2–3–26) Wadi Araba (3–3–26) Wadi Sennur (5–3–26) all in the Eastern Sesert and subsequently on the same host plant at the 6th Tower Suez Road on the 24th March 1926.

A well marked Targionia unlike any other species known to me.

PART. II.—NOTES ON SPECIES RECORDED IN EARLIER BULLETINS.*

7. Lecaniodiaspis africana NEWST.

This species has been found to attack CASUARINA at Kharga Oasis and *Zizyphus spina Christi* at Baharia Oasis. *Ficus carica* and *Psidium guajava* are sometimes moderately infected at Cairo and the former host plant was found attacked at Tanta. This is only the second occasion on which it has been found north of Cairo. No case of serious damage has been observed until April 1926 when a *Psidium guajava* was found to be nearly killed and a *Ficus carica* very much reduced in bearing in a garden at Edfu.

It is interesting to note that this species was collected on *Acacia tortilis* in Wadi Askhar North (65 miles east of Beni Suef in the Eastern Desert) on the February 27th, 1926.

8. Phenacoccus hirsutus GREEN.

This pest may now be said to occur all over Egypt. A Bulletin (No. 70) which is now in the press brings our knowledge on the subject up to date and deals also with the introduction of *Cryptolœmus montrouzieri* MULS. as a natural enemy.

21. Filippia ephedræ NEWST.

Found to be very common on *Ephedra alte* at the beginning of March 1926 in Wadis Ghorab, Abu Rimh, Nashash, Sennur to the east of Beni Suef. Practically all the individuals were egglaying and in the majority of cases the development of the ovisac was complete with the young larvæ hatching out.

Dr. Bodenheimer informs me that he has recently collected this species in Palestine on *Asparagus* SP.

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* For summary of all the records up to date see page 35. The number attached to each species is that under which it was originally recorded.

28. Pseudaonidia glandulosa NEWST.

It is interesting to note that this species was found on *Acacia tortilis* in Wadi Askhar North (February 27th, 1926) about 65 miles east of Beni Suef and the Nile Valley.

33. Aulacaspis pentagona TARG.

It appears that this species is spreading in Alexandria. So far it has not been found elsewhere and legislation is being enacted in an endeavour to prevent it spreading from there.

34. Pinnaspis bilobis NEWST.

Rare in the wadis east of Beni Suef, only being found once on *Pithyranthus tortuosus* near the top end of Wadi Suarka at the end of February 1926 during a 14 days collecting trip in the desert.

45. Ischnaspis longirostris SIGN.

A heavy infection was found on *Agave* SP. and *Dracaena* SP. at Alexandria in January 1926.

60. Pseudococcus bromeliæ BOUCHÉ.

This has been found to be a relatively common species attacking the roots of sedges, *Cynodon dactylon, Sporobolus spicatus, Juncus* SP., *Cressa cretica* and the aerial growth of maize in addition to the host plants already recorded.

64. Ripersia cellulosa HALL.

Appears to be a common species in Egypt particularly on *Imperata cylindrica.* Additional host plants not previously recorded are *Andropogon* SP. and *Phragmites communis* VAR *isaica.*

66. Ripersia internodii HALL.

Maize has been found to be heavily infected on two or three occasions. *Saccharum biflorum* and sedge (roots) also appear to be host plants.

67. Ripersia phragmitis HALL.

This species can almost invariably be found on *Phragmites communis* VAR *isaica* but rarely in large numbers. *Arundo donax* is also attacked.

69. Trionymus indecisus HALL.

This rather obscure species has been found on maize, *Phragmites communis* VAR *isaica* and *Cynodon dactylon* (roots).

72. Pulvinaria discoidalis HALL.

Found to be common on *Haloxylon schweinfurthii* in Wadis Araba and Sennur (Eastern Desert) early in March 1926 and on the same host plant between the 4th and 5th Towers Suez Road in December 1925.

73. Pulvinaria retamæ HALL.

It is interesting to note that during a 10 days trip in the Eastern Desert in May 1925 this species was found to be common on *Pithyranthus tortuosus* but was in no case found on *Retama raetam*. It was also collected on *Artemisia monosperma* at the 6th Tower Suez Road in April 1925.

77. Aspidiotus latastei CKLL.

I have been doubtful about this record for some time. Specimens on *Ruscus hypophyllus* were sent to Mr. Harold Morrison of the Bureau of Entomology, Washington, who very kindly compared them with specimens from Prof. Cockerell's type material of *latastei*. Mr. Morrison states that they are quite definitely different from *A. latastei* CKLL. and adds that a further comparison with specimens from "bay" labelled *A. britannicus* NEWST. leads him to believe that my specimens are also referable to this species. I had suspected that our species was a form of *britannicus* to which I now refer all my material previously labelled *A. latastei* CKLL. which must, therefore, be erased from the list of Egyptian Coccidæ.

80. Lepidosaphes bicuspis HALL.

Some stunted TAMARIX trees in Wadi Sennur (Eastern Desert were found attacked by this species at the beginning of March 1926.

85. Pinnaspis zillæ HALL.

Daemia tomentosa (ASCLEPIADACEÆ) was found to be very heavily infected in Wadis Araba and Suarka (Eastern Desert) at the end of February 1926. *Trichodesma africana* (BORAGINACEÆ) was also found infected in Wadi Askhar North (February 26th, 1926). It appears to be a common species in the desert east of Beni Suef in spite of the comparative absence of *Zilla spinosa*. It has a number of host plants and seems to be widely distributed in the desert.

87. Targionia nigra SIGN.

The following three new host plants* have been found for this species. In each case the scale was uniformly sand to dusky brown coloured and very different from the pretty form found on *Farsetia aegyptiaca* described on page 22 of Bull. No. 64.

Compositæ *Launea spinosa* (aerial) Wadi Askhar North, February 27th, 1926.

Cucurbitaceæ *Citrullus colocynthis* (fruits) Wadi Araba, March 3rd, 1926.

Resedaceae *Ochradenus baccatus* (aerial) Wadi Askhar South, March 3rd, 1926.

89. Margarodes hirsutissimus HALL.

This interesting species has now been found in three or four parts of Cairo. Material collected in December 1925 and March 1926 bears out the remarks made in Bull. No. 64 (page 22). Now that the species can be kept under more direct observation it is hoped that the male may be secured.

93. Aspidoproctus hyphæniacus HALL.

The original description of the adult female was drawn up from only three specimens. Some of the 2nd stage nymphs being of practically the same size as the adult females the latter were not definitely

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* An additional host plant is Compositæ *Artemisia judaica* (*roots*) Wadi Askhar North 27–2–26. This material was identical in appearance with *A. artemisiæ*. For further remarks see p. 20.

recognized until microscopic preparations were made. Abundant further material was obtained from Kharga Oasis in December 1925 including many adult females. An examination of these shows that the species is not correctly placed in the genus ASPIDOPROCTUS. Material has been sent to Mr. Harold Morrison of the Bureau of Entomology, Washington, who is, at present, revising the MONOPHLEBINÆ. He informs me that it belongs to an apparently undescribed genus and that he proposes to make my *hyphæniacus* the type of the new genus.

94. Antonina indica VAR panica HALL.

This appears to be a common species on *Panicum turgidum* growing in the desert. It may occur just below ground but is more usually found low down on the ærial growth.

95. Phenacoccus inermis HALL.

This species is apparently widely distributed in the desert. It was found recently in Wadi Askhar North 70 miles east of the Nile Valley and in many of the intervening wadis.

96. Pseudococcus boninsis KUW.

Pseud. aegyptiacus Hall, Min. Agric. Bull. No. 64, p. 8, (1925). When describing this species it was pointed out that it would probably prove to be a synonym of a previously described species. Mr. Harold Morrison of the Bureau of Entomology, Washington, has recently cleared up the confusion existing in connection with *calceolariae* MASK. and certain allied species in a paper entitled " The Identity of the Mealy bug described as *Dactylopius calceolariae* MASK." (Journ. Agric. Research Vol. XXXI No. 5 Sept. 1st, 1925). From this it is quite clear that my species is identical with *boninsis* KUW. Mr. Morrison has also very kindly checked material of *aegyptiacus* against the species he has designated as *boninsis* KUW. and informs me that he considers them to be the same. The name *aegyptiacus* must therefore be sunk as a synonym of *boninsis*.

100. Chionaspis noææ HALL.

Collected on *Haloxylon schweinfurthii* and *Anabasis articulata* (CHENOPODIACEÆ) in Wadi Ashkar North and South early in March 1926.

Referring to this species there is an error at the end of line 2 page 14 of Bull. No. 64 For " median lobes are larger " *read* " median lobes are smaller."

101. Chrysomphalus dictyospermi MORG.

This species has been collected on *Ruta halepensis*, *Pincenectitia tuberculata* and *Cycas revoluta*, it appears moderately common on the last named plant.

Early in March 1926 a visit was paid to the St. Antonius Monastery situated in Wadi Araba under the north face of the South Galala Mountains 80 miles east of the Nile Valley and about 20 miles from the Gulf of Suez. This extremely isolated Monastery has a well and a large garden containing fruit trees, vegetables etc. During a very cursory examination of this garden the following species were found.

Ceroplastes africanus GREEN on *Acacia farnesiana*—a heavy attack.

Sphaerococcus marlatti CKLL. } on *Phœnix dactylifera.*
Parlatoria blanchardii TARG. }

Leucaspis riccæ TARG. on *Olea europaea.*

Asterolecanium pustulans VAR *sambuci* CKLL. on *Ficus carica.*

There is no doubt that all the species with the possible exception of *Cer. africanus* GREEN were introduced into the garden on plants brought from the Nile Valley.

Incidentally it may be mentioned that at Bir Areiyda at the foot of the southern face of the Northern Galala Mountains 60 miles from the Nile Valley many date palms occur around the well. These are the only date palms I have ever seen in Egypt that were free from the attack of *Parlatoria blanchardii* TARG. and *Sphaerococcus marlatti* CKLL.

PART III.—A LIST OF THE COCCIDÆ OF EGYPT UP TO DATE.

Including the records contained in the present paper 123 species have been recorded from Egypt by the writer. These records and subsequent notes on the species are scattered throughout five bulletins. It is thought that it may be of convenience to give a list of the Coccidæ of Egypt so far known with page references. Where a species was originally described or recorded under one name and that name subsequently altered the references until the correct name was established are given in italics.

Original Number.	Name of Insect.	Number of page in Bulletin Number.				
		22	36	46	64	72
	Monophlebinæ.					
93	*Aspidoproctus hyphœniacus* HALL	—	—	—	1	32
1	*Icerya aegyptiaca* DOUGLAS ...	1	30	—	—	—
2	,, *purchasi* MASK.	2	31	—	—	—
106	*Monophlebus gymnocarpi* HALL	—	—	—	—	1
	Margarodinæ.					
89	*Margarodes hirsutissimus* HALL	—	—	1	22	32
	Ortheziinæ.					
3	*Orthezia insignis* DOUGLAS ...	3	31	—	17	—
	Pseudococcinæ.					
94	*Antonina indica* VAR *panica* HALL	—	—	—	6	33
57	*Antonina phragmitis* MARCHAL	—	1	—	—	—
58	*Halimococcus thebaicae* HALL...	—	2	—	19	—
59	*Naiacoccus serpentinus* VAR *minor* GREEN...	—	3	—	20	—
107	*Phenacoccus cyperi* HALL ...	—	—	—	—	4
8	,, *hirsutus* GREEN ...	8	33	—	18	29
95	,, *inermis* HALL ...	—	—	—	7	33
108	,, *zillae* HALL	—	—	—	—	5
109	*Pseudococcus alhagii* HALL ...	—	—	—	—	7
96	,, *boninsis* KUW. ...	—	—	—	*8*	33
60	,, *bromeliae* BOUCHÉ	—	4	—	20	30
10	,, *citri* RISSO ...	11	34	—	20	—

Original Number.	Name of Insect.	Number of page in Bulletin Number,				
		22	36	46	64	72
	Diaspinæ (*contd.*).					
42	*Diaspis cacti* COMST....	34	47	—	—	—
40	,, *carueli* TARG.	33	47	—	—	—
123	,, *zamiae* MORG.	—	—	—	—	25
44	*Fiorinia fioriniae* TARG... ...	37	48	—	—	—
45	*Ischnaspis longirostris* SIGN....	37	48	—	—	30
46	*Lepidosaphes beckii* NEWM. ...	37	48	—	—	—
80	,, *bicuspis* HALL. ...	—	22	—	22	32
47	,, *conchiformis* GMEL.	*38*	49	—	—	—
92	,, *intermittens* HALL	—	—	7	—	—
48	,, *minima* NEWST.	39	49	—	—	—
81	,, *sacchari* HALL ...	—	23	—	—	—
49	,, *ulmi* L.	39	49	—	—	—
50	*Leucaspis affinis* LEON.	40	50	—	—	—
51	,, *pusilla* LOW.	41	50	—	—	—
52	,, *riccae* TARG.	41	50	—	—	34
124	*Odonaspis panici* HALL	—	—	—	—	26
103	,, *ruthae* EHR.	—	—	—	15	26
82	*Osiraspis balteata* HALL... ...	—	25	—	—	—
53	*Parlatoria blanchardii* TARG. ...	42	50	—	—	34
55	,, *chinensis* MARL. ...	43	51	—	—	—
104	,, *ephedrae* LIND. ...	—	—	—	16	—
54	,, *oleae* COLVÉE	*43*	50	—	—	—
83	,, *pergandii* COMST. ...	—	26	—	—	—
105	,, ,, VAR *crotonis* DOUGLAS	—	—	—	16	—
56	*Parlatoria proteus* CURTIS ...	44	52	—	—	—
84	*Pinnaspis aspidistrae* SIGN. ...	—	26	—	—	—
34	,, *bilobis* NEWST. ...	*28*	*44*	—	19	30
85	,, *zillae* HALL	—	27	—	22	32
28	*Pseudaonidia glandulosa* NEWST.	*24*	42	—	—	30
125	*Targionia haloxyloni* HALL ...	—	—	—	—	27
86	,, *longiloba* HALL ...	—	28	—	—	—
87	,, *nigra* SIGN.	—	29	—	22	32

PART. IV.—LIST OF ADDITIONAL HOST PLANTS.

