

**THE ZOOCECIDIA OF THE NETHERLANDS'
EAST INDIES.**

SUPPLEMENT I

by

Mrs. J. DOCTERS VAN LEEUWEN-REIJNVAAN

and

W. M. DOCTERS VAN LEEUWEN

I. INTRODUCTION.

From our earliest arrival in the Netherlands' East Indies in January 1908 until our departure in August 1932 the galls have been the object of our attention. A very extensive herbarium of galls has been collected in the course of those years; it is kept at the botanical laboratory of Amsterdam and is at the disposal of every investigator interested in the subject. In 1926 we published the results of our examination and described all the galls known at that time. But also since 1926 a lot of gall-material came into our possession.

Since 1926 many galls from Sumatra have been described by J. C. VAN DER MEER MOHR; duplicates of some of these galls occur in our collection. But we collected most of the new acquisitions ourselves in various parts of the Malay Archipelago. Many galls were brought together on the Dutch-American expedition to the central mountain district of New-Guinea in 1926, but only part of the plant-material has been classified, so that we could not yet examine the galls. The same holds good for a collection of galls brought back from the island of Soemba by dr. K. W. DAMMERMAN and his co-operators. A great part occurred on sterile material and could therefore not be described. For many galls we have to thank the Experimental-station for Forestry at Buitenzorg and the foresters collecting material for this institute. Other investigators too provided us with galls. To all of them we offer our most cordial thanks for their co-operation.

We want to mention the zoological co-operators, who described the insects and mites grown from these galls. Their publications are appended to this supplement in the list of literature. Two of these zoologists A. NALEPA and H. H. KARNY have died. It will be hard to find a successor for NALEPA, who in the course of a long and zealous life has raised the classification of the difficult group of the *Phytoptidae* to a higher level. KARNY's work on the *Thysanoptera* was continued by H. PRIESNER, who added a description of the larvae. Several species of flies were grown from galls by L. FULMEK, and to E. P. FELT and CH. FERRIERE respectively we owe the descriptions of gall-causing *Cecidomyidae* and *Chalcididae*. D. HILLERIS LAMBERS described a few *Aphidae*, species of *Astegopteryx*, which cause galls on plants of the genus *Styrax*. RYOICHI TAKAHASHI also described two new species of *Astegopteryx*.

This supplement will not only contain descriptions of new galls, but also additions and corrections of the galls occurring in our book. These additions will be inserted between the new galls. It seems simpler than a separate mention of the corrections. Therefore the galls will be found numbered in two ways. The numbers of the new galls link up with those in our book, to begin with number 1537. The lower numbers are those of the corrections and refer to the descriptions in the book.

All sheets of our herbarium of galls are provided with a number, the first being no. 20 000; all identical material bears the same number. It is mentioned at the end of each description (Gall no. . . .). When the material described does not occur in our herbarium the numbers are absent. Many descriptions were taken from the work by VAN DER MEER MOHR; those species only of which we possess a duplicate in our herbarium have a gall-number. A small number of galls collected by W. J. LÜTJEHARMS on an expedition to the island of Enggano has been described in the periodical „Blumea”. The herbarium of Leiden lent us this material for description. This material does not bear gall-numbers either.

We have not stated the names of the collectors in case we found the galls ourselves, but we have stated them along with the habitat in other cases. The figures represent the drawings of the native draughtman SASTRASAPOTRA at three quarters of their original size.

Below follow the descriptions of 394 new galls; that means that added to the 1536 galls described in our book, the number known as occurring in the large archipelago of the Netherlands' East Indies is 1930. The number of mite-galls increased from 378 to 462, that of the galls caused by *Diptera* (mainly *Cecidomyidae*) from 612 to 752. The hymenopteroecidia display the considerable rise from 28 to 40.

The number of galls formed by *Coleoptera* remained small, it rose from 24 to 27. The lepidopteroecidia are fairly numerous; originally 66 were known, now their number is 91. The galls caused by *Thysanoptera* rose from 147 to 177, those by *Psyllidae* from 145 to 187. The galls caused by *Coccidae* increased from 47 to 68, those by *Aphidae* from 66 to 82. Two new galls were described as caused by *Aleurodidae*, one by a cicade, and one by a *Hemipteron*. The galls caused by unknown insects increased from 10 to 18. Galls formed by *Heterodera* rose from 11 to 20.

