

By

Dr. V. Prabhaker Rao
Ministry of Agriculture, Government of India, New Delhi, India

and

G. F. Ferris
Stanford University, Stanford, California

This paper has resulted primarily from the work of Dr. V. Prabhaker Rao, begun while visiting at Stanford University and at the Bureau of Entomology at Washington and continued at the British Museum (Natural History) in London. An enforced stay in London, while awaiting passage to India, afforded an opportunity for examining specimens, chiefly in the Green Collection, at the Museum. Dr. Rao wishes to express his gratitude to the British Museum for permission to publish the observations then made and to Mr. F. Laing, Assistant Keeper of Entomology, for facilities given him in the course of the work.

The paper has been revised by G. F. Ferris on the basis of material in the Stanford Collection and certain species have been added.

As a consequence of this divided authorship there are portions of the work for which one or the other of the authors is not to be held responsible. The new species herein described are to be attributed to one or the other author as indicated in the headings of the various species.

Beyond these there seem to be no references in the literature.

DEFINITION OF *ANDASPIS* AS HERE UNDERSTOOD

GENERIC TYPE. *Lepidosaphes hawaiiensis* Maskell. Considered on the basis of its type species, *Lepidosaphes hawaiiensis* Maskell, only, this genus is quite easily definable and is readily separable from the other genera of the type of *Lepidosaphes*. On the basis of this species the definition may be written as follows.

Diaspididae referable to the tribe Diaspidini; that is, with "two-barred" macroducts and with gland-spines only along the pygidial margins. Body of the adult female membranous throughout except for a very slight sclerotization of the cephalic apex, more or less fusiform, the segments but weakly lobed at the lateral margins. Median pygidial lobes relatively large, not yoked together by a basal scleriosis, each of a more or less triangular form, the apical margin being diagonal to the longitudinal axis of the body, the lateral margin being short or almost nonexistent, noticeably shorter than the mesal margin, the apices of the lobes almost approximate and with a pair of very small gland-spines between, the base of each with a conspicuous, sclerotized, club-shaped paraphysis extending into the pygidium. Second lobes entirely lacking, their position indicated by a seta which has the mesal side of the socket formed by an enlarged sclerotization. Third lobes also lacking, their positions indicated merely by a marginal seta. Marginal macroducts of normal size. Dorsal macroducts of the pygidium nearly or quite lacking, but the first and second prepygidial segments each with a conspicuous band of ducts, these ducts being much smaller than those of the pygidial margin. Perivulvar pores present in five small groups. Anal opening set well forward and close to the anterior margin of the pygidium.

Scale of the female mytiliform, brown when exposed. Scale of the male similar in form and texture to that of the female but much smaller.

However, this definition—unless the genus is to be restricted to not more than two species—must be modified to permit the inclusion of several species which are connected with the generic type through a series of forms such that a separation becomes difficult. Considering these other species the median pygidial lobes remain of the same characteristic type, but the basal paraphysis may be lacking or may be replaced by one or two transverse scleroses. The second lobe may be present merely as a pair of sclerotized points or may be well developed and the third lobe may be represented by marginal, sclerotized serrations. The conspicuous prepygidial bands of ducts may be en-

BIBLIOGRAPHY OF THE GENUS *ANDASPIS*

1921. MacGillivray, The Coccidae, pages 275, 292.
1936. Ferris, Microentomology 1:20, 24; figure 18.
1937. Lindinger, Entomologisches Jahrbuch fur 1937, page 179.
1937. Ferris, Atlas of the Scale Insects of North America, Series 1: Number 3.
1946. Hall, Transactions of the Royal Entomological Society of London 97:503, 545.
1948. Zimmerman, Insects of Hawaii 5:374, 405. (Included the genus in a key and redescribed the type species, with notes.)

HISTORICAL REVIEW

The genus *Andaspis* was named by MacGillivray in 1921, with the inclusion of only the type species and *Lepidosaphes incisor*, Green. *Lepidosaphes erythrinae* Rutherford and *Lepidosaphes moorosi* Doane and Ferris were included as synonyms of *Andaspis hawaiiensis* Maskell, the type species.

Ferris, in 1936 and 1937, accepted the genus and redescribed the genotype. He accepted the synonymy of the type species as indicated by MacGillivray.

Lindinger, in 1937, merely included the genus in a list of the genera of the Coccoidea.

Hall, in 1946, accepted the genus and referred to it *Lepidosaphes punctae* Laing.

Zimmerman, in 1948, added nothing to what had previously been done except for notes on the type species.

tirely lacking or but weakly developed and ducts may be present on the pygidial dorsum in a series flanking the anal opening. Throughout all these species, however, the median pygidial lobes retain the characteristic form of the generic type, this apparently being the most stable character of the genus.

NOTES. We are not very well satisfied with the characterization of the genus as it is here presented, yet we feel that the included species actually represent a group of related forms. They at least rest better here than in that heterogeneous assemblage of species at present referred to *Leptidosaphes*, to which the described species have in the past been referred. In *Leptidosaphes* and certain other genera that have been named, the median lobes are well separated and have a characteristic form, their sides being quite parallel and equal in length.

COMPOSITION OF THE GENUS

As noted above, the species that should be referred to *Andaspis* present something of a problem. For a real solution of this problem it will be necessary to review on the basis of specimens all of the species that have been referred to *Leptidosaphes*. This is a very large group, there probably being in the neighborhood of a hundred names and probably no collection in the world at present affords enough of a representation of the group to make possible a genuinely adequate study. We have referred to *Andaspis* only those species which we have ourselves been able to examine. The real problem is to determine a point at which *Andaspis* and *Leptidosaphes* can best be separated although the types of the two genera are very obviously quite different.

We have considered *Leptidosaphes meliae* Green as a candidate for inclusion in the genus, but have—perhaps mistakenly—excluded it for it is not an entirely typical *Leptidosaphes* and it certainly displays some degree of resemblance to *Andaspis*. On the other hand it is possible that *Andaspis* as here understood should be divided, but no really satisfactory basis for doing so appears.

On the basis which we have adopted from an examination of specimens we consider the genus to consist of ten species, of which seven are here described as new.

GEOGRAPHICAL DISTRIBUTION

With the exception of one species, *Andaspis incisor* (Green), which is known only from northern Australia, all the included species are from Asia. One of the species, *Andaspis hawaiiensis* (Maskell) has been quite widely distributed about the world by commerce, but is known from eastern Asia. Eight of the species are quite clearly Asiatic. It appears at present that the genus is distributed naturally throughout the area from Japan—where it is represented by *Andaspis crawii* (Cockerell)—through China into India. With the exception of *crawii* and *incisor* all the records fall within the Oriental Region and it is from within this region that additions to the genus may confidently be expected.

Andaspis antidesmae Rao, new species
Figure 10

1937. *Andaspis erythrinae* Rutherford, Green, Ceylon

Journal of Science 20: 328. (Misidentification.)

HOST AND DISTRIBUTION. Known only from a single collection from *Antidesma* sp. at Pundaluoya, Ceylon.

HABIT. Scale of the female of the form common to the genus, brownish, with whitish secretion mixed. Length about 1-1.25 mm.

RECOGNITION CHARACTERS. Median lobes very prominent and of the form common to the genus, their apices somewhat separated and with a pair of small gland-spines between; bases with a sclerosis extending transversely from each angle and with a more or less transverse sclerotized band slightly anterior to these. Second lobe moderately well developed and distinctly bilobed. Third lobe indicated at the most by a slight irregularity of the margin of the pygidium. Dorsum of the pygidium with a longitudinal row of several small ducts laterad and slightly posterior to the anal opening. A row of such ducts is present along the posterior border of the first pygidial segment and a few such submedian ducts are present on the first prepygidial segment, these being broken into a submedian and a submarginal series. On the second and third prepygidial segments a number of such ducts are present in a submarginal group and smaller ducts are present in submarginal groups as far forward as the mesothorax. Marginal gland-spines seem to occur only on the first and second prepygidial segments.

NOTES. The description of this species is based upon a single mounted specimen in the Green Collection at the British Museum of Natural History. It appears to have been considered by Green at first to represent a new species, being labelled as *Leptidosaphes antidesmae*, but was later recorded by him as *erythrinae*.