This list brings up to date the lists given in the Ministry of Agriculture Bulletins No. 22, 36 and 64.

Abroma (*Sterculiaceae*).
Aspidiotus lataniæ.

Achillea (*Compositae*).
Aspidiotus artemisiæ.

Agave (*Amaryllidaceae*).
Phenacoccus hirsutus.
Ischnaspis longirostris.

Alhagi (*Leguminosae*).
Phenacoccus inermis.
Pseudococcus alhagii.
Ceroplastes africanus.

Alternanthera (*Amarantacae*).
Aspidiotus hederæ.

Althaea (*Malvaceae*).
Pseudococcus citri.

Ambrosia (*Compositae*).
Trionymus angustifrons.

Anabasis (*Chenopodiaceae*).
Pulvinaria discoidalis.
Chionaspis noææ.

Ananas (*Bromeliaceœ*).
Diaspis bromeliæ.

Andropogon (*Gramineœ*).
Pseudococcus sacchari.
Pseudococcus trispinosus.
Ripersia cellulosa.

Aralia (*Araliaceœ*).
Lecanium hesperidum.

Artemisia (*Compositœ*).
Ripersia artemisiæ.
Ctenochiton artemisiæ.
Pulvinaria retamæ.
Aspidiotus artemisiæ.
Targionia nigra.

Arundo (*Gramineœ*).
Antonina phragmitis.

Bambusa (*Gramineœ*).
Ripersia internodii.

Beaumontia (*Apocynaceœ*).
Saissetia hemisphærica.

Cæsalpinia (*Leguminosœ*).
Phenacoccus hirsutus.

Callistemon (*Myrtaceœ*).
Chrysomphalus aonidum.

Canna (*Cannaceœ*).
Lecanium hesperidum.
Chrysomphalus aonidum.

Carissa (*Apocynaceœ*).
Ceroplastes floridensis.
Parlatoria oleæ.

Casuarina (*Casuarinaceœ*).
Orthezia insignis.

Ceratonia (*Leguminosœ*).
Lecanium elongatum.

Citrullus (*Curcurbitaceœ*).
Targionia nigra.

Cressa (*Convolvulaceœ*).
Pseudococcus bromeliæ.

Croton (*Euphorbiaceœ*).
Icerya ægyptiaca.

Cycas (*Cycadaceœ*).
Pseudococcus longispinus.
Aulacaspis pentagona.
Chrysomphalus dictyospermi.
Diaspis zamiæ.

Cynodon (*Gramineœ*).
Pseudococcus bromeliæ.
Trionymus indecisus.

Cyperus (*Cyperaceœ*).
Phenacoccus cyperi.
Ripersia internodii.
Chionaspis stanotophri.

Dæmia (*Asclepiadaceæ*).
Pinnaspis zillæ.

Diospyros (*Ebenaceæ*).
Lepidosaphes ulmi.

Dracæna (*Liliaceæ*).
Icerya ægyptiaca.
Lecanium hesperidum.
Ischnaspis longirostris.

Echinops (*Compositæ*).
Pseudococcus alhagii.

Eriobotrya (*Rosaceæ*).
Asterolecanium pustulans var sambuci.

Erythrina (*Leguminosæ*).
Pseudococcus citri.
Lecanium hesperidum.
Aspidiotus lataniæ.

Eucalyptus (*Myrtaceæ*).
Asterolecanium pustulans var sambuci.
Aspidiotus lataniæ.

Fagonia (*Zygophyllaceæ*).
Phenacoccus inermis.

Farsetia (*Cruciferæ*).
Coccomytilus farsetiæ.

Ficus (*Moraceæ*).
Pulvinaria psidii.

Gleditschia (*Leguminosæ*).
Parlatoria oleæ.

Gymnocarpus (*Caryophyllaceæ*).
Monophlebus gymnocarpi.

Haloxylon (*Chenopodiaceæ*).
Monophlebus gymnocarpi.
Ctenochiton haloxyloni.
Pulvinaria discoidalis.
Chionaspis noææ.
Targionia haloxyloni.

Helianthus (*Compositæ*).
Pseudococcus citri.

Heliotropium (*Boraginaceæ*).
Targionia nigra.

Imperata (*Gramineæ*).
Pseudococcus variabilis.

Ipomoea (*Convolvulaceæ*).
Chrysomphalus aonidum.
Chrysomphalus aurantii.

Juncus (*Juncaceæ*).
Pseudococcus bromeliæ.

Kigelia (*Bignoniaceæ*).
Parlatoria oleæ.

Lagunaria (*Malvaceæ*).
Saissetia oleæ.
Aspidiotus lataniæ.

Latania (*Palmaceæ*).
Parlatoria proteus.

Launea (*Compositæ*).
Targionia nigra.

Lavatera (*Malvaceæ*).
Aulacaspis pentagona.

Lawsonia (*Lythraceæ*).
Saissetia nigra.

Lonicera (*Caprifoliaceæ*).
Lecanium hesperidum.

Maclura (*Moraceæ*).
Chrysomphalus aonidum.
Chrysomphalus aurantii.

Morus (*Moraceæ*).
Lecanium berberidis.
Lecanium hesperidum.
Saissetia nigra.
Aulacaspis pentagona.

Narcissus (*Amaryllidaceæ*).
Lecanium hesperidum.

Nerium (*Apocynaceæ*).
Saissetia nigra.

Nitraria (*Zygophyllaceæ*).
Monophlebus gymnocarpi.

Ochradenus (*Resedaceæ*).
Targionia nigra.

Olea (*Oleaceæ*).
Pseudococcus longispinus.
Saissetia hemisphærica.
Saissetia oleæ.

Panicum (*Gramineæ*).
Ripersia internodii.
Aclerda panici.

Panicum (*Gramineæ*).
Lepidosaphes intermittens.
Odonaspis panici.
Pinnaspis bilobis.

Phragmites (*Gramineæ*).
Pseudococcus sacchari.
Ripersia cellulosa.
Trionymus indecisus.
Lepidosaphes sacchari.

Pincenectitia (*Liliaceæ*).
Pseudococcus longispinus.
Aspidiotus lataniæ.
Chrysomphalus aonidum.
Chrysomphalus dictyospermi.
Parlatoria proteus.

Pithecolobium (*Leguminosæ*).
Asterolecanium pustulans var sambuci.

Pithyranthus (*Umbelliferæ*).
Aspidiotus herzlianus.

Prosopis (*Leguminosæ*).
Asterolecanium pustulans var sambuci.

Punica (*Punicaceæ*).
Pseudococcus filamentosus.
Lepidosaphes conchiformis.

Retama (*Leguminosæ*).
Coccomytilus retamæ.

Robinia (*Leguminosæ*).
Lecanium hesperidum.

Rosa (*Rosaceæ*).
Aulacaspis rosæ.

Ruscus (*Liliaceæ*).
Crypthemichionaspis africana.

Salvia (*Labiatæ*).
Orthezia insignis.
Pseudococcus filamentosus.

Sanchezia (*Acanthaceæ*).
Saissetia oleæ.

Sesamum (*Pedaliaceæ*).
Phenacoccus hirsutus.

Sonchus (*Compositæ*).
Trionymus angustifrons.

Sophora (*Leguminosæ*).
Aulacaspis pentagona.

Sporobolus (*Gramineæ*).
Pseudococcus bromeliæ.
Pseudococcus variabilis.
Ripersia internodii.

Sterculia (*Sterculiaceæ*).
Aspidiotus lataniæ.
Aulacaspis pentagona.

Tecoma (*Bignoniaceæ*).
Pseudococcus citri var phenacocciformis.
Ceroplastes floridensis.

Tectona (*Verbenaceæ*).
Icerya ægyptiaca.
Phenacoccus hirsutus.

Trichodesma (*Boraginaceæ*).
Pinnaspis zillæ.

Trifolium (*Leguminosæ*).
Pseudococcus citri var phenacocciformis.
Aspidiotus cyanophylli.

Yucca (*Liliaceæ*).
Aspidiotus lataniæ.

Zea (*Gramineæ*).
Pseudococcus citri.
Pseudococcus bromeliæ.
Pseudococcus variabilis.
Ripersia internodii.
Trionymus indecisus.
Saissetia nigra.

Zilla (*Cruciferæ*).
Phenacoccus zillæ.

Zizyphus (*Rhamnaceæ*).
Lecaniodiaspis africana.

EXPLANATION OF PLATE I.

Monophlebus gymnocarpi SP. NOV.

FIG. 1.—Two forms of the antenna of the præadult stage female × 110.

„ 2.—Hind limb of praeadult stage female × 110.

„ 3.—Anal orifice „ „ „ × 175.

„ 4.—Dermal spiniform setæ of præadult stage female × 125.

„ 5.— „ „ „ „ adult female × 125.

„ 6.—Adult female from *Haloxylon schweinfurthii* × 5.

„ 7.— „ „ „ *Gymnocarpus decander* × 4.

„ 8.—Antenna of adult female × 110.

„ 9.—Hind limb „ „ × 110.

„ 10.—Posterior thoracic spiracle of adult female × 150.

„ 11.—Multilocular dermal pores from the adult female-one seen in side view × many times.

„ 12.—Abdominal spiracle of adult female × many times.

NOTE:—Figs. 6 and 7 are by Mr. N. W. Strekalowsky.

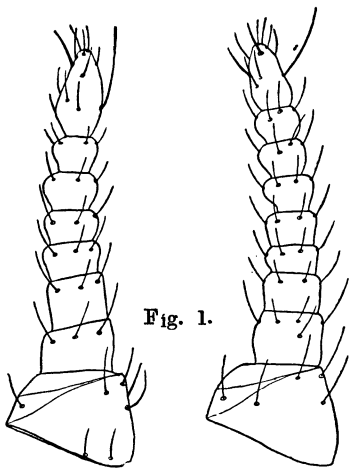


Fig. 1.

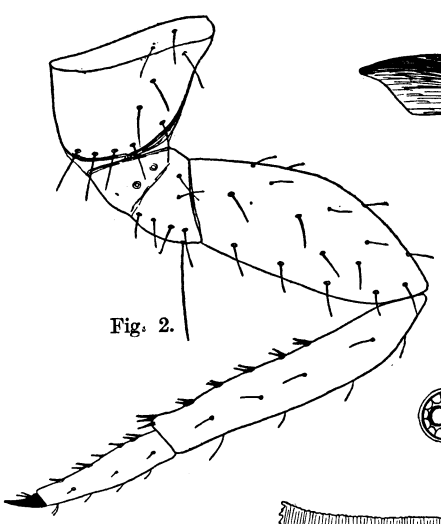


Fig. 2.

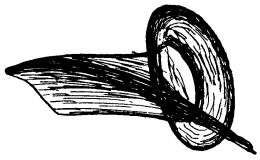


Fig. 10.

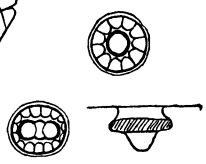
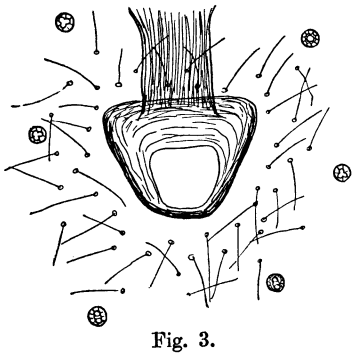


Fig. 11.