It suffices to refer to our book, where we discussed the ratio of the various gall-causers in connection with the figures found in other continents; the new figures mentioned above do not lead us to any alteration in our opinion. The ratio of the gall-causers of the various groups mutually remained equal in substance.

The appearance of this article was rendered possible by the generous assistance of the Trustees of the "Zoologisch Insulinde Fonds". For their help we render them our sincere thanks.

II. DESCRIPTIONS OF THE GALLS.

FAMILY OF THE POLYPODIACEAE.

Cyclophorus lanceolatus ALSTON.

1537. A leaf-gall caused by a gall-midge.

This gall is developed on the underside of the leaf, on the upperside there is only a tiny, circular discoloration. On the underside it consists of an oval swelling, about 2 mm long and 1½ mm broad, and about 1 mm thick. The surface is dark-green and glossy. The tiny larva-chamber within is tenanted by the larva of a gall-midge. There are from 1 to 10 galls on one leaf, often more or less coalescent, but the larva-chambers remain separated. The gall-gnats leave the galls through an excentric opening on the underside. Gall no. 21773.

Java, Buitenzorg, botanic gardens, alt. 250 m, F. W. WENT coll., X, 1929.

Diplazium fraxinifolium PRESL.

7. A leaf-gall caused by a gall-midge.

This gall was described from materials collected in Sumatra, but afterwards it was found also in Java. The Javanese galls are identical with the Sumatra specimens, the old ones being yellow-green. In our book the fern was named: *Diplazium cordifolium* BL. Gall no. 20642.

Java, Mt. Masigit near Nangèla, Buitenzorg, alt. 700 m, II, 1929; Mt. Wiroe near Nangèla, alt. 600 m, R. C. BAKHUIZEN VAN DEN BRINK coll., XII, 1930.

Humata repens DIELS.

14. A leaf-gall caused by a gall-midge.

1927. FELT, p. 323.

The gall-causer has been described by FELT under the name of: *Gynodiplosis humata*. In our book the fern has been called: *Humata alpina* MOORE. Gall no. 20545.

1538. A rhizome-gall caused by a gall-midge.

Almost spherical excrescences on the stems of this epiphytcal fern with long, creeping, and hanging rhizomes. The galls are 3 mm across, covered by a dense tomentum of red hair-like scales. The galls are attached to the surface of the rhizomes by a tiny, almost imperceptible pedicel. The tiny larva-chamber within is surrounded by a thick wall. The galls are often gregarious and attached to a short side-rhizome. They are easily discernable by their dark-red, woolly surface. Gall no. 21744.

Java, Mt. Gedé, Tjibodas, alt. 1400 m, IV, 1932.

Plagiogyria pycnophylla METT.

1539. A leaf-gall caused by a thysanopteron.

The pinnae of the leaf are badly developed, they remain shorter than normal and are contorted and wrinkled. The inhabitants had left the galls, but it is most likely that the causer is a thrips. Gall no. 21775.

Java, Mt. Tangkoeban Prahoe near Bandoeng, alt. 1900 m, VII, 1927.

FAMILY OF THE GLEICHENIACEAE.

Gleichenia volubilis JUNGH.

1540. A leaf-gall caused by a gall-mite.

The same gall as the one described from *Gleichenia linearis* CLARKE, see our book, p. 58, no. 33, fig. 15. The rollings of the pinnae are also yellow and the inside is covered with brown hairlets. Gall no. 21776.

Java, Mt. Pangrango, above Kandang Badak, alt. 2800 m, X, 1927.

FAMILY OF THE SELAGINELLACEAE.

Selaginella ascendens v. A. v. R.

1541. A stem-gall caused by a gall-midge.

At the end of the twig develop one to three oval galls, about 6 to 8 mm long. Inside, there is a longitudinal larva-chamber. The surface is densely covered with lanceolate leaves, ending in a hair-like outgrowth. These leaves point upwards. Sometimes the galls are attached

to a short pedicel and it gives the impression as if the galls are developed from sporophylls. Gall no. 21777.

