A NEW MYRMECOPHILOUS GENUS OF COCCIDAE (HEMIPTERA) FROM INDIA.

By F. Silvestri.

I describe here an interesting new genus of Coccidae kindly sent me for study by Dr. N. Annandale, who collected it and made important observations on its relation with the ants.

Gen. **Xenococcus,** nov.

(Fig. I—V).

♀ Corpus (fig. I) ovale parte magis attenuata postica, a segmento penultimo sursum vergente.

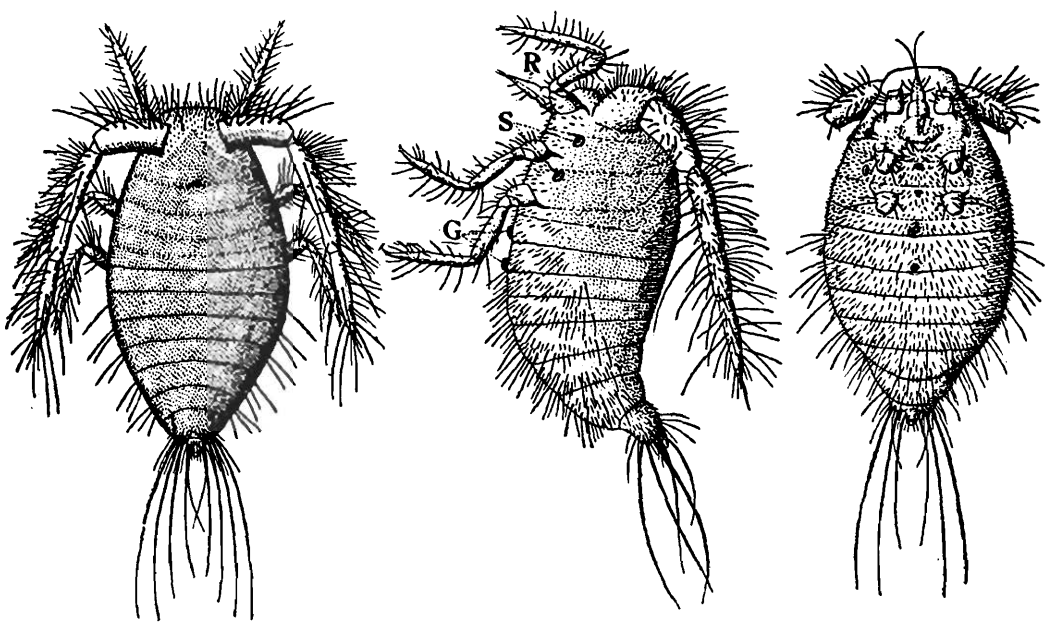

Fig. I.

1—3. *Xenococcus annandalei*; femina supra, lateraliter et subtus inspecta: A=antenna, G=glandulae ventrales, R=rostrum, S=stigmata.

Caput breve, latum, antice late convexum occulis nullis, antennis longiusculis 4-articulatis, supero-lateralibus retrorsum directis, rostro sat longo, biarticulato, articulo secundo quam primus longiore.

Thorax quam abdomen c. $\frac{3}{4}$ brevior cum capite et cum abdomine dorsualiter haud multo manifeste distinctus, pedibus sat longis, articulis consuetis, articulatione tibio-tarsali obsoleta, lineari, praetarso unguiformi setis duabus brevibus aucto.

Abdomen segmentis decim quorum primo et secundo dorsualiter sat confusis, ceteris bene distinctis compositum, parte postica angustata, segmento penultimo angustiore utrimque setis 3, longioribus instructo ultimo angustissimo brevissimum, aperturam analem superam terminalem gerente et utrimque seta sat longa et seta longiore aucto.

Thoracis et abdominis dorsum usque ad segmenti penultimi partem proximalem pilis minimis obsessum, ventre setis plus minusve numerosis plus minusve longis instructo.

Stigmata utrimque duo, magna, parum longe a coxa secundi et tertii paris in parte antica mesonoti et metanoti sese aperientia. Sternum secundum et tertium glandula pluricellulari mediana sat magna instructa.

Vivipara.

Mycetoma magnum ventrale, super urosterna 2^{um} ad 4^{um} situm.