Fig. 12.



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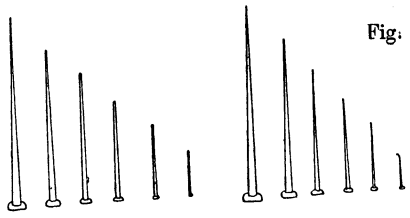
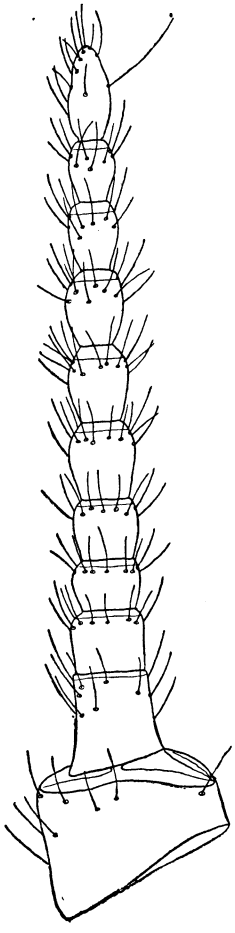


Fig. 4.

Fig. 5.



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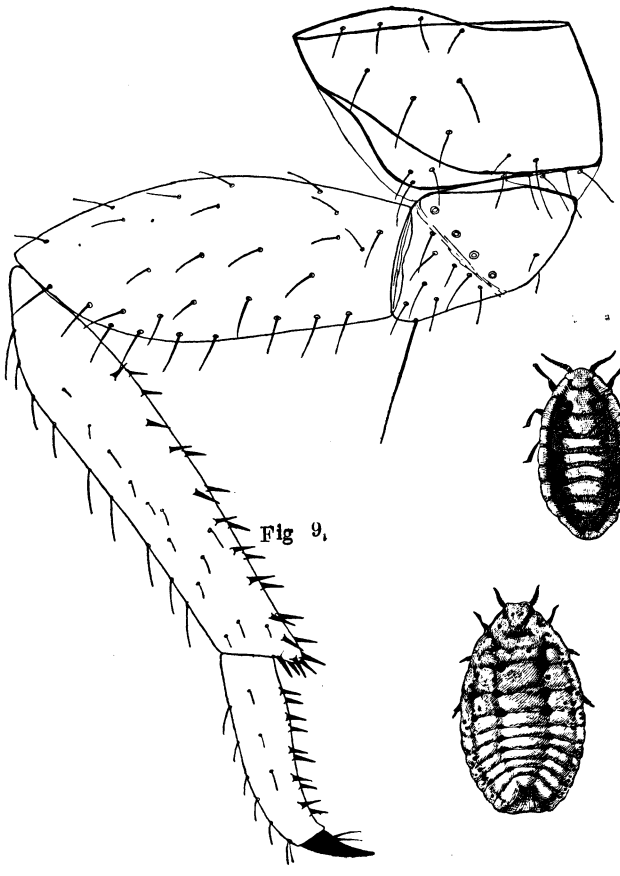

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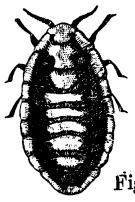


Fig. 7.

Fig. 6.

EXPLANATION OF PLATE II.

Monophlebus gymnocarpi SP. NOV.

Male.

FIG. 1.—Head with the three basal segments of the antenna × 65½.

„ 2.—Dorsal view of head × 65½.

„ 3.—Posterior extremity of abdomen × 65½.

„ 4.—Forewing × 25.

„ 5.—Trochanter of hind limb × 100.

„ 6.—Claw of hind limb × 225.

„ 7.—Distal extremity of haltere × many times.

„ 8.—Abdominal spiracle at the base of the caudal appendage × many times.

„ 9.—Dermal pores × many times.

Aclerda panici SP. NOV.

„ 10.—The larva × 76.

„ 11.—Posterior extremity of larva × 250.

„ 12.—The nymph × 50.

„ 13.—Posterior extremity of nymph × 175.

„ 14.—Marginal spines × many times.

„ 15.—Posterior thoracic spiracle × 300.

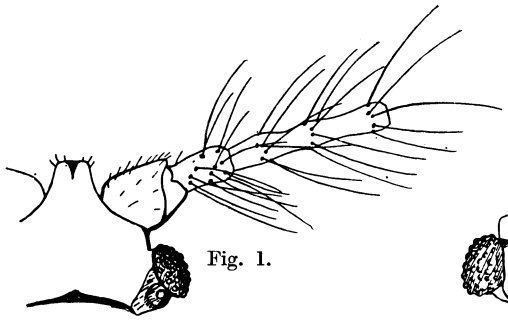


Fig. 1.

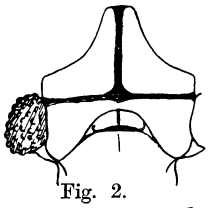
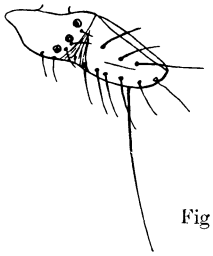


Fig. 2.



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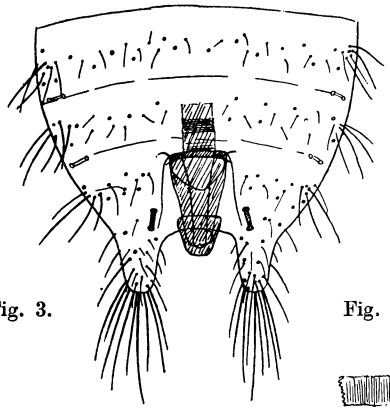

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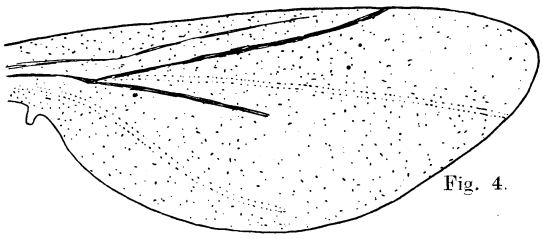

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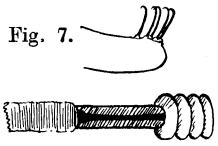

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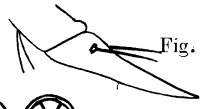
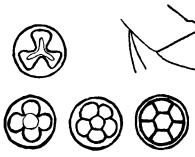


Fig. 6.

Fig. 8.



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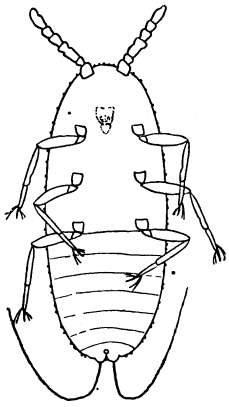


Fig. 10.

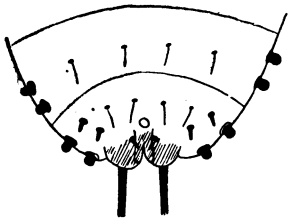


Fig. 11.

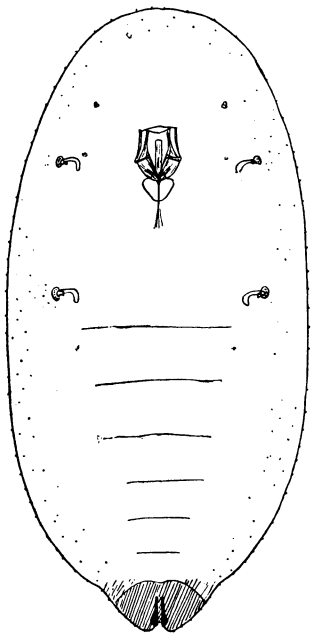


Fig 12.

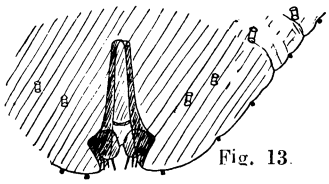


Fig. 13.

Fig 14.

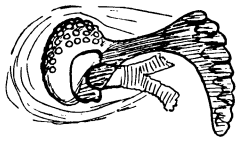


Fig. 15.

W.J.H. *del.*

EXPLANATION OF PLATE III.

Aclerda panici SP. NOV.

Adult female.

FIG. 1.—Old adult female × 35.

„ 2.—Antenna × many times.

„ 3.—Marginal spines × many times.

„ 4.—Vestigial limb × many times.

„ 5.—Posterior thoracic spiracle × 325.

„ 6.—Anal orifice - ventral aspect × 400.

„ 7.— „ „ dorsal „ × 400.

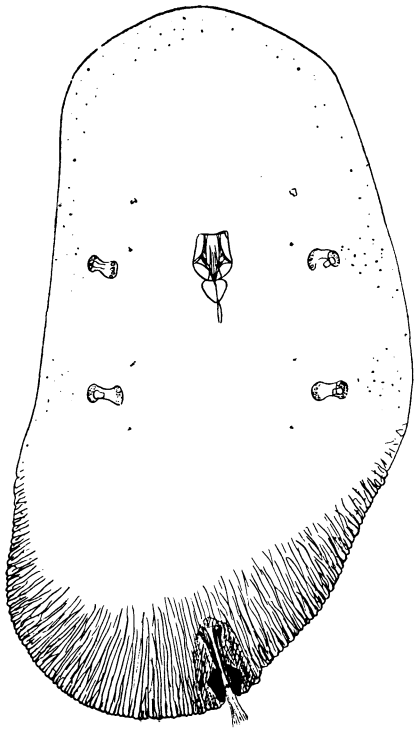


Fig. 1.

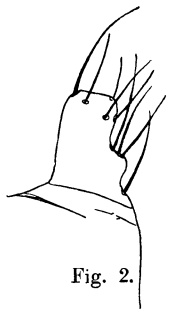


Fig. 2.

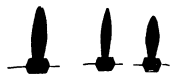
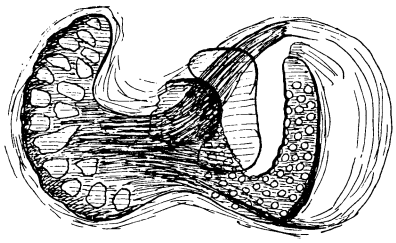


Fig. 3.

Fig. 4.



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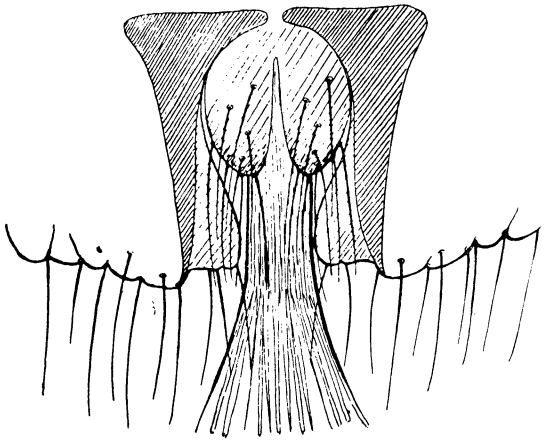

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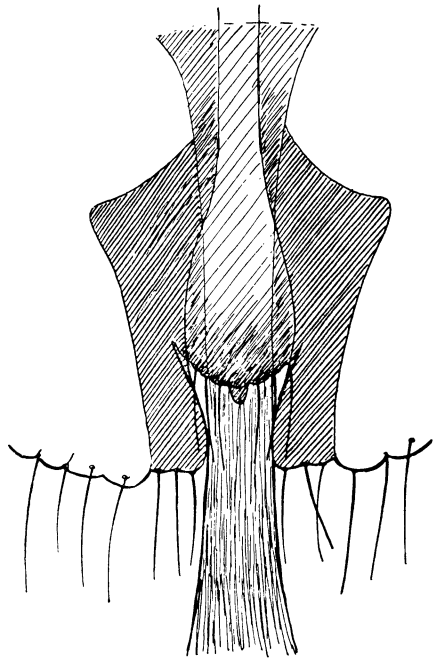


Fig. 7.

W.J.H. *del.*

EXPLANATION OF PLATE IV.

Phenacoccus cyperi SP. NOV.

FIG. 1.—Adult female × 45.

„ 2.—Antenna of adult female × 350.

„ 3.—Hind limb „ „ × 400.

„ 4.—Posterior extremity of abdomen of adult female × 400.