Java, Mt. Wiroe, Nangèla near Buitenzorg, alt. 600 m, R. C. BAKHUIZEN VAN DEN BRINK, coll., XII, 1932.

FAMILY OF THE TAXACEAE.

Podocarpus neriifolia DON.

36. A flower-gall caused by a gall-mite.

1939b. W. M. DOCTERS VAN LEEUWEN, p. 233.

This gall has been described in our book, but afterwards we received ample materials of the young stadia which have been described and pictured in the *Natuurwetenschappelijk Tijdschrift, België*. Gall no. 20997.

New Habitat: Java, Mt. Papandajan, alt. 1800 m, C. G. G. J. VAN STEENIS coll., III, 1930.

FAMILY OF THE GNETACEAE.

Gnetum leptostachyum BL.

1542. A leaf-gall caused by a gall-midge.

Almost the same gall as the one described on the leaves of *Gnetum neglectum* BL., see no. 42. The galls on *G. leptostachyum* are a little bigger, more rounded, 3 mm long and 2 mm broad and high. They are situated in a row along the underside of the mid-rib. Gall no. 21778.

Borneo, North, Oeloe Seboekoe, AMDJAH coll., IX, 1912.

FAMILY OF THE PANDANACEAE.

Freycinetia valida RIDL.

45. An aerial-root-gall caused by a gall-midge.

1927, FELT, p. 386.

FELT described the gall-midge under the name of: *Oligoxenomyia radialis*. Gall no. 20188.

1543. A leaf-gall caused by a gall-midge.

Oval galls, about 8 mm long and 5 mm broad, protruding on both sides of the leaf-blade. Inside there is an irregular larva-chamber surrounded by a thick wall. After hatching of the gall-inhabitants the galls fall out and leave an oval opening, surrounded by a narrow, dead part. The same gall was described from Sumatra, Bandarbaroe on *Freycinetia* species, see our book, p. 64, no. 48. Gall no. 21779.

Java, Mt. Tjipoetih, Poerasèda near Buitenzorg, alt. 500 m, II, 1929.

FAMILY OF THE GRAMINAE.

Eragrostis unioloides NEES et STEUD.

1544. A flower-gall caused by a gall-midge: *Contarinia eragrostidis* FELT.

1928. BACKER, p. 241.

1927a, FELT, p. 381.

This gall has not been found by us, but it was shortly described by BACKER as an infection of the ovary accompanied by an enlarging of the glumes.

Java, Buitenzorg, alt. 250 m.

Ichnanthus pallens MERR.

1545. A leaf-sheath-gall caused by a gall-midge.

Onion-like galls, about 9 mm long and 4 mm broad, situated in the axils of the leaves, and ending in a snout-like appendix of varied length. At first the surface is green, later brown. This gall is almost similar with the gall described on *Panicum trigonum* RETZ, cf. no. 64. Gall. no. 21781.

Java, Mt. Gedé, Tjibodas, alt. 1400 m, III, 1927.

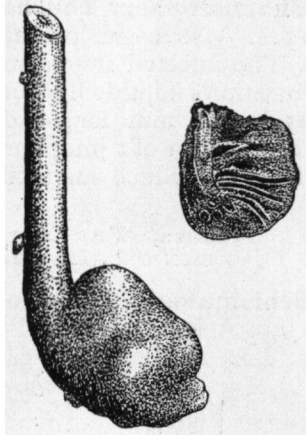


Fig. 1. *Areca* species, no. 1546.

FAMILY OF THE PALMAE.

***Areca* species.**

1546. An aerial-root-gall caused by a gall-midge.

Irregular, club-shaped excrescences at the end of the roots, 20 to 30 mm long and 15 to 25 mm across, see figure 1. The surface is glabrous and coloured wine-red. Inside, there are a great many narrow larva-chambers situated perpendicularly to the axis of the root. Gall no. 21780.

Sumatra, West Coast, near Fort de Kock, alt. 1400 m, E. JACOBSON coll., VI, 1925.

FAMILY OF THE ARACEAE.

Rhaphidophora montana SCHOTT.