Andaspis crawii (Cockerell)

Figure 11

Figure

1896. *Mytilaspis crawii* Cockerell, Psyche 7: Supplement 1: 21.
1896. *Mytilaspis crawii*, Cockerell, United States Department of Agriculture, Division of Entomology, Technical Series, Bulletin 4: 44.
1896. *Mytilaspis crawii* Cockerell, Craw, State Board of Horticulture of the State of California, Biennial Report 5: 41; Plate 7, figure 13.
1897. *Mytilaspis crawii* var. *canaliculata* Maskell, Transactions of the New Zealand Institute 29: 304; Plate 19, figures 5, 6.
1897. *Mytilaspis crawii* var. *canaliculata* Maskell, Entomologist's Monthly Magazine 33: 241.
1902. *Mytilaspis crawii* Cockerell, Kuwana, Proceedings of the California Academy of Sciences (Third Series) 3: 82.
1903. *Leptidosaphes crawii* (Cockerell), Fernald, Catalogue of the Coccidae, page 307.
1925. *Leptidosaphes crawii* (Cockerell), Kuwana, Department of Finance, Japan, Imperial Plant Quarantine Service, Technical Bulletin 2: 15; Plate 5, figures G-L.

HOSTS AND DISTRIBUTION. In connection with the original description of this species Cockerell recorded only that it has been taken from *Elaeagnus* sp. at quarantine from Japan. Craw, who was responsible for the collection of the species, records it as having been taken from *Elaeagnus* and *Quercus cuspidata* and all subsequent records have been from the latter host in Japan.

HABIT. Occurring on the underside of the leaves of the host, more or less concealed beneath the mat of leaf hairs on the epidermis. Scale of the female quite flat, elongate, in specimens at hand showing a marginal fringe of thin secretion. Scale of the male not recognized in material at hand.

RECOGNITION CHARACTERS. Adult female much elongated and very slender, the abdomen only slightly lobed laterally. Median pygidial lobes of a distinctive form, the triangular form common to the genus being displayed, but the apex rather broadly rounded, the posterior margin minutely serrate; paraphyses represented by a small sclerosis extending transversely across the lobe from each basal angle; anterior to and slightly separated from these scleroses is a transverse, sclerotized bar; each end of this bears a minute seta. Second lobe well developed, distinctly bilobed. Dorsum of the pygidium without ducts or with but one or two, these very small. Two or three prepygidial segments with a very few, scattered small ducts. Otherwise the dorsum of the abdominal segments is free from ducts, except for very small ducts along the lateral margins. Lateral margins of the abdominal segments without any sclerotized spurs.

NOTES. Specimens of this species are at hand from the Koebele Collection which was recorded by Maskell and the accompanying illustration is based upon these.

In spite of the strong development of the second pygidial lobes no good basis appears for keeping this species out of *Andaspis*.

Andaspis erythrinae (Rutherford)
Figure 12

1914. *Lepidosaphes erythrinae* Rutherford, Bulletin of Entomological Research 5:254.
1921. *Andaspis hawaiiensis* (Maskell), MacGillivray, The Coccidae, page 292. (Misidentification).
1937. *Lepidosaphes erythrinae* Rutherford, Green, Ceylon Journal of Science, Section B, 20:328.
1937. *Andaspis hawaiiensis* (Maskell), Ferris, Atlas of the Scale Insects of North America, Series 1, Number 4. (Part: misidentification.)

HOSTS AND DISTRIBUTION. Known only from the original record, from *Erythrina* sp., Peradeniya, Ceylon.

HABIT. Scale of the female described as being "about 2 mm. long; exuviae at one end, golden brown; secretion very dark brown." Scale of the male described as being "similar to that of the female but smaller; white in region of hinge and often caudad of hinge."

RECOGNITION CHARACTERS. Female fusiform. Anterior spiracles with but one or two associated pores. Median pygidial lobes large and prominent, strongly triangular, with two small gland-spines between the apices, with a small paraphysis arising at the mesal basal angle of each lobe and extending transversely partially across the base of the lobe. Second lobes represented at the most by a low, rounded, sclerotized prominence. Dorsal pygidial macroducts arranged in an irregular series of perhaps fifteen ducts just posterior to and on each side of the anal opening. First prepygidial segment with a few such ducts submarginally and in a single row that extends almost to the midline. Second prepygidial segment with a marginal or submarginal group of a few such pores and a submedian group of three or four. A marginal or submarginal

group of such ducts is present on each of the preceding segments, including the mesothoracic, and the abdominal prepygidial segments each bears a cluster of small gland-spines at the lateral margins. Abdominal segments three and four each bears a sclerotized spur on its lateral margin.

NOTES. The holotype of this species, from the Green Collection, is in the British Museum. The type slide carries a single specimen which is not in good condition for study but sufficient to show the major characteristics of the species. It is very obviously distinct from *hawaiiensis*, with which it has previously been synonymized. Specimens from *Antidesma* sp. in Ceylon, which were at one time recorded by Green as *erythrinae*, represent a new species herein described as *Andaspis antidesmae*.

Andaspis halli Rao, new species
Figure 13

1928. *Lepidosaphes hawaiiensis* (Maskell), Hall, Bulletin of Entomological Research 19:277. (Misidentification.)

HOST AND DISTRIBUTION. From *Cassia tettensis* at Mazoe, Southern Rhodesia.

HABIT. Scales not available for description.

RECOGNITION CHARACTERS. Median pygidial lobes of the form common to the genus, but with their apices somewhat separated and with a pair of small setae or gland-spines between; basally with a slender, club-shaped paraphysis arising from the median angle and a very small thickening at the lateral angle. Second lobe represented by a small, sclerotized tooth, with a short, broad, sclerotized paraphysis extending into the pygidium. Third lobe represented by a slight irregularity and sclerotization of the margin. Dorsum of the pygidium with a few scattered small ducts laterad of the anal opening. First prepygidial segment with a very few small ducts in a submedian cluster and few in a submarginal cluster; margins of the prepygidial abdominal segments with a few very small gland-spines and a submarginal cluster of small ducts.

NOTES. The types of this species are in the British Museum of Natural History. Hall noted some differences between *Andaspis hawaiiensis* and this species, but did not note the absence of the band of ducts on the two prepygidial segments, which represent its most distinctive feature. It seems to be most closely related to *hawaiiensis*.

Andaspis hawaiiensis (Maskell)
Figure 14

1894. *Mytilaspis flava* var. *hawaiiensis* Maskell, Transactions of the New Zealand Institute 27:47.
1898. *Mytilaspis flava* var. *hawaiiensis* Maskell, Maskell, Transactions of the New Zealand Institute 30:230.
1903. *Lepidosaphes flavavar. hawaiiensis* Maskell, Fernald, Catalogue of the Coccidae, page 309.
1916. *Lepidosaphes moorsti* Doane and Ferris, Bulletin of Entomological Research 6:401; fig., 3.
1918. *Lepidosaphes flava hawaiiensis* (Maskell), Houser, Annals of the Entomological Society of America 11:170.
1919. *Howardia moorsti* (Doane and Ferris), Brain, Bulletin of Entomological Research 9:188; Plate 13, figure 132.

developed, distinctly bilobed, the median lobe being the larger. Dorsum of the pygidium with a scattered group of small ducts on each side of the anal opening. First prepygidial segment with merely a few scattered ducts or with none, and the three segments preceding this with a band of such small ducts extending more or less across the body and these segments also each with a distinct, sclerotized spur at the lateral margin. Each prepygidial abdominal segment with a cluster of marginal and submarginal gland-spines, those of the anterior-most segment forming a band that extends well toward the median line. Thoracic segments with numerous minute submarginal ducts ventrally.

NOTES. In the strong development of the second pygidial lobes this species departs from the type of the genus yet it seems to belong to this group.

Andaspis punicea (Lainig)
Figure 19

1929. *Leptidosaphes punicea* Lainig, Annals and Magazine of Natural History (Series 10) 4: 500; figure 28.

1946. *Andaspis punicea* (Lainig), Hall, Transactions of the Royal Entomological Society of London 97: 503.

HOSTS AND DISTRIBUTION. Described from *Punica granatum* at Dar-es-Salaam, Tanganyika Territory, East Africa. A single mounted specimen is in the Stanford University collection, from *Litchi chinensis*, from the Hawaiian Islands taken at quarantine.

HABIT. The scale of the female is described as of the type common to the genus, the color varying from castaneous brown or a very deep reddish brown to almost a dull black, some whitish deposit at the sides, spreading sometimes on to dorsum; exuvia golden brown. Length in well-developed individuals 2 mm. Male not known. There is no indication as to whether the scales occur on leaves or stems.