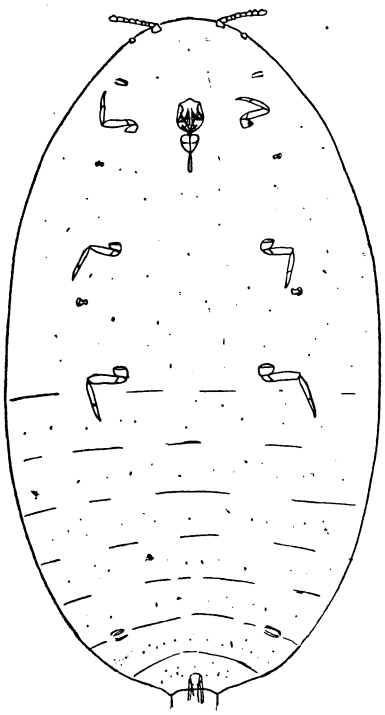


Fig. 1.

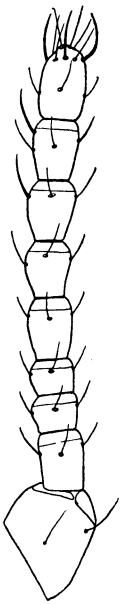


Fig. 2.

Fig. 3.

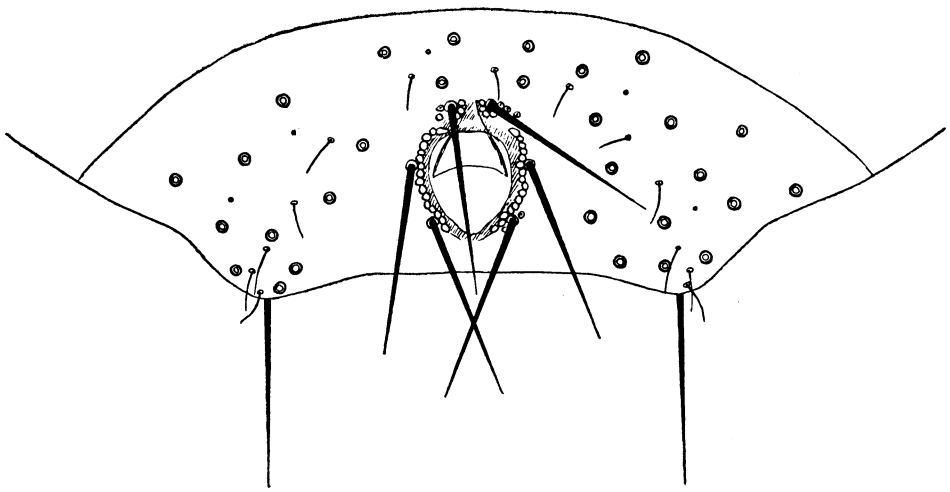


Fig. 4.

W.J..H. *del.*

EXPLANATION OF PLATE V.

Phenacoccus zillæ SP. NOV.

FIG. 1.—Adult female × 35.

„ 2.—Antenna of adult female × 250.

„ 3.—Hind limb „ „ × 150.

„ 4.—Posterior extremity of abdomen of adult female × 275.

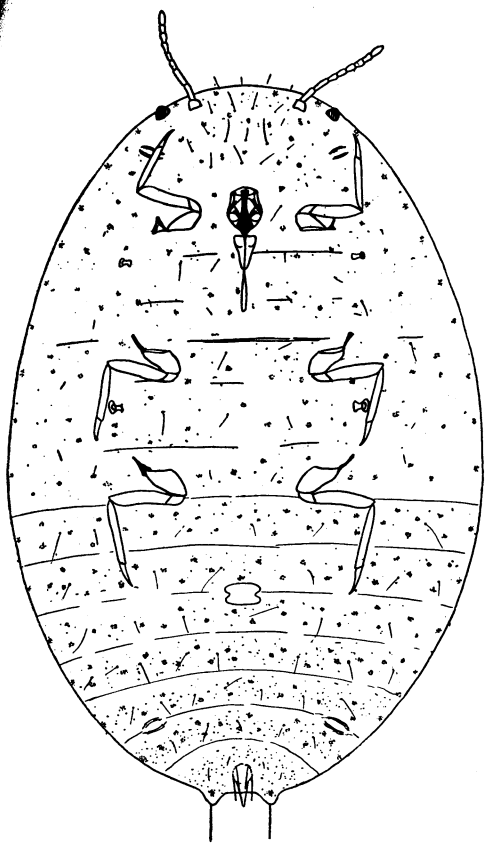


Fig. 1.

Fig. 2.

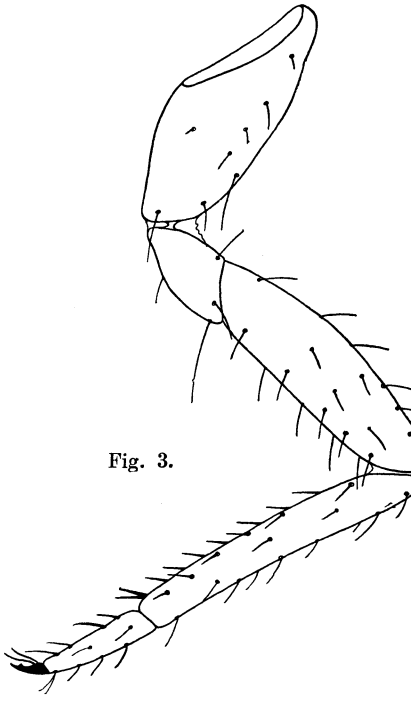


Fig. 3.

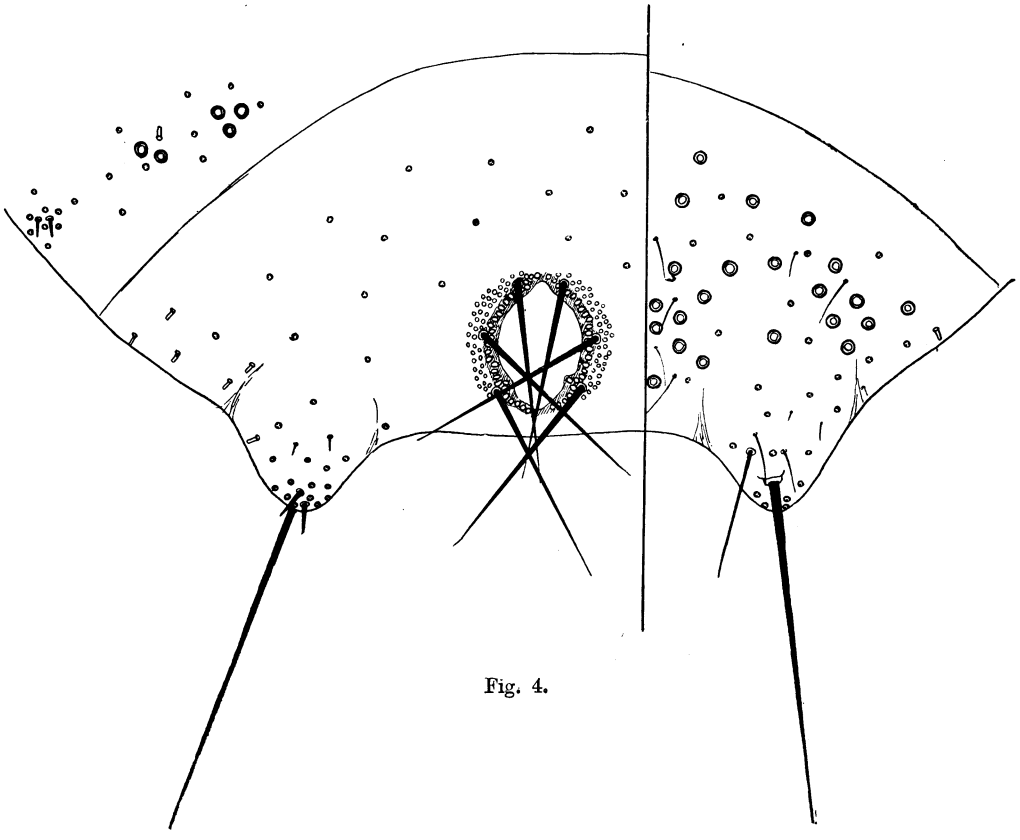


Fig. 4.

W.J.H. *d*

EXPLANATION OF PLATE VI.

Pseudococcus alhagii SP. NOV.

FIG. 1.—Adult female × 30.

,, 2.—Antenna of adult female × 150.

,, 3.—Hind limb ,, ,, × 150.

,, 4.—Posterior extremity of abdomen of adult female × 250.

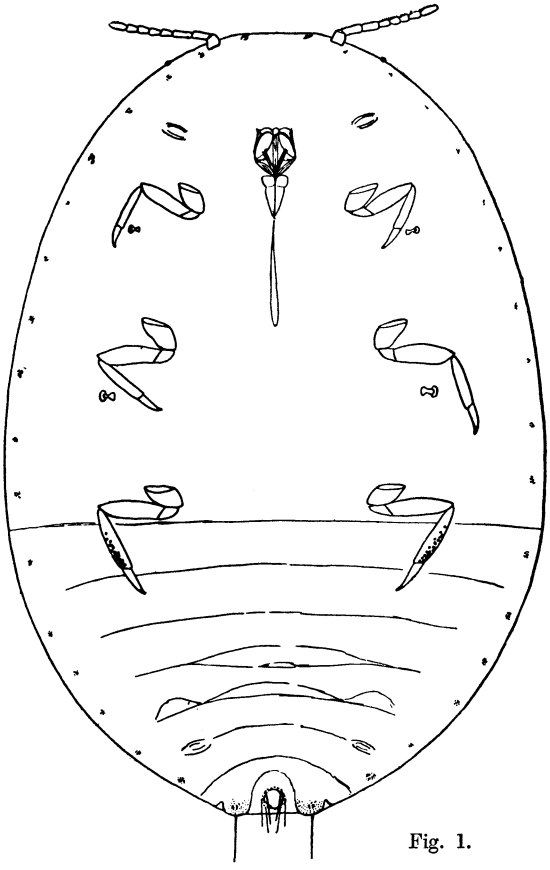


Fig. 1.

Fig. 2.

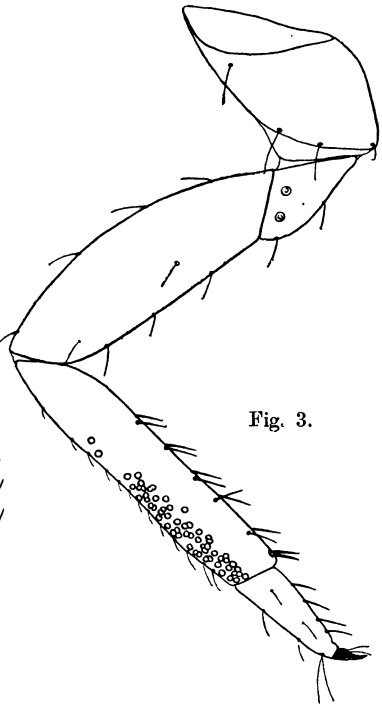


Fig. 3.

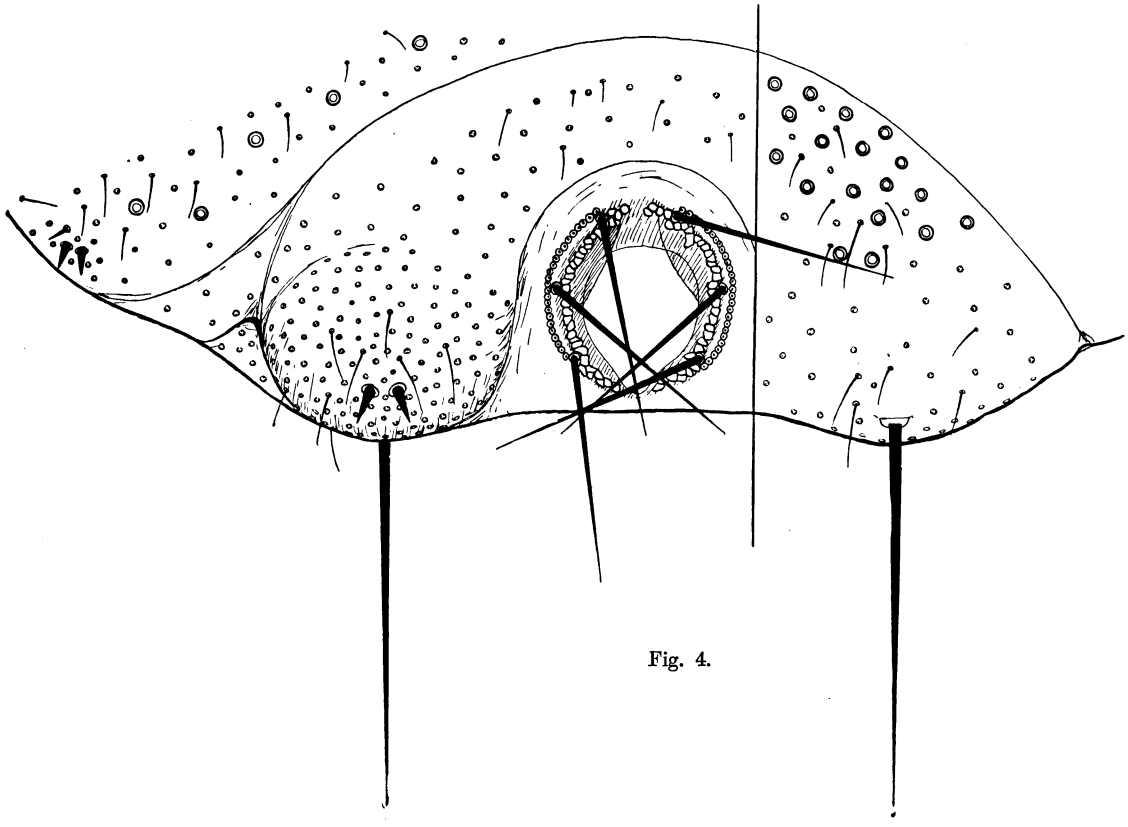


Fig. 4.