1547. A stem- and petiole-gall caused by a hymenopteron.

1929. FERRIÈRE, p. 150, fig. 6.

These galls develop gregariously and lopsidedly on the stems and the

petioles. They form irregular excrescences, covered with a gray-brown corky tissue, reaching a length of up to 150 mm and a width of 15 mm. When the infection is a strong one the petiole is often curved. See figure 2. CH. FERRIÈRE described the gall-causer as: *Perilampella raphidophorae*. Gall no. 21710.

Java, Tjibodas near Tjampea, alt. 250 m, XI, 1925.

Rhaphidophora conocephala v. A. v. R.

1548. A stem-gall probably caused by a gall-midge.

The infected stem distends into a fusiform swelling, sometimes lopsidedly developed. The galls are from 15 to 30 mm long and from 10 to 15 mm across, they consist of a juicy parenchymatous tissue in which the longitudinal larva-chambers are imbedded. Gall no. 21757.

Sumatra, West Coast, Boekit Batoe, alt. 1000 m, E. JACOBSON coll., II, 1924.

Schismatoglottis latifolia MIQ.

1549. A leaf-gall caused by a gall-midge.

This is the same gall as the one described on

Schismatoglottis calyptrata Z. et M., see our book, p. 80, no. 88,

fig. 51. It is an almost spherical excrescence of the leaf-blade, protruding on both sides. The gall is 3 to 5 mm across and the surface is covered with a gray corky layer. Gall no. 21707.

Sumatra, West Coast, Fort de Kock, alt. 900 m, E. JACOBSON coll., VI, 1925.

Scindapsus roseus v. A. v. R.

1550. A petiole-gall caused by a hymenopteron (Chalcidide).

The single galls are semi-spherical and attached to the petiole by a broad base. They are 3 to 5 mm across and covered with a grey corky layer. The galls are mostly gregariously situated, arranged in rows or in clusters, see figure 3. Inside each gall there is a spacious larva-chamber. Gall no. 21658.

Sumatra, West Coast, Gadoet, alt. 900 m, E. JACOBSON coll., IX, 1924.



Fig. 2.
Rhaphidophora montana
SCHOTT, no. 1547.

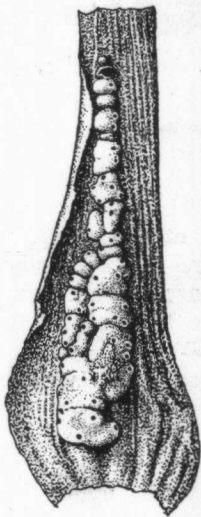


Fig. 3. *Scindapsus roseus* v. A. v. R.
no. 1550.

Scindapsus splendidus v. A. v. R. must be *S. splendens* v. A. v. R. see no. 95.

FAMILY OF THE FLAGELLARIACEAE.

Flagellaria indica L.

1551. A bud-gall probably caused by a gall-midge.

The ends of the twigs are swollen, the internodia remain short, and the leaves do not develop normally. The swollen stem-tip is surrounded by a bunch of extended leaf-sheaths. The galls at my disposal were old and the inhabitants had left them, but the larvae probably live between the bases of the leaf-sheaths. Gall no. 21781.

Sumatra, East Coast, Perboengan, J. C. VAN DER MEER MOHR coll., VI, 1926.

FAMILY OF THE LILIACEAE.

Smilax modesta DC.

104. A petiole-gall caused by a gall-midge.

1927. FELT, p. 382.

E. P. FELT described the gall-causer as: *Asphoxanomyia smilacis*. Gall no. 20702.

Smilax Zeylanica L.

1552. A leaf-gall caused by a gall-midge.

The whole leaf-blade is changed into an oval gall, situated at the top of the leaf-sheath, see figure 4. The surface of the gall is green and glossy; inside the gall consists of a watery parenchym in which many irregular larva-chambers are imbedded. Gall no. 21635.

Java, Mt. Gedé, Tjibodas, alt. 1400 m, M. J. G. BRUGGEMAN coll., IV, 1925.