RECOGNITION CHARACTERS. Body form of the type common to the genus. Median pygidial lobes very prominent and strongly triangular, each with a very small, sclerotized parapsis at each basal angle, that of the lateral angle being the larger, each of these parapses apparently bearing a small seta. Second lobes represented each by a small, sclerotized tooth, which gives indications of a bilobed condition. Third lobes represented by smaller, sclerotized points. Dorsum of the pygidium with a compact band of small ducts posterior to and flanking the anal opening. First pygidial segment with an irregular row of small ducts extending from the midline well into the submarginal region, where there are a number of such ducts scattered about. Of the three preceding prepygidial segments each likewise possesses a transverse row of such ducts, the ducts being much fewer. The first, third, and fourth prepygidial segments each have a small, apically rounded, sclerotized spur just in from the margin dorsally. All prepygidial abdominal segments with a few small gland-spines at the margins, and the metathorax and mesothorax bear numerous very small submarginal ducts.

NOTES. The types of this species were examined by Rao at the British Museum and the accompanying illustrations were based upon these types, supplemented to a slight degree from the specimen in the Stanford collections, which is very definitely the same species.

first pygidial segment. A transverse series of scattered small ducts appears also on the second prepygidial segment and numerous very small ducts occur in the submarginal areas of the abdominal segments and as far forward as the mesothorax. There seem to be no marginal tubercles on any of the abdominal segments and these segments are beset marginally only with a very few small gland-spines.

NOTES. The type is in the Green Collection of the British Museum of Natural History, being a specimen from *Pithecolobium saman*. The species stood in the Green Collection under two manuscript names, *Leptidosaphes punctatissima* and *Leptidosaphes hawaiiensis* variety *trivata*.

This species is quite close to *Andaspis hawaiiensis*, from which it differs most conspicuously in the presence of a wide gap between the cluster of small ducts on the first pygidial segment and the transverse band of such ducts on the first prepygidial segment.

Andaspis leucophleae Rao, new species
Figure 17

1930. *Leptidosaphes leucophleae* Green Ms., Ayyar, Imperial Institute of Agricultural Research Pusa, India, Bulletin 197: 30.

HOSTS AND DISTRIBUTION. On *Acacia leucophleae*, *Acacia arabica* and *Punica granatum*, at Coimbatore, India, in the Green Collection at the British Museum of Natural History. Collected by Rao from *Acacia leucophleae* at Katol, Central Provinces, India.

HABIT. Scale of the female of the form common to the genus, grayish in color. Scale of the male similar to that of the female in form, but paler.

RECOGNITION CHARACTERS. Median pygidial lobes rather small but of the characteristic form of the genus, quite well separated at the apex and with a pair of small gland-spines between; from the base arises a short, narrow parapsis. Second and third lobes obsolete. Dorsum of the pygidium with a row of small macroducts on each side of the anal opening, and a row of such ducts along the posterior margin of the first pygidial segment, these extending, with some interruption, from the midline to the margin. First prepygidial segment with a similar row and a marginal cluster of such ducts. Second prepygidial segment with mostly a submarginal series of such ducts and a much reduced dorsal series. A stout lateral spur occurs on the margin of the first prepygidial segment but apparently on no others.

NOTES. The type is in the collections of the Directorate of Plant Protection, Quarantine and Storage, at New Delhi, India, being from the lot from Katol, Central Provinces, India.

Andaspis mori Ferris, new species
Figure 18

HOST AND DISTRIBUTION. From *Morus australis* at An-lin-wen-chian, near Kuming, Yunnan Province, China, April 24, 1949, G. F. Ferris collector.

HABIT. Occurring on the bark of twigs, the scales more or less hidden under the epidermis but where exposed appearing dark brown.

RECOGNITION CHARACTERS. Adult female about 1 mm. long. Median pygidial lobes of the form common to the genus, each with a small, sclerotized parapsis arising from both its lateral and its mesal basal angles, these parapses being shorter than the lobe itself. Second pygidial lobe well

Andaspis incisor (Green)
Figure 15

1916. *Leptidosaphes incisor* Green, Bulletin of Entomological Research 7: 99; figure 6.

1921. *Andaspis incisor* (Green), MacGillivray, The Coccidae, page 292.

HOST AND DISTRIBUTION. Known only from the original record, from *Melaleuca leucodendron*, at Koolpinayah and Stapleton, Northern Territory, Australia.

HABIT. Scale of the female described as "pale brown or brownish ochraceous, semitranslucent... Average length 2.5 mm." The scale of the male is indicated as similar, but narrower and smaller.

RECOGNITION CHARACTERS. Median pygidial lobes strongly developed and very definitely triangular, their apices approximate, each with a narrow, transverse sclerosis arising from the outer basal angle and a smaller, perpendicular parapsis arising from the mesal angle. Second lobes lacking. Third lobes represented only by low prominences at the base of the usual paired ducts. Dorsum of the pygidium with but a single (or perhaps at times with no) duct just posterior to and laterad of the anal opening. Posterior margin of the first pygidial segment (segment 5) with a single submarginal and two submedian dorsal ducts and the two prepygidial segments each with but a single submarginal duct. Abdominal segment three with a small cluster of marginal gland-spines, the remaining prepygidial segments with none, the first abdominal segment and the mesothoracic and metathoracic segments each with submarginal clusters of small ducts. Abdominal segments apparently without lateral spurs.

NOTES. Rao was able to examine the types of this species at the British Museum and the accompanying illustration is based on these specimens. The species seems most nearly to belong with the genus *Andaspis*.

Andaspis laingi Rao, new species
Figure 16

1930. *Leptidosaphes punctatissima* Green, Ayyar, Imperial Institute of Agricultural Research, Pusa, India, Bulletin 197: 30. (A nomen nudum.)

HOSTS AND DISTRIBUTION. From *Albizia lebbek* and *Pithecolobium saman* at Coimbatore, India, collected by Ramakrishna Ayyar.

HABIT. Scale of the female of the form and color typical of the genus, brown; length about 1 mm.

RECOGNITION CHARACTERS. Median pygidial lobes prominent, of the characteristic form found in the genus, their apices slightly separated and with a pair of small setae or gland-spines between; base of each with a conspicuous, club-shaped parapsis arising from near the median angle and extending into the pygidium. Second and third lobe entirely obsolete. Pygidial margin with but four large macroducts instead of the usual five or six. Dorsum of the pygidium apparently entirely without ducts except that there is a detached group of numerous small ducts extending from the outermost pygidial segment. First prepygidial segment with a transverse row of numerous small macroducts extending from the marginal region almost to the midline of the body, this series of pores well separated from the series of marginal ducts on the

1920. *Leptidosaphes hawaiiensis* (Maskell), Ferris, Canadian Entomologist 52: 65.

1921. *Andaspis hawaiiensis* (Maskell), MacGillivray, The Coccidae, page 292. (In part)

1928. *Leptidosaphes hawaiiensis* (Maskell), Green, Annals and Magazine of Natural History (Series 10) 1: 152.

1932. *Leptidosaphes hawaiiensis* (Maskell), Palachowsky, Encyclopedie Entomologique 15: 4: xviii.

1936. *Andaspis hawaiiensis* (Maskell), Ferris, Microentomology 1: 20, 24; figure 18.

1937. *Andaspis hawaiiensis* (Maskell) Ferris, Atlas of the Scale Insects of North America, Series 1: Number 4.

1946. *Andaspis hawaiiensis* (Maskell), Hall, Transactions of the Royal Entomological Society of London 97: 503.

1948. *Andaspis hawaiiensis* (Maskell), Zimmerman, Insects of Hawaii 5: 407; figure 221.

HOSTS AND DISTRIBUTION. Described by Maskell from "bark of trees," at Kauai, Sandwich (=Hawaiian) Islands. Recorded by Maskell from *Pyrus sinensis* at Amo, China. Described by Doane and Ferris as *Leptidosaphes moorsi* from orange, near Apia, Samoa. Recorded by Brain from *Lagerstroemia indica* at Durban, Natal, South Africa. Recorded by Houser from *Malpighia punctifolia* at Havana, Cuba. Recorded by Balachowsky from *Lagerstroemia indica* and *Mimosa* sp. at Algiers. Recorded by Ferris from *Lawsontia* sp. in Florida. Recorded by Zimmerman from various unspecified hosts at Honolulu. In the course of the present work there have been seen specimens from the lot recorded by Maskell from Amo, China, and from *Pyrus* sp. at Lingnan University, Canton, collected by G. F. Ferris; the type specimens of *moorsi* from Samoa; from unspecified host at Hongkong; *Hydrangea* from Honolulu and from *Albizia stipitata* at Kandy, Ceylon.