Mas : ignotus.

Typus : *X. annandalei*, sp. n.

Observatio. Genus hoc inter Coccidarum genera valde diversum est, ad genus *Orthezinella* Silv. (quod perproximum ad *Ortheziola* Sulc. est) pedum tibiotarsi fabrica simile, sed characteribus ceteris perdiversum est. Quum mas notus sit, positio huius generis inter Coccidarum subfamilias melius consideranda est.

Xenococcus annandalei, sp. n.

♀ Corpus melleum.

Caput supra area postica mediana triangulari, ut thoracis dorsi superficies, pilis minimis obsessa, fronte setis brevissimis, setis brevibus

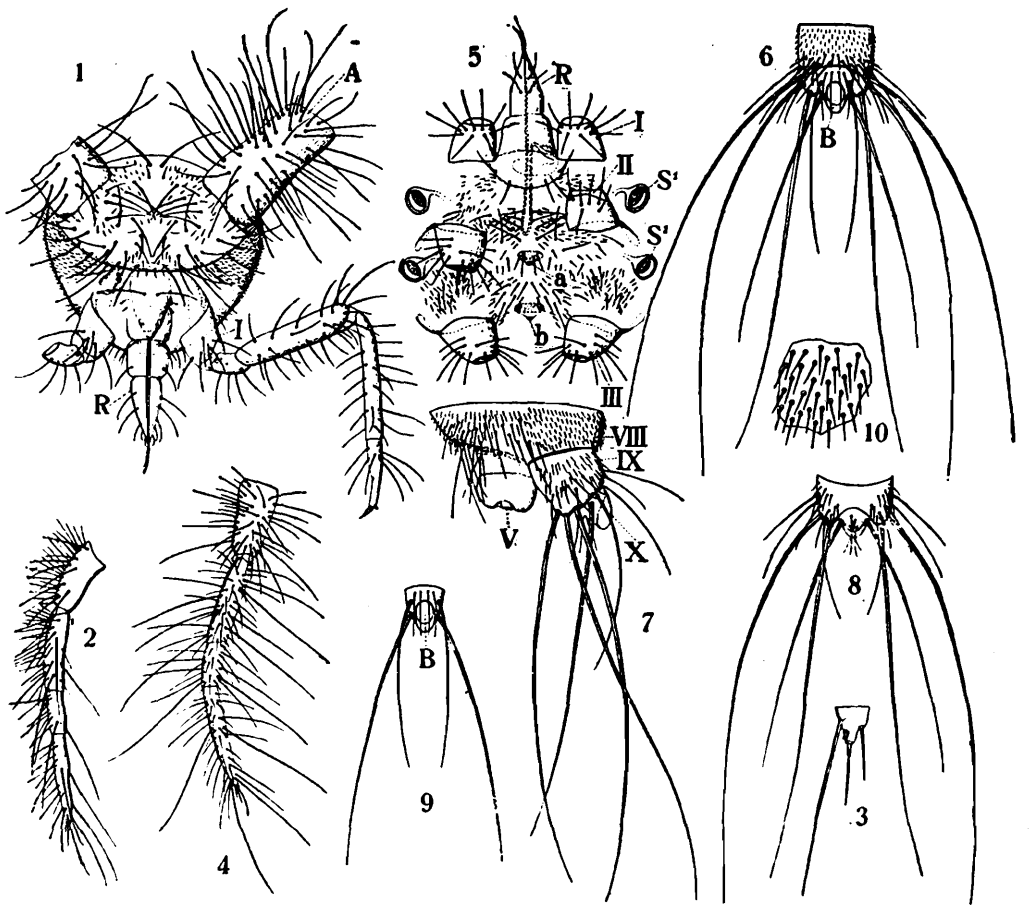

FIG. II.

Xenococcus annandalei : 1. caput et prosternum antice inspecta ; 2. antenna laeva integra supra inspecta ; 3. ejusdem apex ; 4. antenna laeva exempli alii a superficie externa inspecta ; 5. thoracis sterna ; 6. abdominis segmenta penultimum et ultimum prona ; 7. abdominis pars postica a segmento antepenultimo lateraliter inspecta ; 8. abdominis segmenta penultimum et ultimum supina ; 9. abdominis segmentum ultimum pronum.