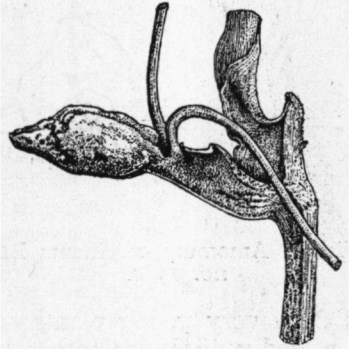


Fig. 4. *Smilax Zeylanica* L., no. 1552.

FAMILY OF THE DIOSCOREACEAE.

Dioscorea oppositifolia L.

1553. A petiole-gall caused by a gall-midge.

The end of the petiole is swollen into an oval more or less cylindrical gall, about 8 mm long and 5 mm across, see figure 5. The

outside is glossy, and a cross section more or less angular. Inside, there are 5 or more longitudinal, narrow larva-chambers. Gall no. 21625.

Java, Sitoegoenoeng, Tjisaät near Soekaboemie, alt. 1000 m, H. WINKLER coll., X, 1924.

FAMILY OF THE ZINGIBERACEAE.

Amomum coccineum BL.

1554. A root-gall caused by a gall-midge.

The thin roots of these plants are about 1 mm across, and they carry ball- or pear-shaped galls. Sometimes these galls are situated on the sides of the roots and attached only by a narrow part, but mostly they transform the tip of the roots. They are 6 to 8 mm long and about 5 mm across, see figure 6. The galls are

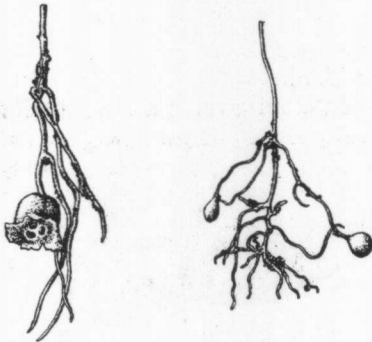


Fig. 6. *Amomum coccineum* BL., no. 1554.

Only very young plants are infected. The base of the stem is lopsidedly distended into a brilliant-red, spindle-shaped gall. The longitudinal larva-chamber is tenanted by the larva of a gall-gnat. The galls are about 8 mm long and 5 mm across. Gall. no. 21784.

Java, Mt. Gedé, Tjibodas, alt. 1800 m, III, 1928.

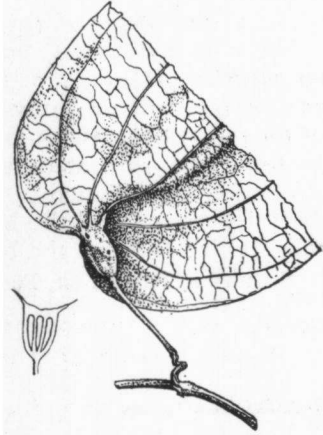


Fig. 5. *Dioscorea oppositifolia* L., no. 1553.

parenchymatous and inside, there are one to three central chambers. The tissues surrounding the gall-chambers contain a large quantity of amyllum stored. When the gall-midge is ready to hatch the outer part of the top of the gall splits into 5 pointed lobes which open and curl backwards like the petals of a flower. Gall no. 21783.

Java, Mt. Gedé, Tjibodas, alt. 1400 m, IV, 1929.

Hedychium Roxburghii BL.

1555. A stem-gall caused by a gall-midge.

FAMILY OF THE ORCHIDACEAE.

Ceratostylis simplex BL.

1556. A stem-gall caused by a gall-midge.

The same gall as the one described on *C. capitata* Z. et M., see our book, p. 91, no. 118. Lopsidedly developed swellings near the base of the stem or higher up. The galls are mostly gregarious, forming irregular, knobby swellings. Gall no. 21785.

Java, Mt. Gedé, Kandang Badak, alt. 2550 m, VI, 1931.

Dendrobium Endertii J. J. S.

1557. A stem-gall probably caused by a dipteran.

An internode of the stem is swollen into a fusiform gall. Inside, there is one longitudinal larva-chamber. The material at my disposal was old and the inhabitants had left the galls. Gall no. 21786.

Borneo, West, Koetai, near Kamoel, F. H. ENDERT coll., X, 1926.

Dendrobium poneroides SCHLTR.