W.J.H. *del.*

EXPLANATION OF PLATE VII.

Trionymus angustifrons SP. NOV.

FIG. 1.—Adult female × 25.

,, 2.—Antenna of adult female × 150.

,, 3.—Hind limb ,, ,, × 150.

,, 4.—Posterior extremity of abdomen of adult female × 300.

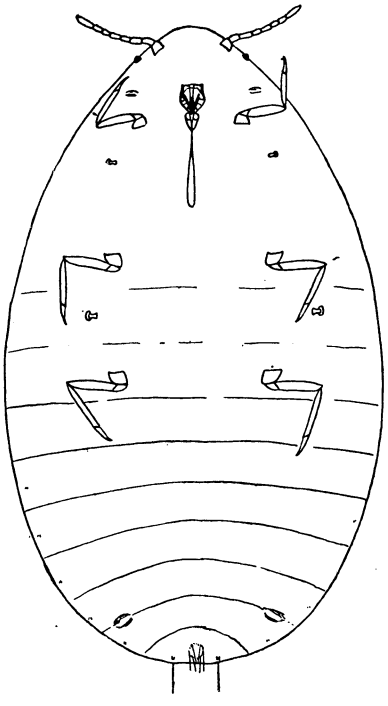


Fig 1.

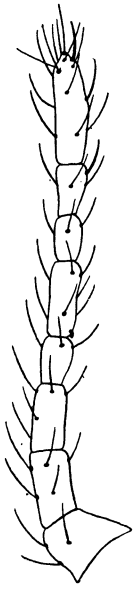


Fig. 2.

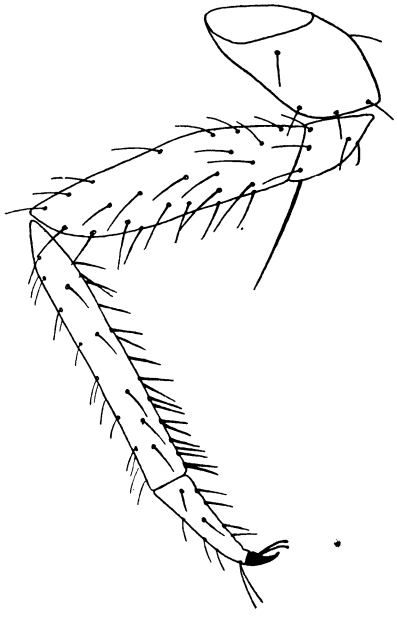


Fig. 3.

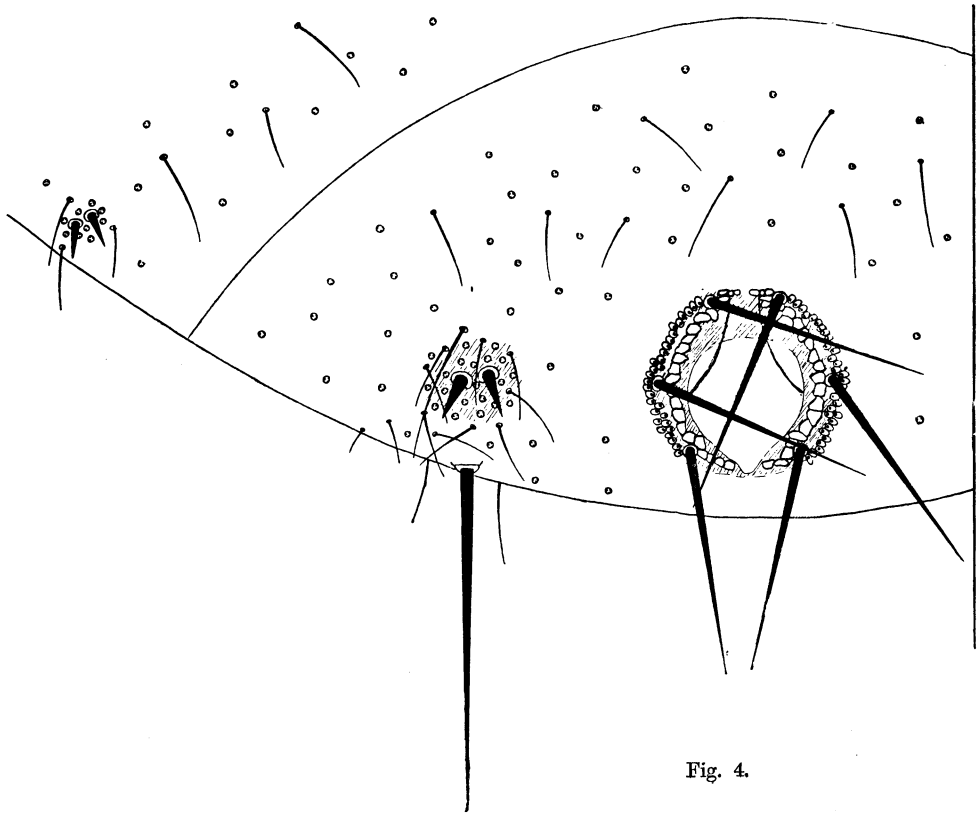


Fig. 4.

W.J.H *del.*

EXPLANATION OF PLATE VIII.

Ripersia artemisiæ SP. NOV.

FIG. 1.—Adult female × 25.

,, 2.—Two forms of antenna of adult female × 350.

,, 3.—Hind limb of adult female × 235.

,, 4.—Posterior extremity of adult female - dorsal aspect × 275.

,, 5.—Posterior extremity of adult female - ventral aspect × 275.

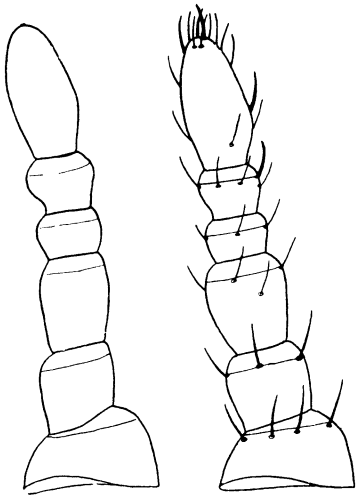


Fig. 2.

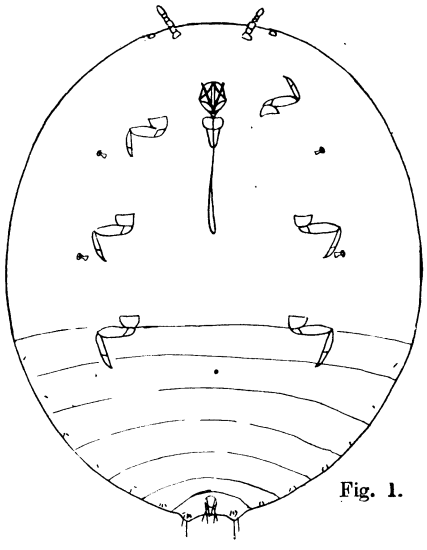
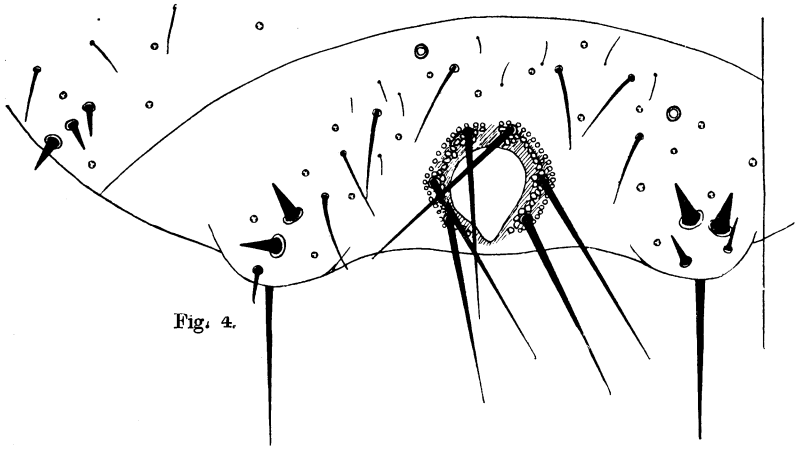


Fig. 1.



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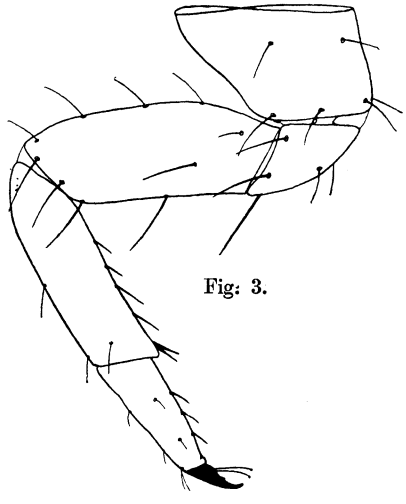


Fig. 3.

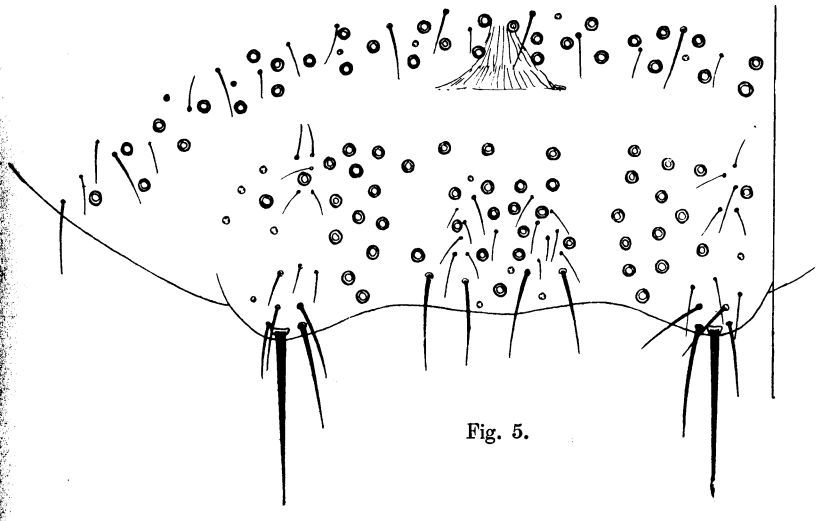


Fig. 5.

W.J.H. *del.*

EXPLANATION OF PLATE IX.

Ctenochiton artemisiæ SP. NOV.

FIG. 1.—Adult female × 35.

„ 2.—Two forms of antenna of adult female × 250.

„ 3.—Hind limb of adult female × 250.

„ 4.—Stigmatic spines and portion of margin × 350.

„ 5.—Valves of the anal operculum × 165.

„ 6.—Tubular spinneret from submarginal region × many times.

„ 7.—Multilocular dermal pore × many times.

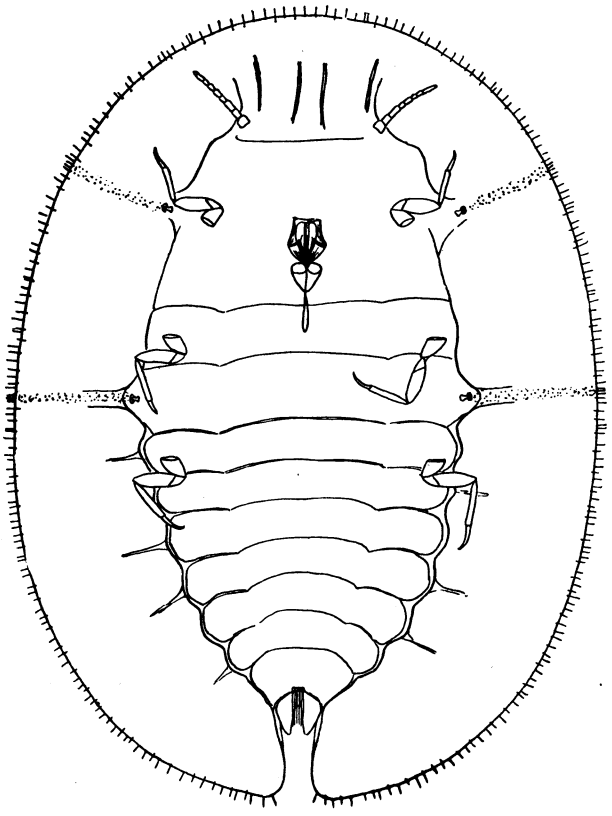


Fig. 1.