HABIT. The insects have a very pronounced habit of burrowing beneath the epidermis of the bark of their host, this concealing the color of the scale, but when it is at all exposed the scale of both male and female is brown. The species seems always to occur upon the bark.

RECOGNITION CHARACTERS. Median pygidial lobes each with a very pronounced, club-like parapsis extending into the pygidium from the mesal basal angle. Second and third lobes entirely lacking. Dorsum of the pygidium entirely without pores. First prepygidial abdominal segment with a conspicuous transverse band of small ducts, this band extending from each margin but interrupted somewhat at the median line, and expanding without interruption into a submarginal cluster on each side, this cluster extending somewhat both anteriorly and posteriorly from the end of the band. Second prepygidial segment with a narrower band of ducts, this band interrupted mesally and at each end, where it is somewhat separated from the small submarginal cluster. There seem to be no other dorsal ducts except along the segmental margins. First and second prepygidial segments each with a spur-like process at each lateral margin. Small gland-spines present ventrally on all the abdominal segments at their lateral margins and numerous very small ducts present ventrally at the lateral margins on the mesothorax and metathorax.

NOTES. The accompanying illustrations are from specimens identified in the Koebelle Collection, without data but possibly from his type material.

Key to the Species of *Andaspis*

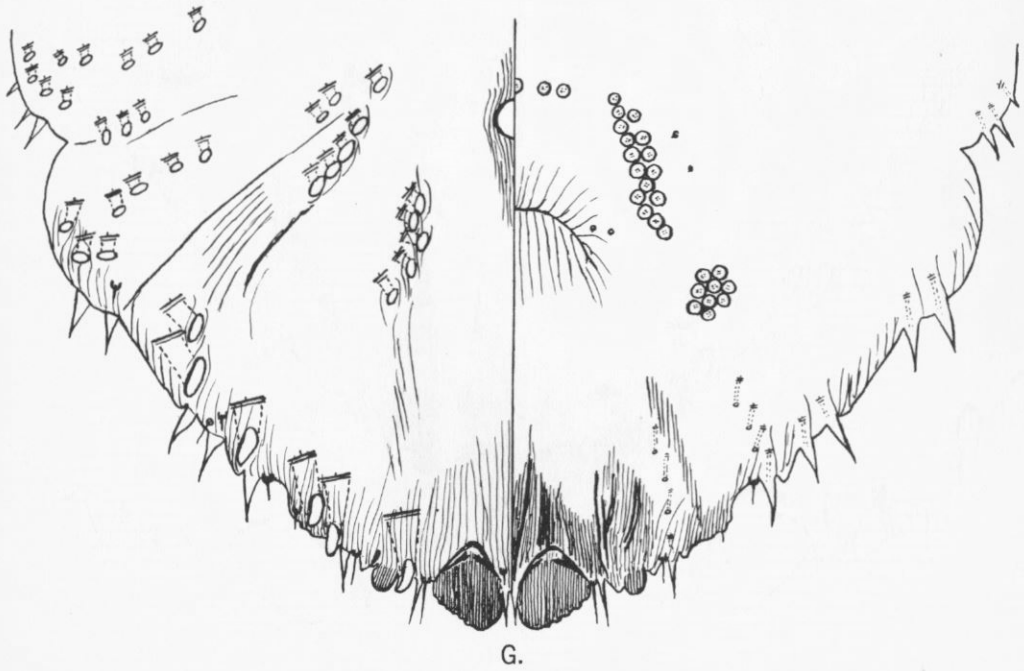
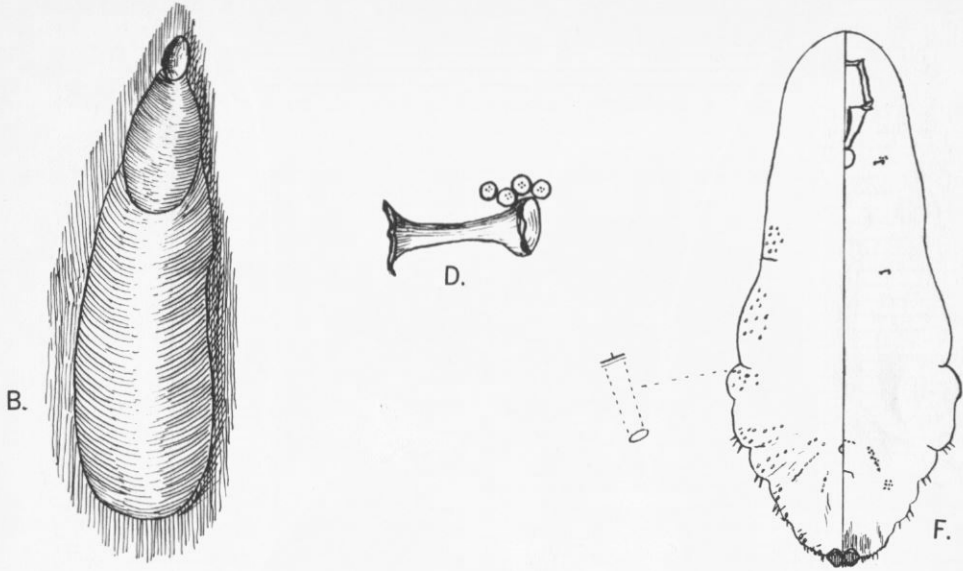
1. With a club-shaped paraphysis extending into the pygidium from the median basal angle of each median lobe.....2
 Without such a paraphysis, the paraphyses at the base of the median lobes being either transverse or lacking.....6
2. Dorsum of the pygidium with no pores in the area flanking the anal opening.....3
 Dorsum of the pygidium with at least a few pores in the area flanking the anal opening.4
3. Dorsum of the first prepygidial segment with an at least double band of ducts extending from the midline to a marginal group, this marginal group being continuous with a small submarginal group on the first pygidial (fifth) segment.....HAWAIIENSIS
 Dorsum of first prepygidial segment with a similar band of ducts, but this band well separated from the submarginal group of the first pygidial (fifth abdominal) segment.....LAINGI
4. Dorsum of the pygidium with a definite longitudinal row of ducts on each side, flanking the anal opening.....LEUCOPHLEAE
 Dorsum of the pygidium with the ducts flanking the anal opening scattered.....5
5. Paraphysis which arises from the base of each median lobe about twice as long as the lobe itself.....HALLI
 Paraphyses arising from the base of the median lobes short, being scarcely longer than the lobe itself.....MORI
6. Median lobes each with but a small sclerosis at each basal angle, this sclerosis being formed by the socket surrounding a small setaPUNICAE
 Median lobes each with at least a small, transverse sclerosis arising from one or both basal angles.....7
7. Second pygidial lobes distinctly developed...8
 Second pygidial lobes completely absent or indicated only by a slight prominence.....9
8. Dorsum of the pygidium with a row of several pores flanking the anal opening....ANTIDESMAE
 Dorsum of the pygidium without such pores.....CRAWLI
9. Dorsum of the pygidium with a row of as many as ten or more pores flanking the anal opening.....ERYTHRINAE
 Dorsum of the pygidium with no such row of pores flanking the anal opening.....INCISOR

EXPLANATION OF ILLUSTRATIONS
FOR CONTRIBUTIONS 76-77.

All illustrations in Contribution Number 76 and Contribution Number 77 are arranged according to a standard system, so that the same letter always refers to the same features. The lettering is as follows:

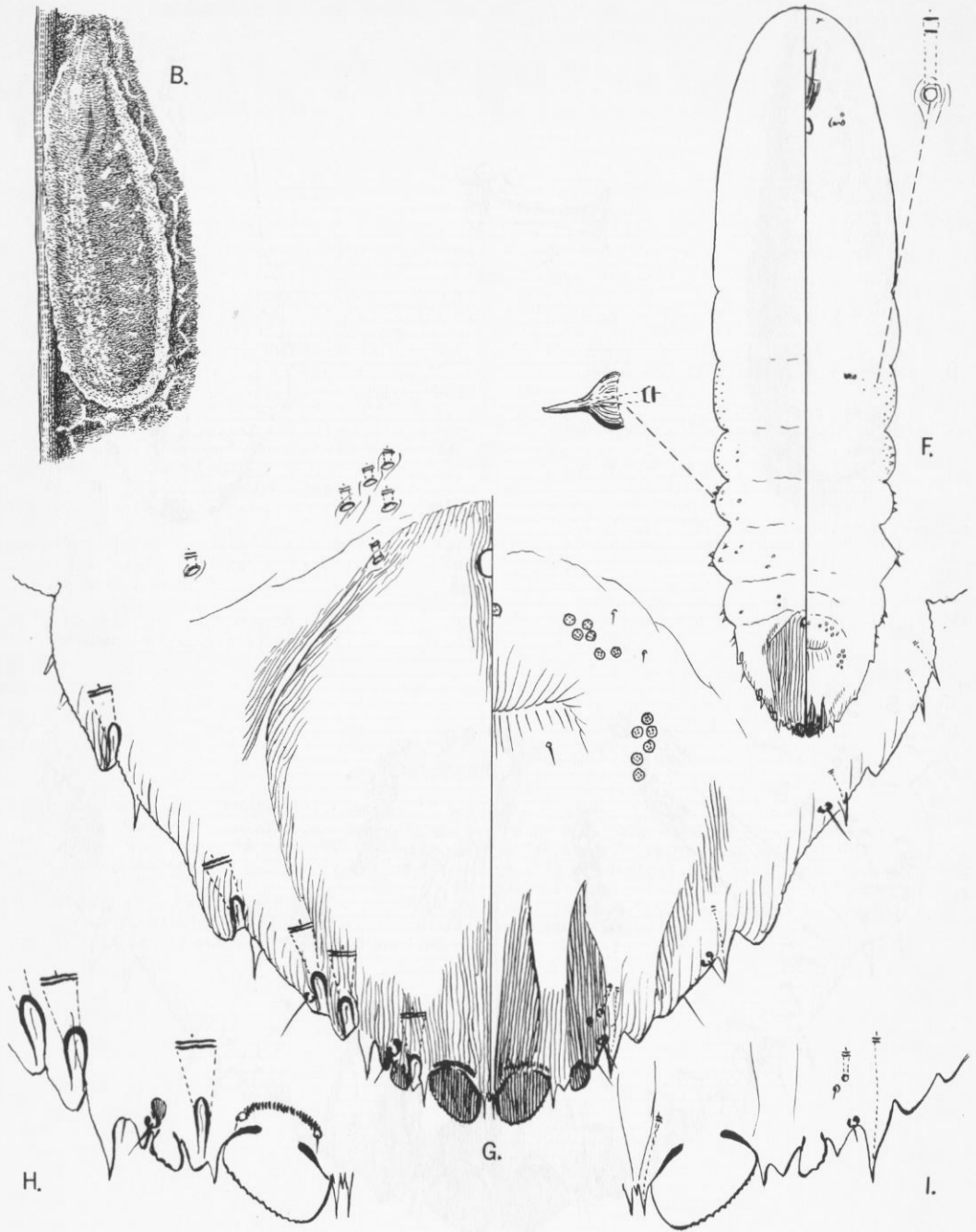
A, antenna of first stage; B, habit; C, antenna of adult female; D, anterior spiracle of adult female; E, pygidium of second stage of female; EE, outline of

second stage in pupillarial forms; F, body of adult female; G, pygidium of adult female; H, details of dorsal aspect of pygidial margin of adult female; I, details of ventral aspect of pygidial margin of adult female. Other details are connected with their points of origin by guide lines and should be readily identifiable.