1558. A stem-gall caused by a gall-midge.

The thin stems show one or two swellings, fusiform and about 3 mm long, and $1\frac{1}{2}$ to 2 mm across. Each contains a longitudinal larva-chamber. Gall no. 21787.

New Guinea, North, Rouffaer-river, alt. 150 m, IX, 1926.

Liparis crenulata LINDL.

1559. An ovary-gall caused by a gall-midge.

The same gall as the one described on *Liparis latifolia* LINDL., see our book, p. 93, no. 126. The flower-buds remain closed and the ovaries are swollen. The gall-midge larvae live between the ovulae. Gall no. 21788.

Java, Mt. Gedé, Tjibodas, alt. 1600 m, XII, 1925.

FAMILY OF THE CASUARINACEAE.

Casuarina equisetifolia FORST.

135. A stem-gall caused by a hymenopteron (Chalcidide).

1926a. VAN DER MEER MOHR, p. 2.

This gall was described from the islands of the Salajar-group, but has now also been found in Sumatra. Gall no. 20709.

Sumatra, West Coast, Strand near Perbaengan, J. C. VAN DER MEER MOHR coll.

1560. A stem-tip-gall caused by a gall-mite.

The scales near the stem-tips are slightly enlarged, bunched together, and the tips of the scales are curved outwards. They are

thickly covered with unicellular, wavy hairlets. Gall no. 21789.

Sumatra, Indrapoera, Strand near Paier Ganteng, E. JACOBSON coll., X. 1915.

Casuarina Junghuhniana MIQ.

138. A stem-gall caused by a hymenopteron.

1929. FERRIÈRE, p. 159, fig. 10.

CH. FERRIÈRE described the gall-causer as: *Tetrastichus casuarinae*. Gall no. 20111.

FAMILY OF THE PIPERACEAE.

Heckeria umbellata KTH. var. *subpeltata* KTH.

1561. A leaf-gall caused by an aphid.

1936, W. M. DOCTERS VAN LEEUWEN, p. 292.

The plant-lice affix themselves to the underside of the young leaves, near their base. Consequently, the leaves develop poorly, roll up more or less, and have irregular, lumpy excrescences. The infected leaves become darker-green. Gall no. 21725.

Island of Krakatau, VII, 1924.

Piper caninum BL.

145. A leaf-gall caused by: *Gynaiokothrips chavicae* ZIMM.

This gall was described from Java, it has also been found in the Salajar-islands. Gall no. 20606.

Salajar-island, Bitombang, alt. 300 m, V, 1913.

Piper malamiri BL.

1562. A leaf-gall caused by: *Gynaiokothrips* species.

1936. W. M. DOCTERS VAN LEEUWEN, p. 298.

Both halves of the leaf are turned upwards and loosely rolled inwards. The surface is granular and of a yellowish colour. Gall no. 21791.

Island of Krakatau, alt. 300 m, III, 1931.

Piper mollissimum BL.

1563. A leaf-gall caused by a thysanopteron.

This gall resembles the gall on the leaves of *Piper sarmentosum* ROXB., see our book p. 102, no. 157. The leaves are entirely rolled upwards, twisted and contorted, with a rough, hairy surface. The colour of the gall is light-green. Gall no. 21790.

Java, Buitenzorg, Pasir Rarangan, alt. 450 m, R. C. BAKHUIZEN VAN DEN BRINK coll., XII, 1930.

Piper retrofractum VAHL.

156. A leaf-gall caused by: *Gynaikothrips chavicae* ZIMM.

1934. W. M. DOCTERS VAN LEEUWEN, p. 159.

This gall was found in Java, Sebesi-island, and Salajar, it has not yet been collected in Krakatau, but on another small island in the Soenda-strait. Gall no. 20740.

Island Toppers Hoedje, on rocks near the sea, II, 1928.

FAMILY OF THE SALICACEAE.

Salix tetrasperma ROXB.

1564. A leaf-gall caused by a gall-mite.

1926. VAN DER MEER MOHR, p. 4.

1926—'27. VAN DER MEER MOHR, p. 114, fig. 1—3.