A=antennae pars proximalis ; B=apertura analis ; R=rostrum ; S^1 et S^2=stigmata ; V=vulva cum vagina aliquantum extroflexa ; *a* et *b* foveae furcosternales ; I-III pedum par primum, secundum et tertium ; VIII-X segmenta abdominalia octavum, nonum et decimum.

et setis sat longis (usque ad mm. 0·130) instructa, clypeo setis duabus medianis brevibus instructo.

Antennae quam corpus parum breviores articulo quarto quam ceteri singuli longiore vel in exemplo nonnullo articulo secundo subaequali et quam tertius, magis quam duplo longiore, articulo secundo quam tertius duplo longiore et quam primus parum minus quam duplo longiore, aticulis omnibus setis brevibus, setis longis et setis robustis longioribus (usque ad mm. 0·50) per faciem superam et inferam externam (internam antennis retrorsum directis inspectis) instructis.

Rostrum articuli primi parte basali infera seta brevi et setis duabus brevissimis instructa et parte distali setis duabus brevibus, articulo secundo utrimque setis duabus sat longis proximalibus et setis tribus distalibus brevibus instructo nec non subtus setis 3 + 3 aucto. Setae mandibulares et maxillares longae, extensae usque ad mm. 0·70.

Thorax dorso et lateribus usque ad stigmata pilis minimis obsessus, sternitis (Fig. II, 5) setis brevioribus et brevibus sat numerosis.

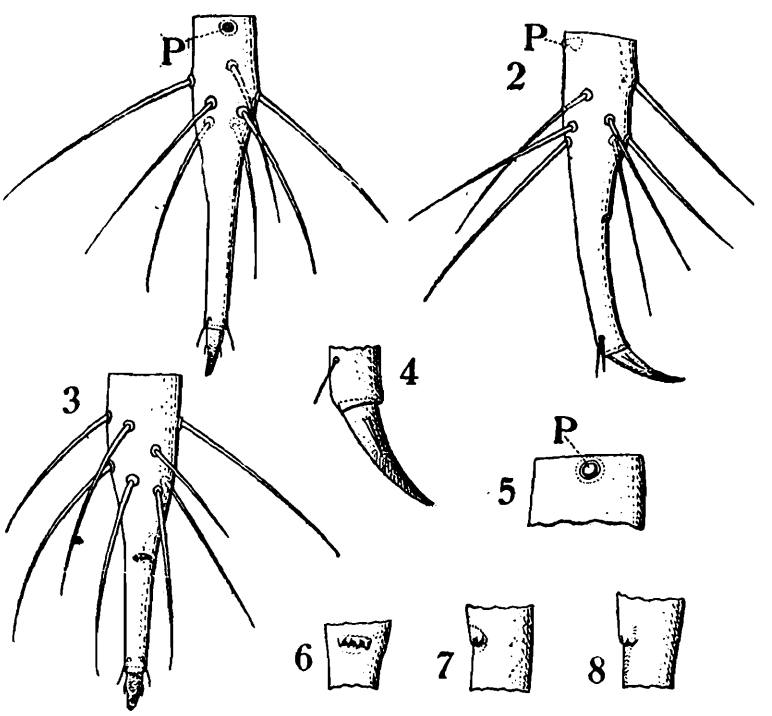

FIG. III.

Xenococcus annandalei : 1—3. pedis tertii tarsus et praetarsus supra, lateraliter et subtus inspecta ; 4. ejusdem tarsi apex et praetarsus ; 5. tarsi pars proximalis supra inspecta ; 6—8. tarsi pars submediana subtus et lateraliter inspecta ; P = tarsi sensillum placoideum.

Pedes hirtelli, setis sat numerosis sat longis instructi, coxa parum ad basim latiore quam longiore, trochantere brevi, femore tibiam longitudine subaequante tibia quam tarsus fere duplo longiore, tarso (Fig. III, 1—5) basi dorsuali sensilli placoideo circulari parvo instructo, dimidia parte distali cylindracea, subtus ad basim partis cylindraceae transverse sinu parvo affecta margine postico vix 4-lobulato ; praetarso (Fig. III, 4) ungue sat longo, utrimque seta brevi proximali aucto, constituto.