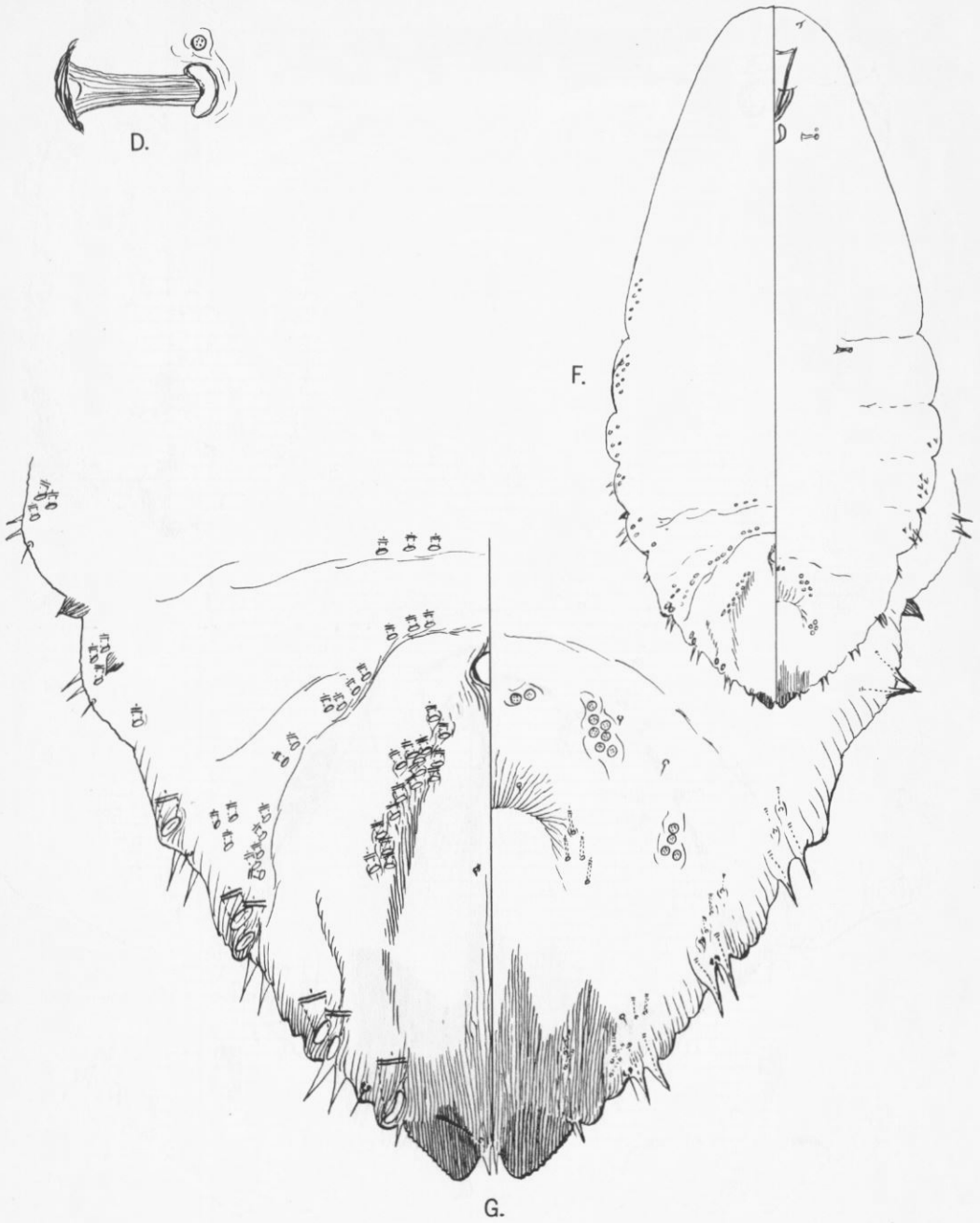
Andaspis antidesmae Rao, new species

Figure 10



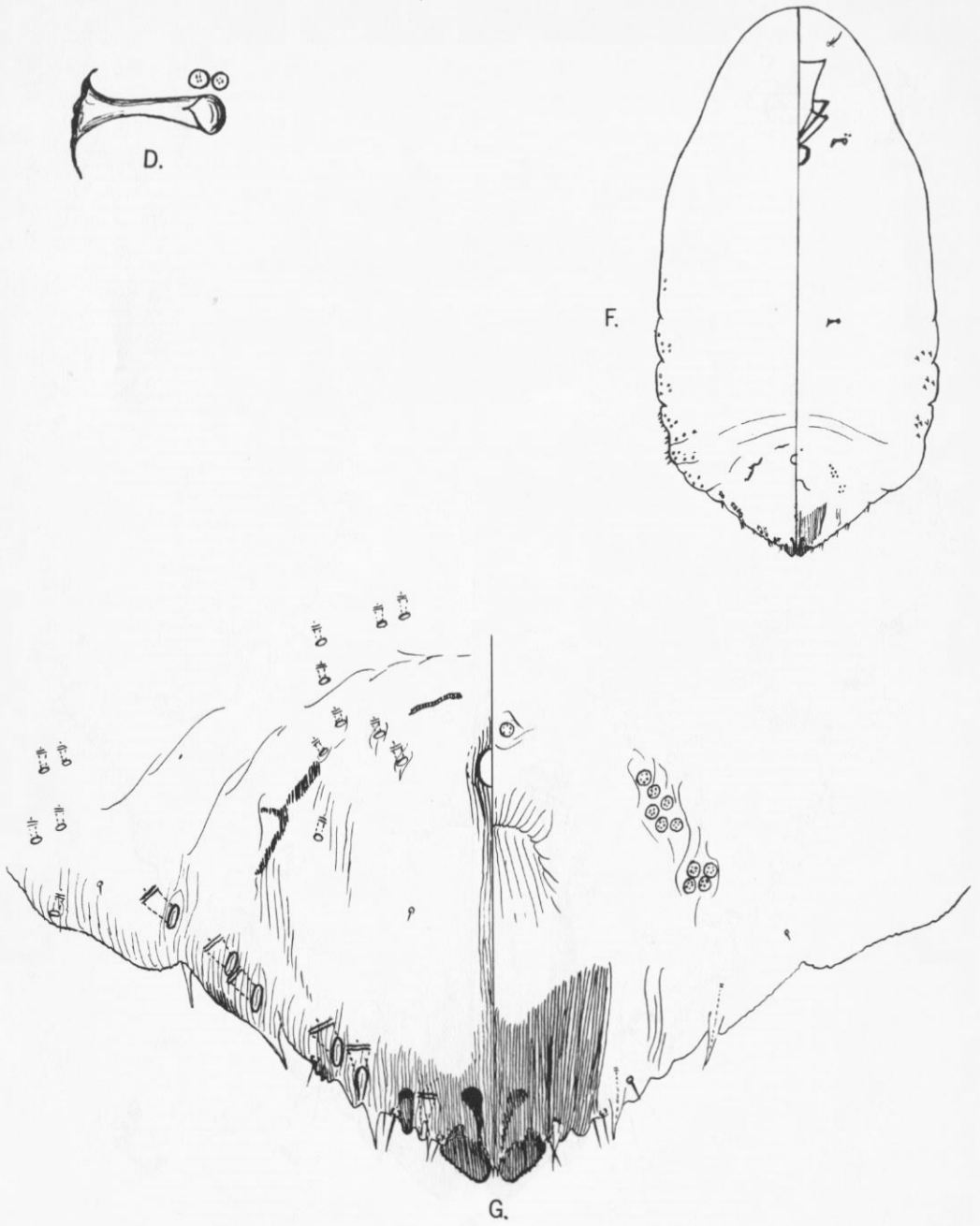
Andaspis crawii (Cockerell)

Figure 11



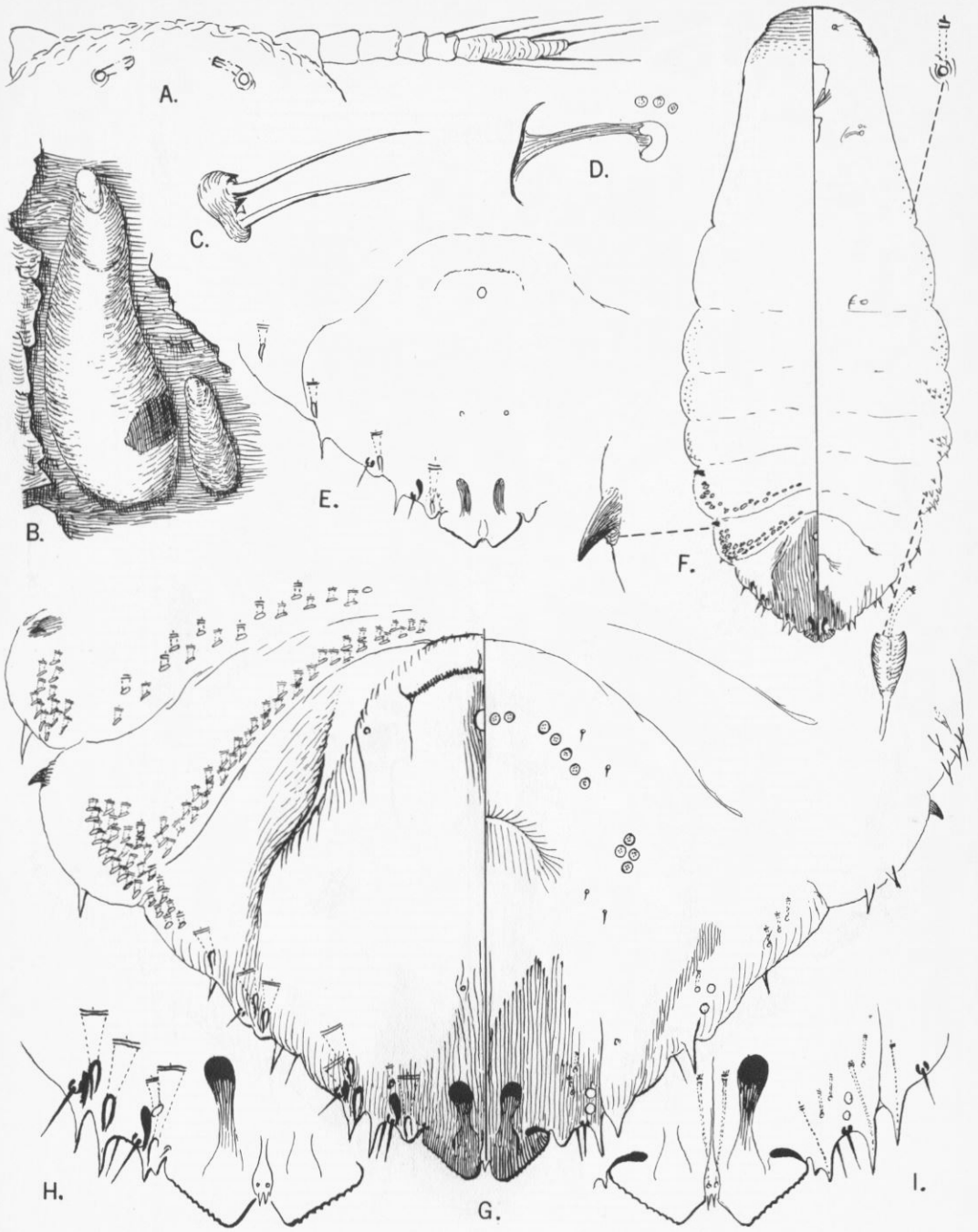
Andaspis erythrinae (Rutherford)