This gall is a rolling upwards of the leaf-margin. Simple galls are 1 to 7 mm long, but mostly a larger stretch of the margin is rolled. These rollings are hard and knobby, and at first of a light- or whitish-green, later of a pink colour. The normal leaf-blade is glossy, but the infected parts are thickly covered with unicellular, single, wavy, white hairlets. Gall no. 21792.

Sumatra, East Coast, Soengei Merak, J. JOCHEMS coll., I, 1926; Tapi-noelie, near Persea, alt. 900 m, J. C. VAN DER MEER MOHR coll., VIII, 1928.

1565. A gall on the inflorescences caused by a gall-midge.

1926. VAN DER MEER MOHR, p. 4.

1926—'27. VAN DER MEER MOHR, p. 115, fig. 4.

The infected parts of the male inflorescences are slightly swollen, curved, and spirally twisted. The flowers situated on the galled parts of the axis are slightly altered, the perianth-scales are somewhat thickened and the filaments of the anthers are swollen at their bases, and remain shorter. The hair-covering on the perianth does not alter and the filaments remain glabrous. Gall no. 21793.

Sumatra, East Coast, Soenga Merah, J. JOCHEMS coll., I, 1926.

Siamaloer-island, ACHMED coll., VII, 1919.

FAMILY OF THE JUGLANDACEAE.

Engelhardtia spicata BL.

1566. A leaf-gall caused by a gall-midge.

These galls are visible on both sides of the leaf. They are light-green and juicy, and sparsely covered with stiff, white hairlets. On the upperside they are coniform, more or less rounded, on the underside higher and coniform. The average diameter is 3 mm

and the height is $2\frac{1}{2}$ mm. The spacious larva-chamber is tenanted by one red itonid-larva. See figure 7. Gall no. 21700.



Fig. 7. *Engelhardtia spicata* BL., no. 1566.

Java, Mt. Keloed, Paree, alt. 500 m, V, 1912; Mt. Tangkoeban Prahoe near Bandoeng, alt. 1700 m, VI, 1915; Mt. Tjikorai, alt. 2000 m, V, 1925; Paseh near Bandoeng, alt. 1000 m, IV, 1930.

FAMILY OF THE FAGACEAE.

Castanea javanica BL.

1567. A stem-gall caused by a lepidopteron.

Spindle-shaped swellings of the thin twigs, about 15 mm long and 6 to 7 mm across. The wood of the twig is thickened and inside, there is a longitudinal, narrow, irregular larva-chamber, with callus-like outgrowths on the inner wall. Sometimes the part of the twig above the gall is badly developed. Gall no. 21769.

Java, Batoetoelis near Tjigentoeng, R. C. BAKHUIZEN VAN DEN BRINK coll., VIII, 1931.

Quercus conocarpa OUD.

1568. A leaf-gall caused by a gall-midge.

The underside of the leaf is irregularly strewn with semi-globular or more or less conical, tiny galls, about 1 mm across. On the upper-side there is only a slight swelling. The surface is densely covered with brown hairlets. The rounded larva-chamber is connected with the air through a narrow canal, which, moreover, is covered with stiff hairlets pointing inwards. Gall no. 21770.

Java, Preanger Regencies, Tjigenteng, S. H. KOORDERS coll., VIII, 1900.

Quercus induta BL.

1569. A leaf-gall caused by a gall-midge.

This gall is developed on the underside of the leaf, on the upper-side there is a slight thickening of the place where the gall is attached. They are spherical, yellow-brown, and glossy, about 6 to 8 mm across. Inside, there is a rounded larva-chamber surrounded by a parenchymatous tissue, the walls of the cells are thickened. Gall no. 21771.

Java, Mt. Paroengpoeng near Buitenzorg, alt. 750 m, R. C. BAKHUIZEN VAN DEN BRINK coll., III, 1930.

1570. A stem-gall caused by a coccid.

On the end of a twig there exists a kind of witches' broom, consisting of a great many short and swollen twigs. These are yellowish-green and covered with short scales; leaves are absent. Gall no. 11772.

Java, Mt. Paroengpoeng, alt. 750 m, R. C. BAKHUIZEN VAN DEN BRINK coll., III, 1930.

Quercus lineata Bl.