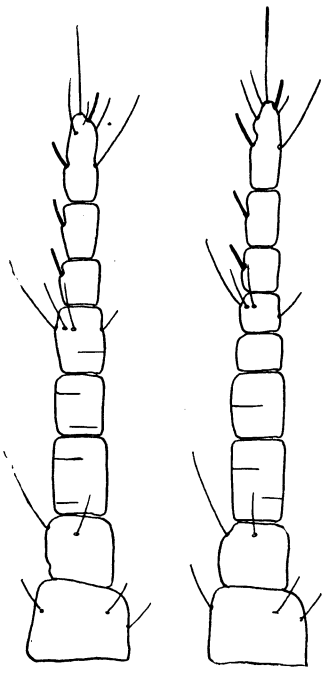


Fig. 2.

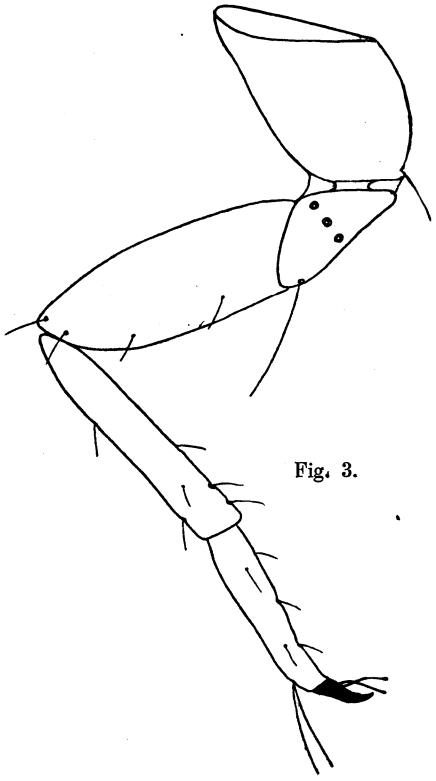


Fig. 3.

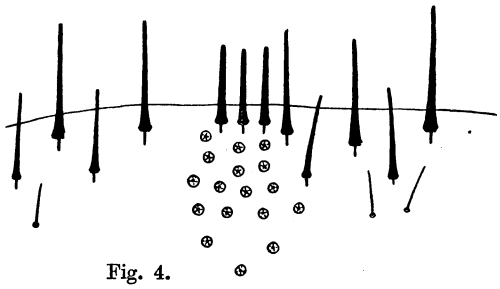


Fig. 4.

Fig. 7.

Fig. 6.

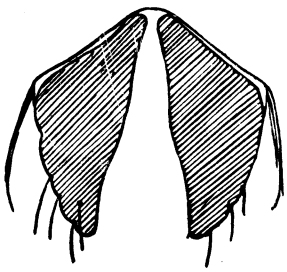


Fig. 5.

W.J.H. *del.*

EXPLANATION OF PLATE X.

Ctenochiton haloxyloni SP. NOV.

FIG. 1.—Adult female seen from above × 7.

,, 2.— ,, ,, ,, ,, below × 7.

,, 3.— ,, ,, ,, ,, behind × 12.

,, 4.—Adult female × 35.

,, 5.—Antenna of adult female × 425.

,, 6.—Hind limb ,, ,, × 500.

,, 7.—Marginal spine × many times.

,, 8.—Dorsal spine from immediately anterior of the valves of the anal operculum × many times.

,, 9.—Multilocular dermal pore × many times.

,, 10.—Tubular spinneret from the submarginal region × many times.

,, 11.—Stigmatic pore × many times.

Aspidiotus artemisiæ SP. NOV.

,, 12.—Pygidium of adult female × 350.

NOTE.—Figs. 1 and 2 are by Abdel Hamid Eff. Hamdi and Fig. 3 by Mr. N.W. Strekalowsky.

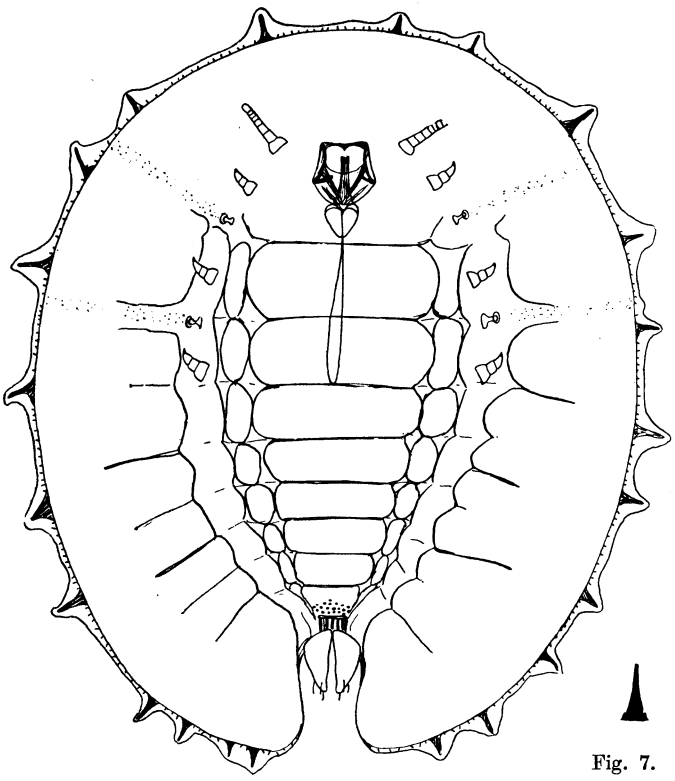


Fig. 4

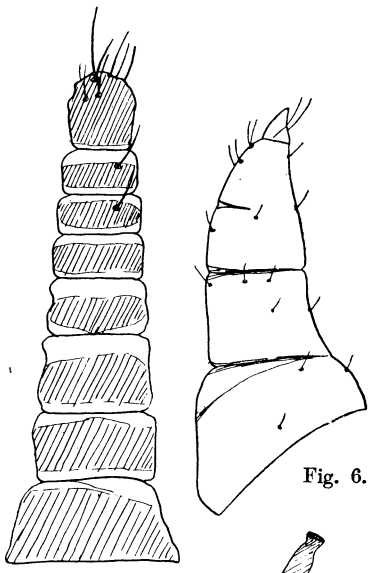


Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8. Fig. 9.

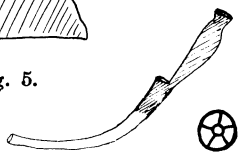
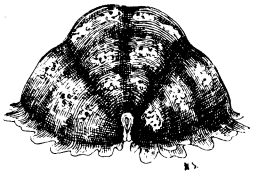


Fig. 10. Fig. 11.

Fig. 1.

Fig. 2.



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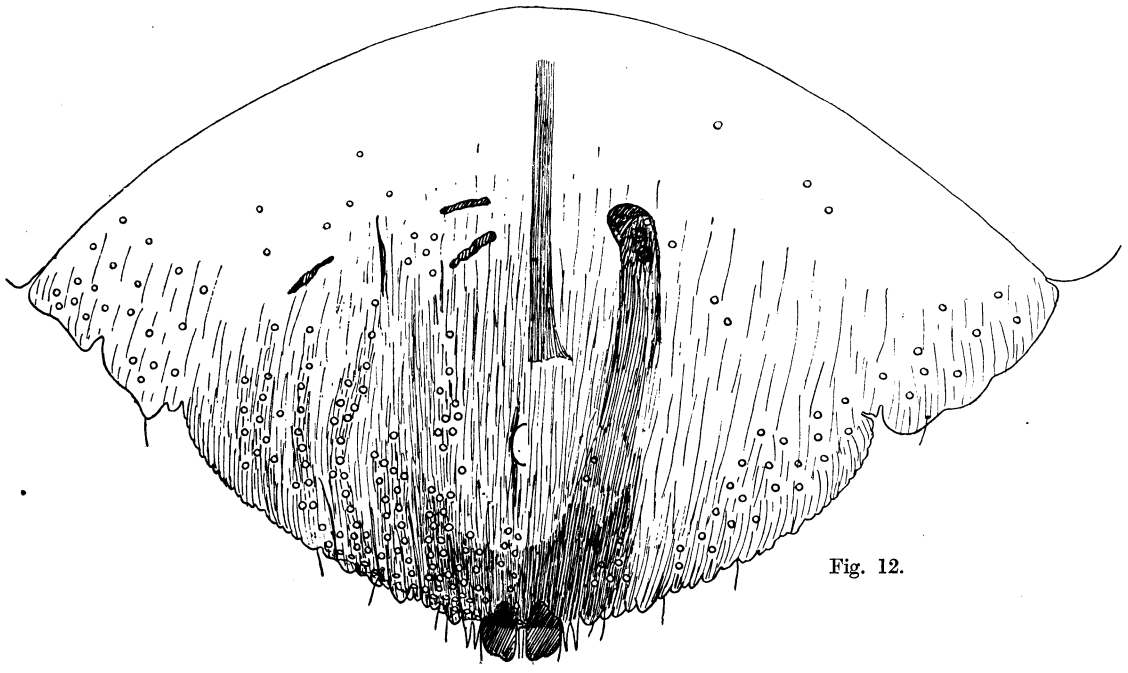


Fig. 12.

W.J.H. *del.*

EXPLANATION OF PLATE XI.

Aspidiotus herzlianus Bod.

Fig. 1.—Pygidium of adult female × 350.

„ 2.—Tubular spinneret opening on the dorsal surface of the pygidium × many times.

Coccomytilus farsetiæ sp. nov.

„ 3.—Adult female × 50.

„ 4.—Pygidium of adult female × 350.

„ 5.—Antenna of adult female × many times.

„ 6.—Gland spine from just posterior of the anterior spiracles × many times.

„ 7.—Tubular spinneret opening on the dorsal surface of the pygidium × many times.

„ 8.—Tubular spinneret opening on the ventral surface of the pygidium × many times.

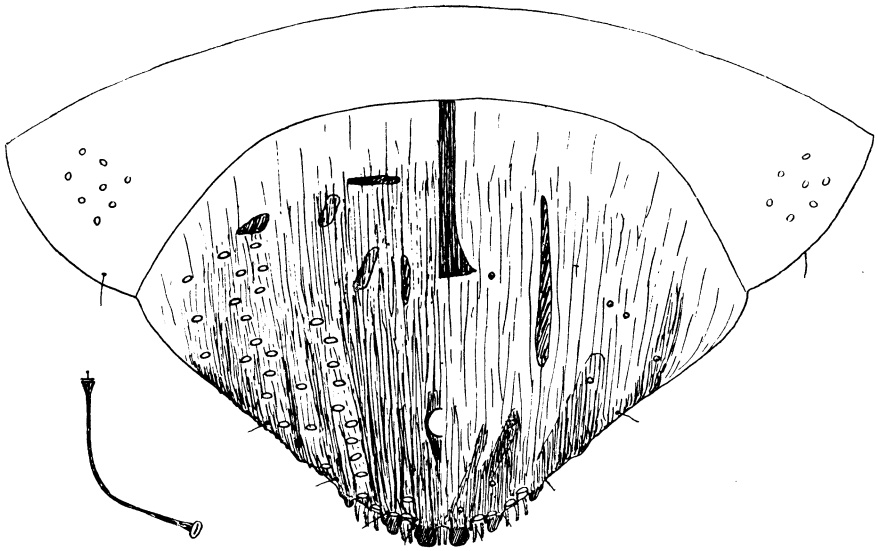


Fig. 2.

Fig. 1.

Fig. 5.

Fig. 6.

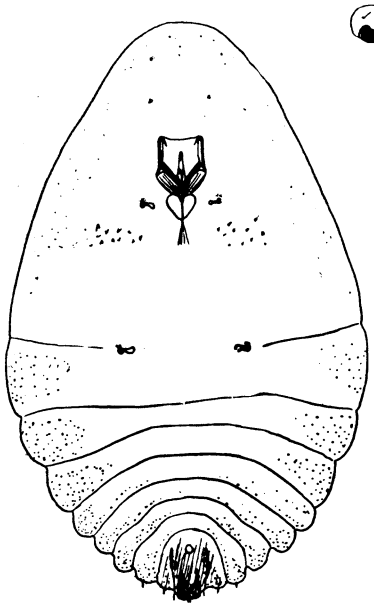


Fig. 3.