Figure 12



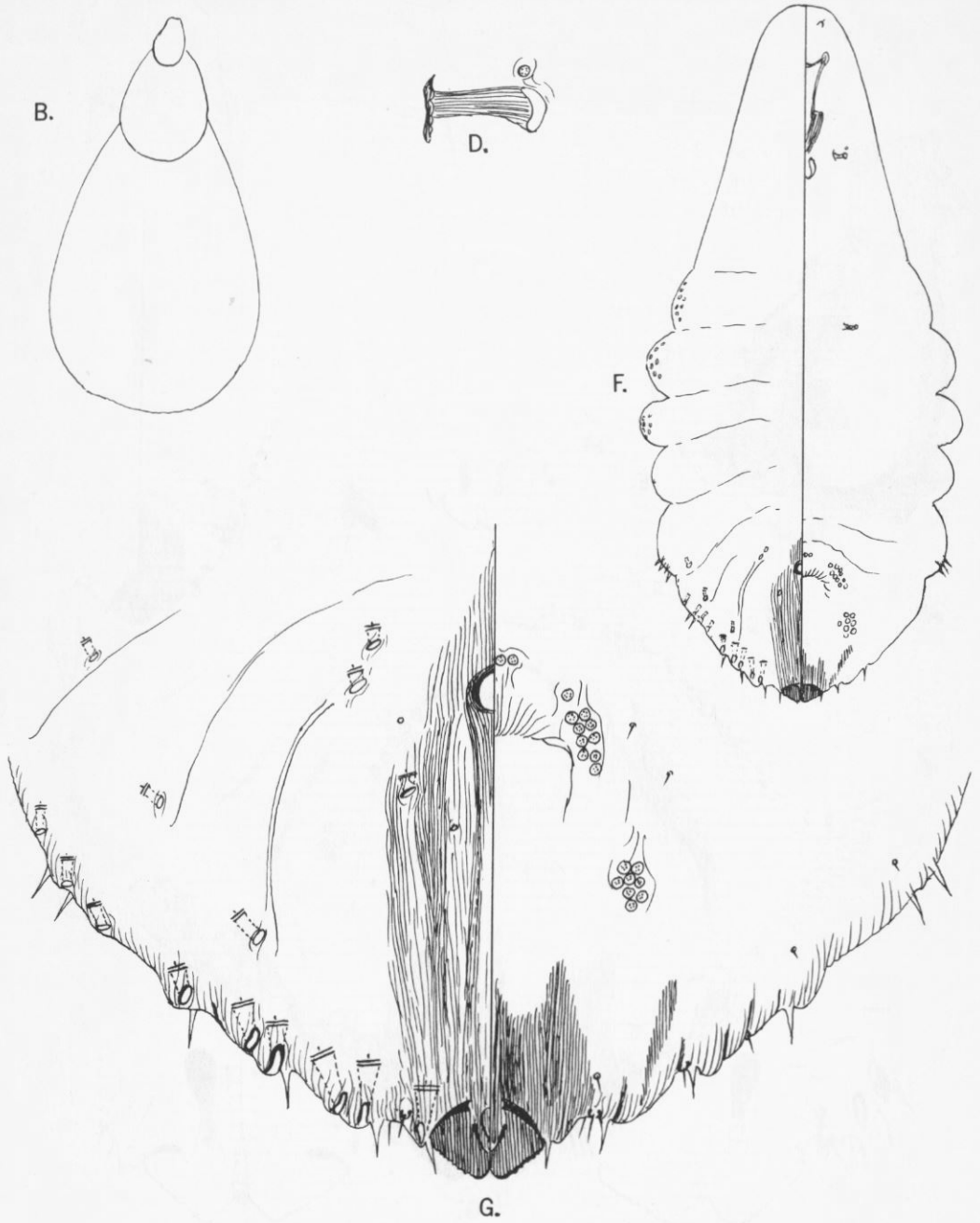
Andaspis halli Rao, new species

Figure 13



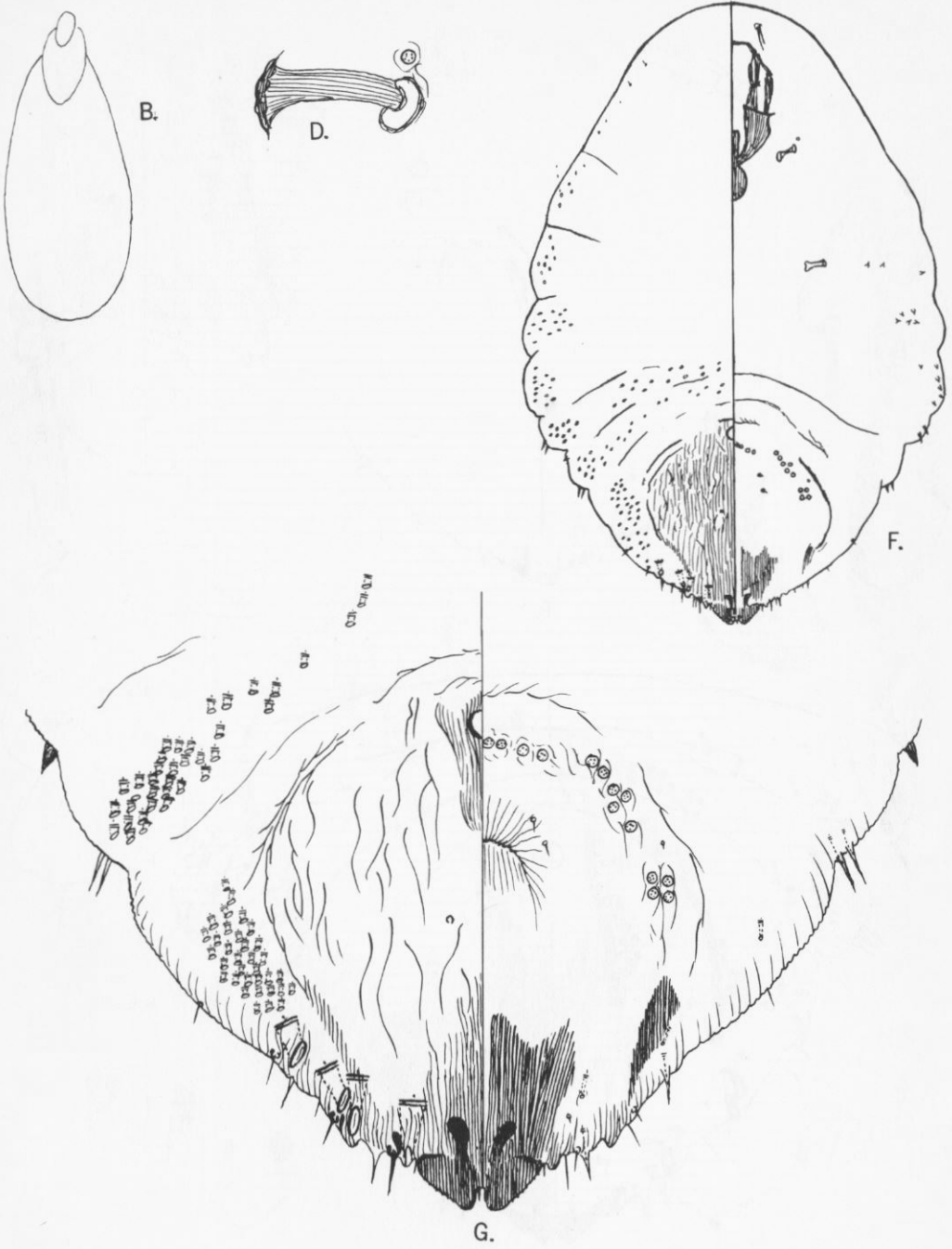
Andaspis hawaiiensis (Maskell)

Figure 14



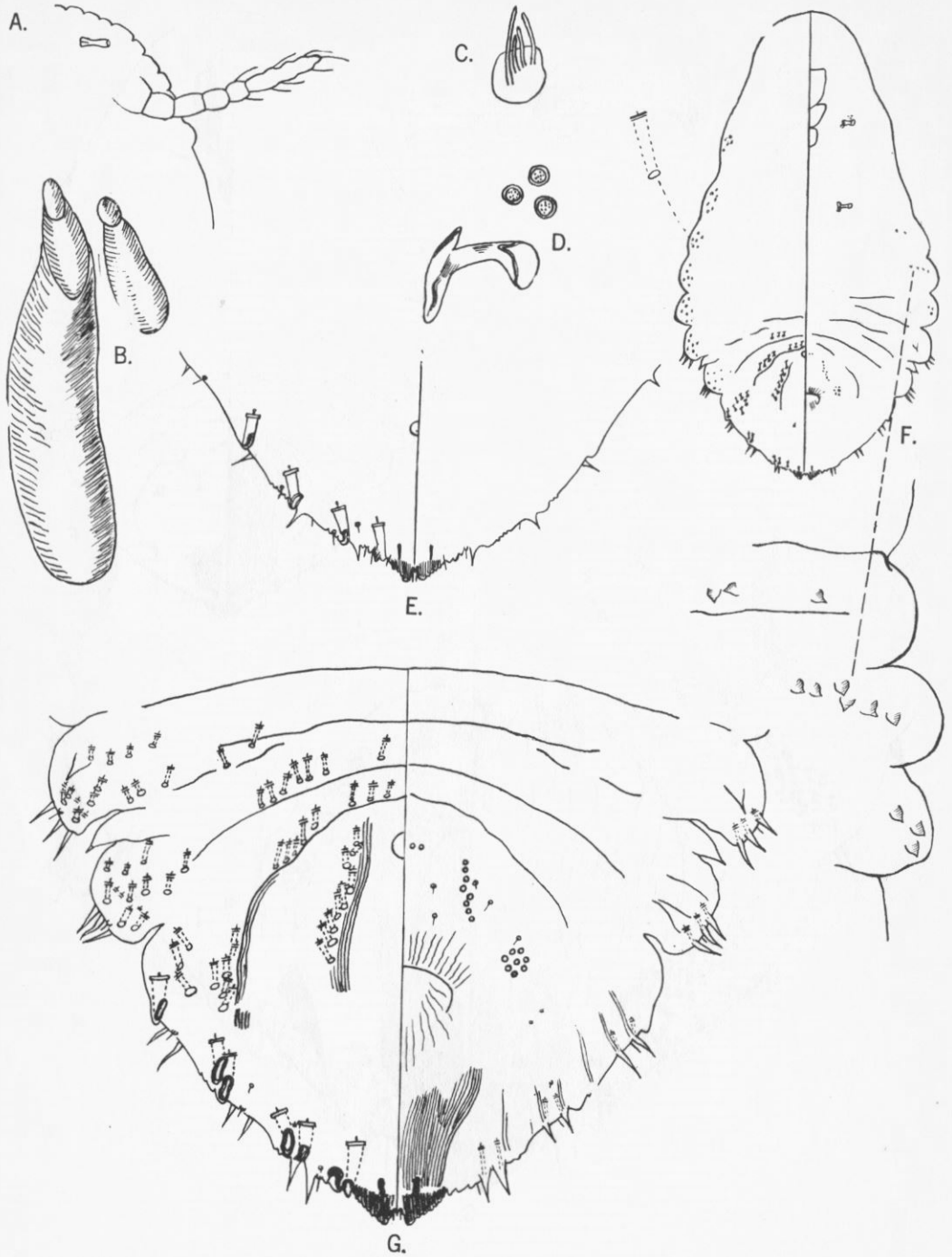
Andaspis incisor (Green)