Abdomen dorso, ut dixi, usque ad segmenti noni parte proximali pilis minimis obsesso, segmentis 3—8 lateribus et segmentis 1—8 ventre setis numerosis brevibus et magis numerosis longis (usque ad mm. 0·200) vestitis. Segmentum nonum parte distali dorsuali setis brevibus c. 10 et setis sat longis (usque ad mm. 0·150) instructa, lateraliter utrimque

setis duabus posticis longioribus (usque ad mm. 0·90) subtus utrimque seta apicali longiore, seta praeapicali longa et setis aliis sat brevibus aucta; segmentum decimum multo angustatum, aperturam analem superam posticam nudam gerens et supra setis brevioribus quatuor praeanalibus, lateraliter seta supera longa (ad mm. 0·65) et seta infera longiore (ad mm. 0·90) instructum, subtum setis brevioribus 3—4.

Segmenti secundi et tertii glandulae ventralis rima rotunda (diam. 30—40μ).

Long. corp. mm. 1·70, lat. abdominis 0·90 ; long. antennarum 1·42 ; pedum paris tertii 1·10.

Patria. Barkuda I., Chilka Lake, Madras distr. (Dr. N. Annandale legit.)

Habitat. Sub radicibus plantae "*Ficus obtusa*" cum formica "*Acropyga acutiventris* Rog."

Notes. The specimens of *Xenococcus* received by me were preserved only in alcohol as museum specimens and not for histological research, but in view of the interest of this curious myrmecophilous insect, I have cut sections of some specimens and can make the following statements about the internal structure.

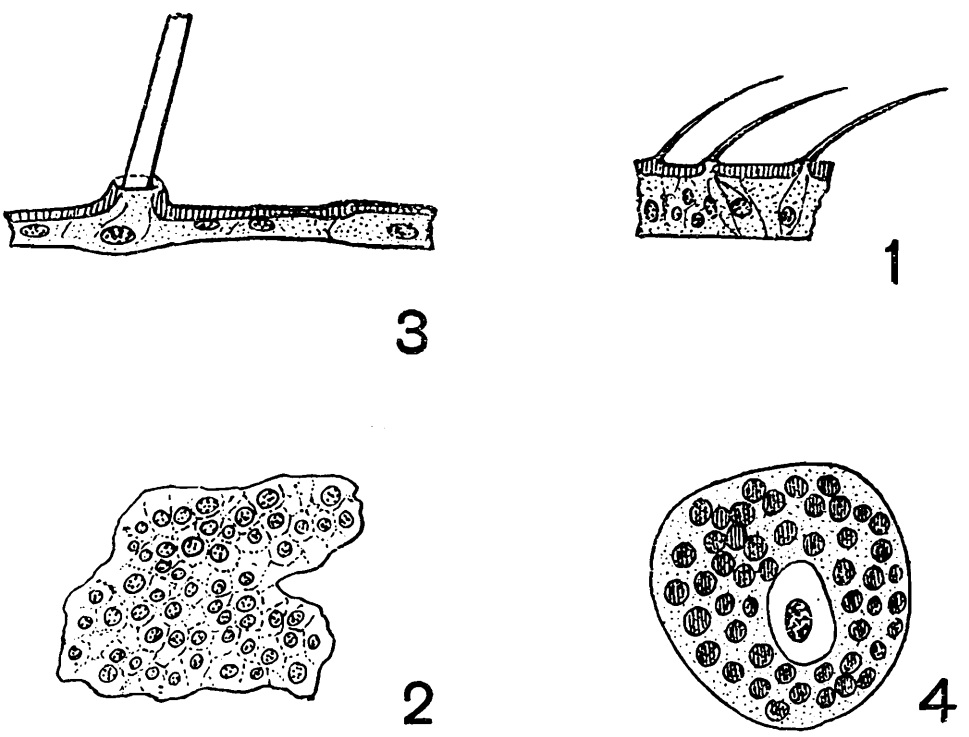

FIG. IV.