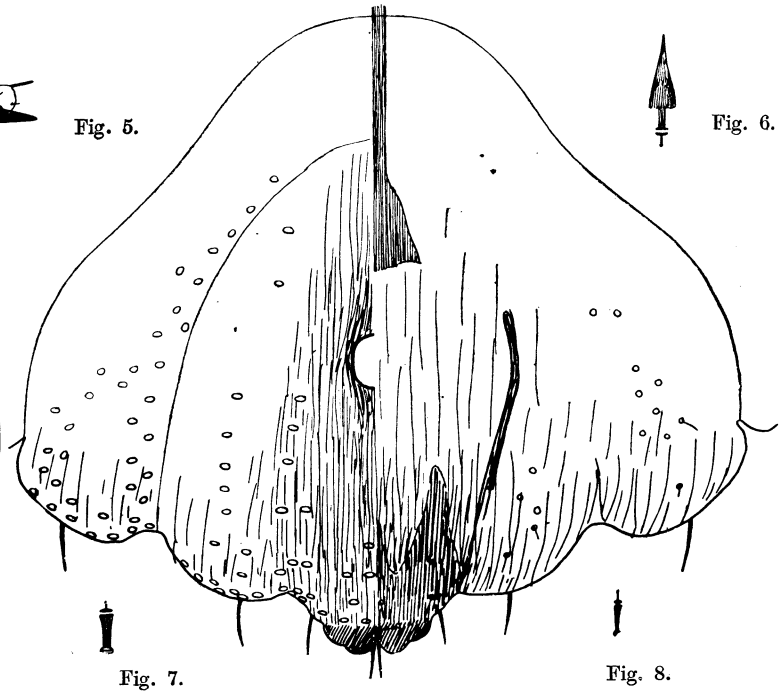


Fig. 7.

Fig. 8.

Fig. 4.

W.J.H. *del.*

EXPLANATION OF PLATE XII.

Coccomytilus retamæ SP. NOV.

FIG. 1.—Pygidium of adult female × 500.

Odonaspis ruthæ EHR.

„ 2.—Pygidium of 2nd stage female × 350.

Odonaspis panici SP. NOV.

„ 3.—Pygidium of 2nd stage female × 350.

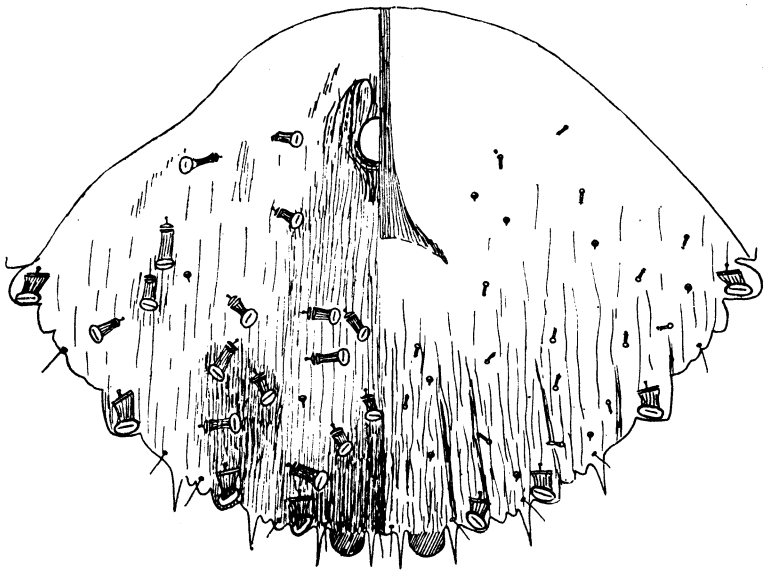


Fig. 1.

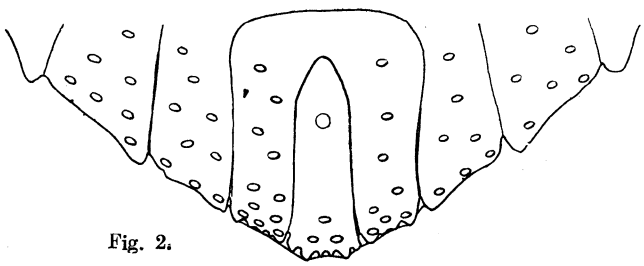


Fig. 2.

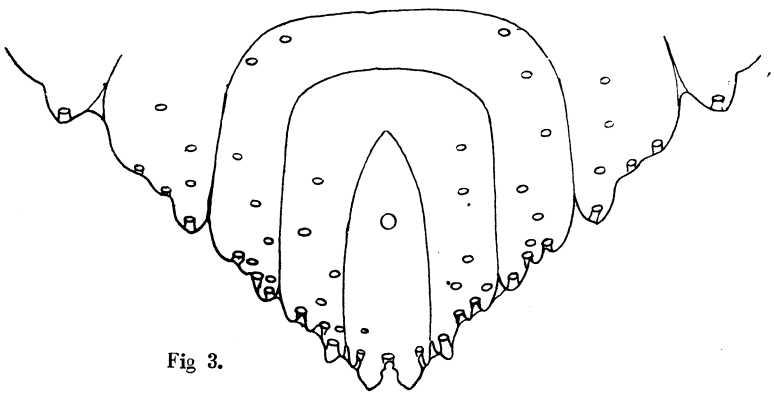


Fig 3.

W.J.H. *del.*

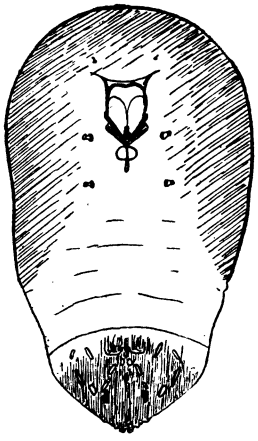
EXPLANATION OF PLATE XIII.

Targionia haloxyloni SP. NOV.

FIG. 1.—Early adult female × 50.

,, 2.—Old adult females × 50.

,, 3.—Pygidium of adult female × 250.



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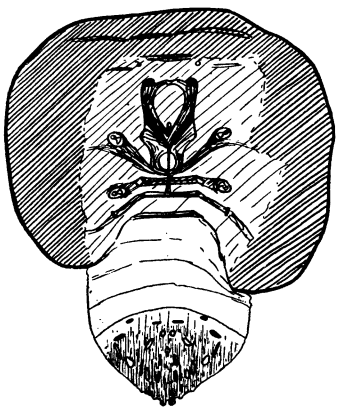

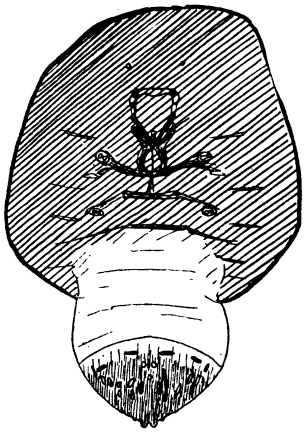

Fig. 2.

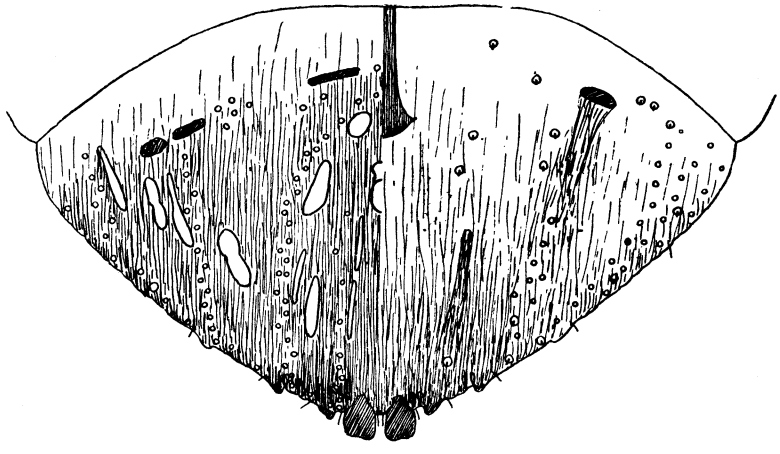

Fig. 3.

W.J.H *del.*

MINISTRY OF AGRICULTURE, EGYPT.

List of Publications in English issued by the Ministry.*

The following publications may be obtained, either directly, or through any bookseller, from the Government Publications Office, Ministry of Finance, (Dawawîn P.O.), Cairo.

Agricultural Journal of Egypt.

First Series.

Vol. I, 1911. Parts I and II, P.T. 2 each part.
„ II, 1912. Part I P.T. 2, Part II, P.T. 3.
„ III, 1913. Parts I and II, P.T. 3 each part.
„ IV, 1914. Parts I and II, P.T. 3 each part.
„ V, 1915. Parts I and II, (one volume) P.T. 5.
Vols. VI to X, 1916–1920. P.T. 5 each volume.

In 1923 a new series was started monthly in Arabic only. An English edition is published once a year containing articles selected from the year's Arabic issues.

New Annual Series.

Vol. I, 1923 P.T. 5.
„ II, 1924–1925. (In the Press.)

Egyptian Agricultural Products (By Gerald C. Dudgeon).

No.
1 A. The Great Millet (*Durra Baladi* or *Durra Rafî'a*) in Egypt. 1915. P.T. 3.
2 A. The Ground Nut or Earth Pea (*Fûl Sudani*) in Egypt. 1916. P.T. 2,
3 A. Gossypium Spp., Cotton (*Qotn* in Egypt). History, Development, and Botanical Relationship of Egyptian Cottons, withtables showing Areas, Yields, Prices and Distribution of the Varieties. 1917. P.T. 5.

Technical and Scientific Bulletins.

No.
— Special Bulletin :—Egyptian Commercial Cotton, by G. C. Dudgeon. (English and French). 1918.
1. Report on the First two Years' Working of the Plant Protection Law (Law No. 5 of 1913), by G. Storey. (English or French). 1916. P.T. 2.

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* Revised to Nov. 1926.

† P.T. 1 = 5 cents = 2½*d.* approximately.

TECHNICAL AND SCIENTIFIC BULLETINS (*continued*).

No.

2. The Nature of the Damage done by the Pink Boll-Worm (*Gelechia gossypiella* Saund.), by Lewis Gough. (English or French). 1916. P.T. 1.
3. Note on the Alkaloids of some Egyptian Solanaceæ, by Frank Hughes. (English or French). 1916. P.T. 1.
4. The Life History of *Gelechia gossypiella* from the Time of the Cotton, Harvest to the Time of Cotton Sowing, by Lewis Gough. 1916. P.T. 1.
5. List of Egyptian Insects in the Collection of the Ministry of Agriculture, by G. Storey. 1916 P.T. 10.
6. Note on a Machine to kill *Gelechia* Larvæ by Hot Air, and the Effects of Heat on *Gelechia* Larvæ and Cotton Seed, by Lewis Gough. 1916. P.T. 2.
7. Work in Connection with Egyptian Wheat, by G. C. Dudgeon and B. G. C. Bolland. 1916. P.T. 1.
8. Work conducted at the Experimental Farm at Gîza in connection with Great Millet and *Bersîm*, by B. G. C. Bolland. 1916. P.T. 1.
9. Work in connection with Egyptian Maize, by G. C. Dudgeon and B. G. C. Bolland. 1916. P.T. 1.
10. Some Tests of Flour made from Egyptian Wheats, by Frank Hughes. 1916. P.T. 1.
11. Simon's Hot Air Machine for the Treatment of Cotton Seed against Pink Boll-Worm, by G. Storey. 1921. P.T. 1.
12. Experiment with Flax growing at the Government Farm at Gemmeiza, by G. C. Dudgeon. 1917. P.T. 2.
13. The Rate of Increase of the Pink Boll-Worm in Green Bolls in the period July to November, 1916, by Lewis Gough. 1917. P.T. 2.
14. Machines for the Treatment of Cotton Seed against Pink Boll-Worm (*Gelechia gossypiella* Saund.), by G. Storey. 1921. P.T. 2.
15. The Rusts and Smust of Wheat, Barley, and Oats, by H. R. Briton-Jones. 1920. P.T. 2.
16. The Present Situation with regard to the Control of the Pink Boll-Worm in Egypt, by G. Storey. 1921. P.T. 2.
17. The Hibiscus Mealy Bug., by W. J. Hall. 1921. P.T. 3.
18. The Smuts of Millet, by H. R. Briton-Jones. 1922. P.T. 3.
19. A Wound Parasite of Cotton Bolls, by H. R. Briton-Jones. 1923. P.T. 3.
20. The Fixation of Atmospheric Nitrogen, by Frank Hughes. 1922. P.T. 3.
21. Report on a Soil Survey of Zone No. 1 (Gharbîya), 1921, by Frank Hughes. 1922. P.T. 5.
22. Observations on the Coccidæ of Egypt, by W. J. Hall. 1922. P.T. 5.
23. (*Stopped.*) Subsequently published by the Société Entomologique d'Egypte. 1922. under the title : A Monograph of the Egyptian Diptera (Part I, fam. Syrphidæ), by H. C. Efflatoun.
24. On the Dispersion of the Pink Boll-Worm in Egypt, by Lewis Gough. 1922. P.T. 5.
25. The Basis of Egyptian Agriculture and its Relation to the Decline in the Average Yield per Feddân of Cotton, by E. McKenzie-Taylor and A. Chamley Burns. 1922. P.T. 5.
26. The Outbreak of Pseudococcus sacchari Ckll., on the Sugar Cane of Egypt, by W. J. Hall. 1922. P.T. 3.