Figure 15



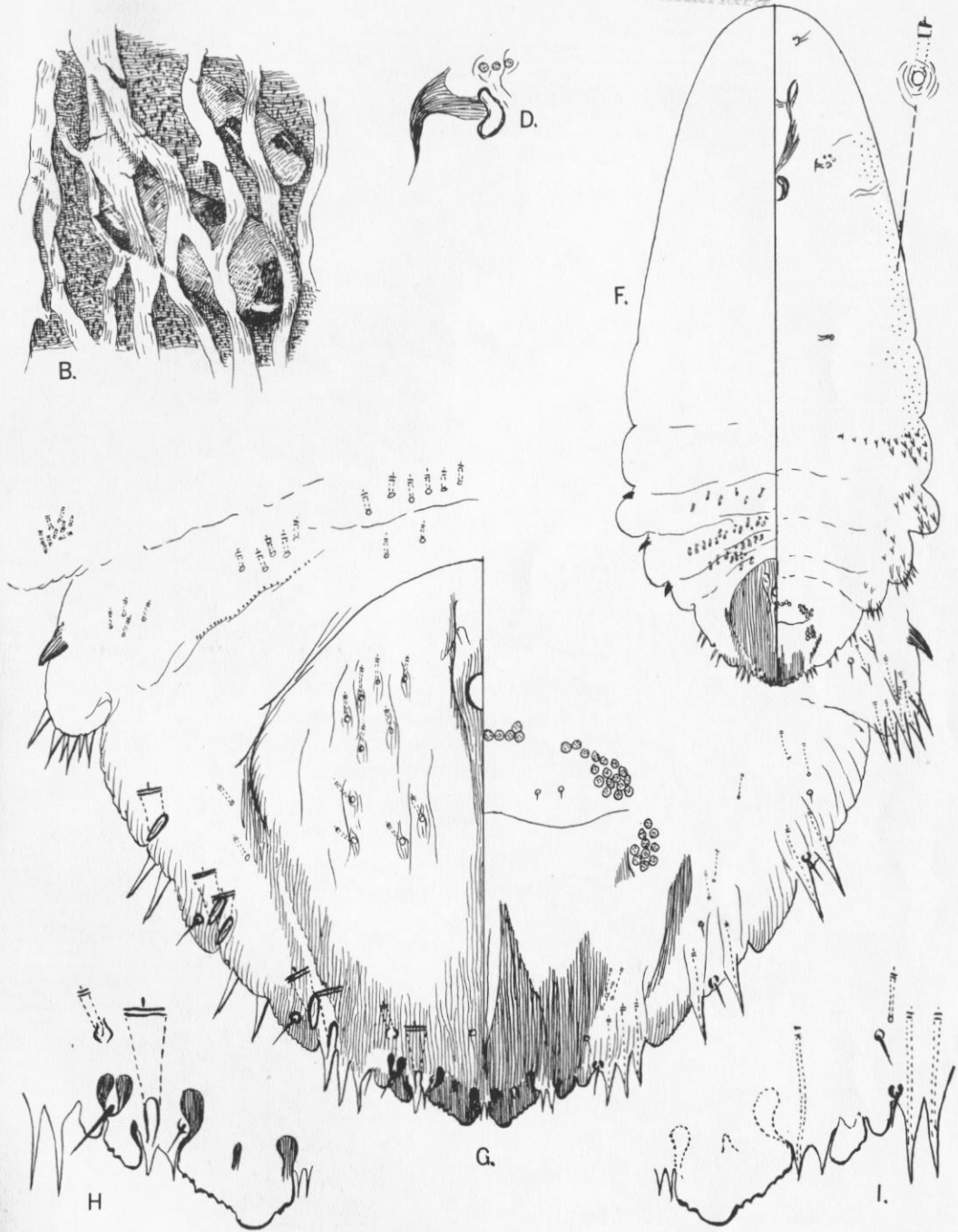
Andaspis laingi Rao, new species

Figure 16



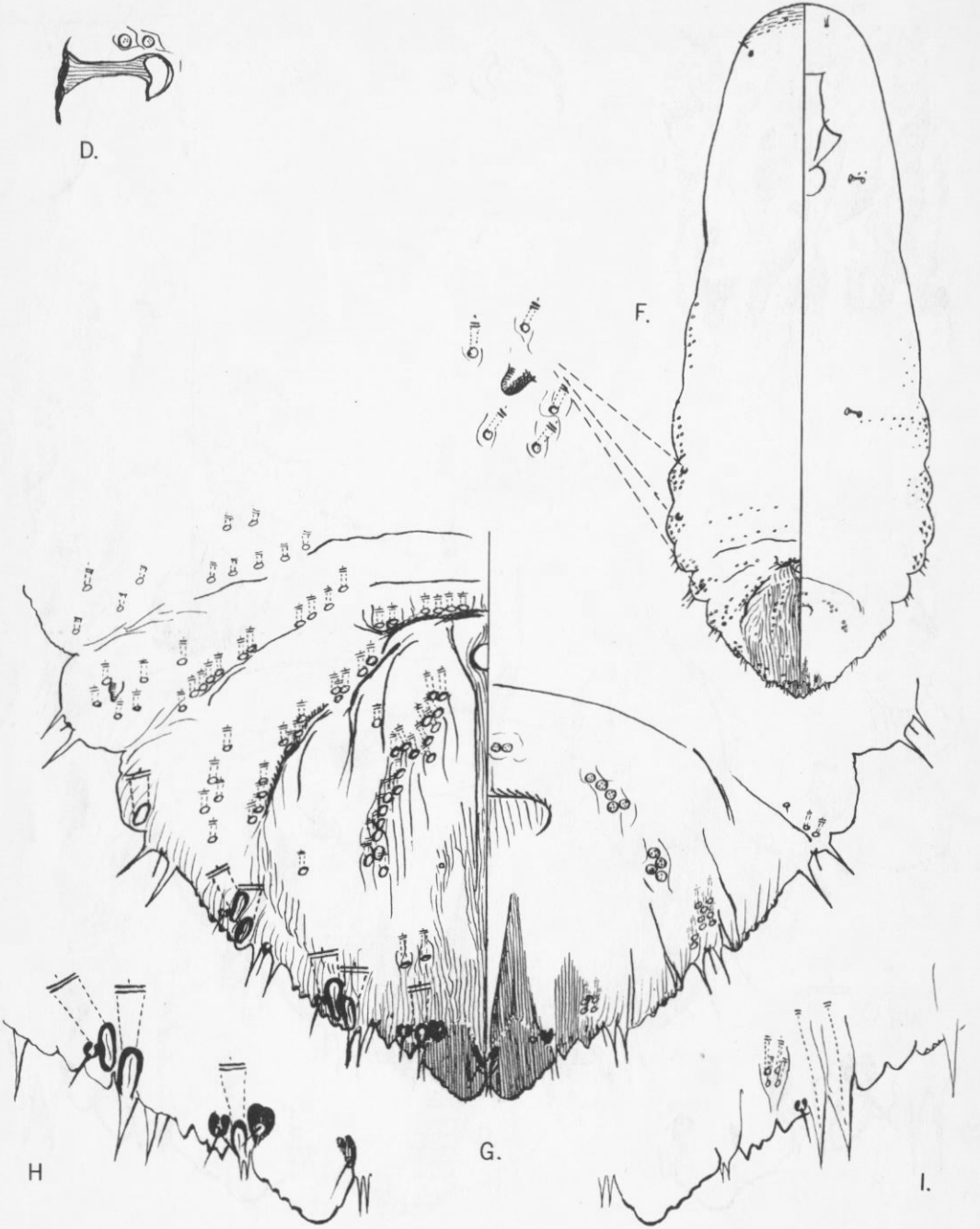
Andaspis leucophloeae Rao, new species

Figure 17



Andaspis mori Ferris, new species

Figure 18



Andaspis punicae (Laing)

Figure 19