Xenococcus annandalei : 1. Section of dorsal thoracic hypoderm and cuticule ; 2. part of the same hypoderm seen flat ; 3. section of ventral abdominal hypoderm and cuticule ; 4. a cell of the mycetoma (all the figures have been delineated with 8 comp. ocular and 3 mm. apohrom. object).

The hypoderm under the cuticule of the dorsum (Fig. iv, 1), covered with short setae, is formed of cells 11μ high and 2-3μ wide, furnished with very small nuclei and with the protoplasma having the appearance of being glandular ; but it is necessary to study well preserved material to confirm this statement.

The hypoderm of the uresterna (Fig. iv, 3) is about half as high as the described hypoderm.

The two glandulae of the 2nd and 3rd urosternum have a circular platform of about 20μ in diameter bordered by a ring (Fig. v, 1-2). Under the platform there are the apex of numerous pyriform cells, which are distributed all around for an area of about 84μ (Fig. v, 1). Each cell (Fig. V, 3) is elongated pyriform, has a distal nucleus near the basis and the protoplasma proximally much vacuolated. These glandulae ventrales certainly secrete some kind of liquid, which may be attractive to the ants, and I note that in no other Coccid hitherto known are there similar glandulae.

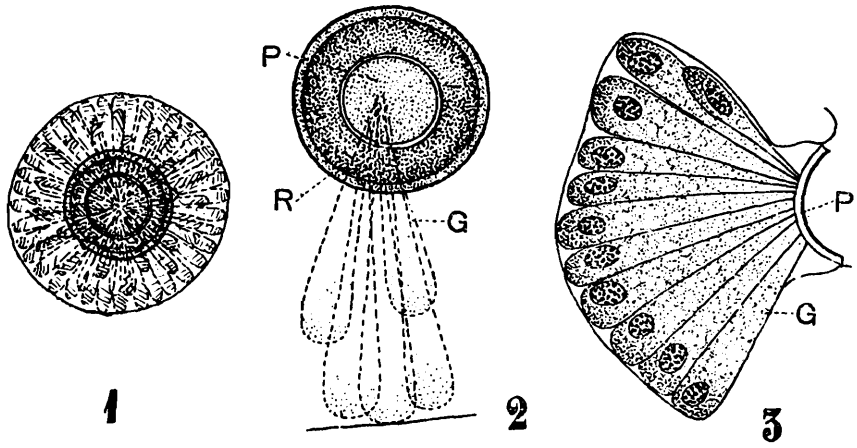

FIG. V.

Xenococcus annandalei: 1. A glandula ventralis seen from external surface; 2. platform and ring seen from external face and outline of some glandular cell; 3. sagittal section through the glandula.

The nervous, alimentary, respiratory and reproductive systems are as in Lecaniinae and Pseudococcinae, but the mycetoma is similar to the "yellow body" of *Pseudococcus*. The mycetoma of *Xenococcus* is ovoid in shape and depressed; it is about 400μ large and 20 wide. It is composed of subspherical cells (Fig. v, 4) with a central nucleus and protoplasm replete with small spherical bodies, which are also mycetocytes with symbiotic fungi in varying number and size.

Biology. We are indebted to Dr. Annandale for the following interesting observations:

"*Xenococcus* is invariably found in the nests of the little yellow ant *Acropyga acutiventris* on the rootlets of various trees of the genus *Ficus*. In cold and dry weather both ants and coccids retire deep into the ground, but so long as the soil is damp [1] and warm they remain under stones just below the surface. The workers of the ants are entirely sunterranean in habit and the males and females apparently stay for some time in the nest after hatching from their coccoons before leaving it to form new colonies. If the nest is disturbed the females as well as the workers carry off the coccids. When they leave the nest each female carries in her jaws a female of the coccid as a kind of dowery. This accounts for the universal distribution of the coccid in the nests of the ant, in which a very peculiar, blind, small, colourless Isopod is also usually to be found.[2]

[1] I have recently discovered that the ants, and a few of the Coccids, can be attracted to the surface even in hot dry weather by keeping the earth moist under a stone among the roots of a fig-tree. *N.A.*

[2] This Isopod is now being described by Dr. B. Chopra of the Zoological Survey of India. *N. A.*