TECHNICAL AND SCIENTIFIC BULLETINS (*continued*).

No.

27. Statistics of Pink Boll-Worm Occurrence from 1916–1921, by the Entomological Section. 1923.
28. A New Type of Light Trap for Insects, by C. B. Williams. 1923. P.T. 3.
29. A Short Bio-Climatic Study in the Egyptian Desert, by C. B. Williams 1923. P.T. 5.
30. A Banana Disease caused by a Species of "Heterodera," by Tewfik Eff. Fahmy. 1924. P.T. 5.
31. Soil Temperatures during the *Sharâqi* Period and their Agricultural Significance, by E. McKenzie-Taylor and A. Chamley Burns. 1924. P.T. 5.
32. The Cotton Plant in Relation to Temperature and Rainfall, by C. B. Williams. 1923. P.T. 2.
33. Preliminary Notes on Two Minor Pests of the Egyptian Cotton Crop, (*Creontiades pallidus*, Ramb., and *Nezara viridula*, L.), by T. W. Kirkpatrick. 1923. P.T. 3.
34. Preliminary Note on the Soil Temperature in *Sharâqi* Land, by E. McKenzie-Taylor and A. Chamley Burns. 1924. P.T. 5.
35. The Egyptian Cotton Seed Bug (*Oxycarenus hyalinipennis*, Costa). Its Bionomics, Damage, and Suggestions for Remedial Measures, by T. W. Kirkpatrick. 1923. P.T. 10.
36. Further Observations on the Coccidæ of Egypt, by W. J. Hall. 1923. P.T. 5.
37. Bioclimatic Observations in the Egyptian Desert in March 1923, by C. B. Williams. 1924. P.T. 5.
38. A Multiple Temperature Incubator, by C. B. Williams and T. W. Kirkpatrick. 1924. P.T. 3.
39. A Preliminary Note on the Loss by Boll-Worms, by Ibrahim Eff. Bishara. 1924. P.T. 5.
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41. Some New and Interesting Orthoptera in the Collection of the Ministry of Agriculture, Cairo, by B. P. Uvarov. 1924. P.T 5.
42. Experiments to determine the Susceptibility of Weaned Calves to Cattle Plague, the Calves being doubly inoculated while suckling qith Virulent Cattle Plague Blood and Serum, by Mohamed Askar Bey. 1924. P.T. 3.
43. Date Palm in Egypt, by T. W. Brown. 1924. P.T. 5.
44. The Propagation and Cultivation of Citrus Trees in Egypt, by T. W. Brown. 1924. P.T. 5.
45. The Insect Pests of Citrus Trees in Egypt, by W. J. Hall. 1924. P.T. 5.
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51. Statistical Note on the Cotton Variety tests at Sakha, 1916–1920, by T. Trought. 1925. P.T. 5.
52. The Effect of the Summer Fallow upon Soil Protozoa in Egypt, by E. McKenzie-Taylor and A. Chamley Burns. 1924. P.T. 5.

TECHNICAL AND SCIENTIFIC BULLETINS (*continued*).

No.

53. The Effect of Irrigation upon Soil Temperatures, by E. McKenzie-Taylor. 1924. P.T. 5.

54. Notes on the Fungus Rhizopus Nigricans, Ehr., in Relation to Insect Pests of the Cotton Plant in Egypt, by T. W. Kirkpatrick. 1925. P.T. 5.

55. Ratoon Cotton in Egypt. A Preliminary note, by J. Templeton. 1925. P.T. 5.

56. The Buff-Backed Egret (*Ardea Ibis*, L. Arabic *Abu Qerdan*) as a Factor in Egyptian Agriculture, by T. W. Kirkpatrick. 1925. P.T. 5.

57. The Effect of the *Sharâqi* Period upon the Yield of Cotton in Egypt, by E. McKenzie-Taylor. 1926 P.T. 5.

58. The Survival of Pink Boll-Worm Larvæ in Buried Seed during the Winter in Egypt, by C. B. Williams and Ibrahim Eff. Bishara. 1925. P.T. 5.

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60. The Development of the Egyptian Cotton Plant, by M. A. Bailey and T. Trought. 1926. P.T. 5.

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71. Investigations on Raw Cotton.—Preliminary Report on Deterioration of Egyptian Cotton during Damp Storage, by A. Chamley Burns. (In the Press.)

72. Contribution to the Knowledge of the Coccidæ of Egypt by W. J. Hall. 1926. P.T. 10.

ENTOMOLOGICAL PAMPHLETS.

No.

1. Egyptian Insect Pests. "Termites." 1921. P.T. 2.
2. Egyptian Insect Pests. "The Australian Fluted Scale." 1921. P.T. 2.
3. The Black Scale. (Aspidiotus Aonidum, L.=A. ficus Riley) 1921. P.T. 1.
4. The Red Scale (*Aspidiotus aurantii*, Mask). 1921. P.T. 1.
5. The Orange Mussel Scale (*Mytilaspis beckii*, Newm.=*citricola*, Pack.) 1921. P.T. 1.

LEAFLETS OF THE MYCOLOGICAL DIVISION.

Plant Protection Section.

No.

1. The Downy Mildew of Vines. 1923.
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3. Machines for Spraying and Dusting Diseased Crops. 1923.
4. The Eel Worm Disease of Wheat. 1924.
5. The Smuts of Wheat. 1924.
6. The Smuts of Millet. 1924.
7. The Smuts of Barley. 1925.
8. Mildews which attack Plants of the Gourd Family. 1925.
9. Seed Steeping and Sprinkling. 1925.
10. The Leaf Spot Celery. 1926.

Obtainable free of charge from the Mycological Division, Plant Protection, Section, Gîza.

LEAFLETS OF THE HORTICULTURAL SECTION. BY T. W. Brown, Director, Horticultural Section. P.T. 1, unless stated otherwise.

(*No number.*) Citrus Trees.

No.

1. French Beans (*Fasoolia*). 1920.
2. Asparagus (*Kishk Almaz*). 1920.
3. Preservation of Dates. 1915.
4. Egyptian Arum (*Qolqas*). 1915.
5. Cultivation of Potatoes. 1920.
6. Preservation of Apricots. 1916.
7. Custard Apple. 1916.
8. List of Trees, Shrubs, and other Perennial Plants cultivated in the Ministry's Garden at Gîza.
9. Globe Artichoke (*Kharshûf*). 1920.
10. Strawberries (*Shouleik* or *Frawla*). 1920.

No.

11. Tree Planting on Agricultural Estates and Roads. 1917. P.T. 5.
12. Household recipes for preserving Tomatoes by F. G. Walsingham. 1917.
13. Quince. 1919.
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15. Manuring of Vegetables by M. Tewfic Eff. Hefnawi. 1920.
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Plant Introduction. (By Horticultural Section).

No. 1, July 1919; No. 2, July 1920; No. 3, July 1921; No. 4, July 1922; No. 5, July 1923. P.T. 2 each.

Laws and Regulations

Price P.T. 2 each, unless stated otherwise.

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Regulations of the Cotton Worm Campaign, 1915, 1916.
Regulations of the Boll-Worm Campaign, 1917.
Législation Agricole et Vétérinaire. (French). 1923. P.T. 10.

Administrative and Technical Reports.

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The same, 1914, 1915, 1916, 1917, 1918–1919, 1919–1920, 1920–1921, 1921–1922 and 1922–1923. P.T. 5 each.
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Report on the Maintenance and Improvement of the Quality of Egyptian Cotton and the Increase of its Yield, by A. Martin Leake. 1921. P.T. 5.
The Pink Boll-Worm in Egypt in 1916–1917, by H. A. Ballou. 1920. P.T. 10.
Report on the Motor Tractor Trials organized by the Ministry of Agriculture. P.T. 15.
The Mosquitoes of Egypt, written by T. W. Kirkpatrick, on the request of the Anti-Malaria Commission, 1925.
Report on the Work of the Entomological Section from its commencement in August 1911 to March 1923. P.T. 10.
Report on the Work of the Entomological Section. 1923–1924, 1926. P.T. 5.

Cotton Research Board.

Preliminary Report on the Cotton Research Board. P.T. 3.
First Annual Report of the Cotton Research Board, 1920. P.T. 10.
Second Annual Report of the Cotton Research Board, 1921. P.T. 10.
Third Annual Report of the Cotton Research Board, 1922. P.T. 15.
Fourth „ „ „ „ „ „ „ 1923. P.T. 15.

Egyptian Agricultural and Veterinary Notes.

Notes on Samples of Fertilizers and Substitutes examined at the Laboratories of the Chemical Section during 1918. P.T. 2.
Analytical Key to the Flora of Egypt, by M. Tewfik Hefnawi Eff. 1922. P.T. 5.
The Method employed by the State Domains for producing and maintaining their High Standard of Sakel Cotton. 1922. P.T. 2.
Nitrate of Lime. 1922. P.T. 2.
Ageing Egyptian Cattle, by Mohammed Askar Bey. 1923. P.T. 2.
The principal Species of Birds Protected by Law in Egypt, giving their English, French, Arabic, and Scientific Names, their local status, their approximate size, and concise notes on their Colouration, for purposes of identification, by S. S. Flower, and H. J. Nicoll. 1921. P.T. 5.

Agricultural Circulars.

The following circulars have been issued gratis in English :—

No.

3. *Assîli* Cotton.
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19. Cotton Cultivation in Upper Egypt.
20. Protection of the Buff-backed Egret. (English and French).
21. Hints on Cotton-growing in Egypt.
22. On using Nitrate of Soda in Maize Cultivation in Gîza Province.
26. Steps to combat the Cotton Boll-Worm in May, June and July.
27. Paraffin Emulsion. (English and French).
29. Sowing Vegetable Seeds in Winter.
30. The Danger of Overwatering Cotton Fields.
35. Distribution of Cotton-Seed.
37. Fumigation of Citrus Trees.
38. Pomegranate Wom.
39. The Smut Diseases.
40. Eradication of the Pink Boll-Worm.
41. Resin Wash.
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46. Eradication of Fig Scale.
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51. Planting Instructions.
52. Method of Distinguishing the Eggs, Larvæ and Pupæ of the Cotton Worm (Arabic : *Dûd el Qutn*), *Prodenia litura* F. ; the Small Green Leaf Worm (Arabic : *El Dûd el Akhdar el saghîr*); *Laphygma exigua*, Hb.; and the Greasy Cut-worm (Arabic : *Dûd el Bersîm*), *Agrotis ypsilon* Rott.
53. Destruction of Aphis.
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66. The Melon and Water Melon Aphis.
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76. Precautions for Cultivation of Beans.
77. Hay and Hay-Making in Egypt.
78. Precautions for Sowing Wheat.
80. Aphis on Cotton Trees and its Treatment.
81. Nitrate Experiments on *Nîli* Maize.

AGRICULTURAL CIRCULARS (*continued*).

No.
82. Circular and Arrêté *re* fixing Date for picking and destroying of Cotton Bolls.
83. Improvement of Egyptian Wheat.
84. Protection of Insectivorous Birds. (English and French).
85. Flour Paste and Cyllin Solution.
87. Fumigation of Orange Trees.
89. For Improvement of Wheat Cultivation.
91. The Sugar-Cane Mealy Bug.
92. Measures against the Hibiscus Mealy Bug.
93. Protection of Insectivorous Birds.
96. Paraffin Emulsion (This circular cancels circular No. 27).
97. Pomegranate Fruit Butterfly, Virachola Livia Klug. (This circular cancels circular No. 38).
98. Eradication of Fig Scale. (This circular cancels circulars No. 44 and 46).
99. Bordeaux Mixture (1–1–100). (This circular cancels circulars No. 54).

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