1571. A bud-gall caused by a coccid.

The terminal buds of the thin twigs are changed into a red-brown, plushy ball, 7 tot 12 mm across. Sometimes full-grown leaves are attached to the galls. A white coccid lives inside; the wall is covered with a thick mass of red-brown hairs. Gall no. 21764.

Java, Mt. Tangkoeban Prahoe near Bandoeng, alt. 1600 m, VII, 1927; Mt. Papandajan, alt 1400 m, J. LABOEHM coll., III, 1932.

Sumatra, Tapianoele, Simakoek, alt. 1000 m, Forest-experimental Station leg., VII, 1928.

1572. A leaf-gall caused by a psyllid.

1917. HOUARD, p. 84, no. 12, fig. 5 to 7.

1922. HOUARD, p. 155, no. 558, fig. 289 to 291.

Very small, rounded, conical excrescences on the upperside of the leaf, about $\frac{1}{2}$ mm across. On the underside each has a tiny opening. This gall is probably identical with the gall described by C. HOUARD from Java. Gall no. 21767.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, XII, 1925.

Quercus spicata Bl.

1573. A leaf-gall caused by a lepidopteron.

The limb of the leaf between the offsprings of the main-nerve is strongly thickened and the surface glossy and of a yellowish colour. The underside is more or less sunken and the surface rough. Inside, there is an irregular larval-hole. Often one leaf bears many galls, in which case its border is rolled downwards, see figure 8. Gall no. 21761.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, XII, 1925.

Quercus sundaica Bl.

1574. A fruit-gall probably caused by a gall-midge.

The cupule remains closed, only the tip of the badly developed acorn becomes visible. The wall of the cupule is thickened and contains a number of small gall-chambers. The inhabitants had left their galls, so that the gall-causer cannot be given with certainty; possibly it is a gall-midge, but it may also be a wasp. Gall no. 21657.

Java, Dépok, alt. 100 m, S. H. KOORDERS coll., II, 1919.



Fig. 8. *Quercus spicata* Bl., no. 1573.

Quercus species.

1575. A stem-gall caused by a hymenopteron.

The stems are swollen into irregular, spindle-shaped galls. They are 5 to 15 cm long. The wood is considerably thickened and in every gall there are a great many larva-chambers imbedded in the wood. The surface is covered with a rough layer of cork, see figure 9. Gall no. 21762.



Fig. 9. *Quercus* species
no. 1575.

Java, Mt. Kawi, Tjemarakandang, alt. 2700 m, IV, 1929.

1576. A leaf-gall caused by a psyllid.

Part of the leaf-margin is rolled upwards and forms an irregular rolling. The surface is rough and dark-brown, the infected parts are thickened. It contains a narrow larva-chamber. Gall no. 21763.

Java, Mt. Kawi, Tjemarakandang, alt. 2700 m, IV, 1929.

FAMILY OF THE ULMACEAE.***Celtis tetrandra* ROXB.**

1577. A leaf-gall caused by a gall-mite.

1932. VAN DER MEER MOHR, p. I.

The gall may develop along the margin of the leaf, the attacked part becoming involute, as well as on the leaf-blade itself, then causing bladders on the upper-side with corresponding depressions on the opposite side. The affected parts are more or less swollen and wrinkled, slightly chlorotic, and covered on the underside with a pubescence consisting of thick, unicellular, filiform hairlets. Gall no. 21766.

Java, Poedjon near Malang, alt. 1000 m, IV, 1929.

Sumatra, Si Borong-borong, Tapianoeli, J. C. VAN DER MEER MOHR coll., X, 1931.

***Gironniera subaequalis* PLANCH.**

1578. A leaf-gall caused by a gall-mite.

The underside of the leaf is strewn with hundreds of minute, velvety pustules, about 1 mm across, sometimes even less. These pustules are short, cylindrical formations developed from the parenchym. They are covered with peculiar hairlets. These are

flat, curled, and ribbon-shaped and consist of five or more rows of cells. The galls are whitish-green when young, afterwards brown, see figure 10 and 11. Gall no. 21648.

Java, Pasir Saninten near Bolang, Buitenzorg, alt. 600 m, R. C. BAKHUIZEN VAN DEN BRINK coll., VI, 1924.

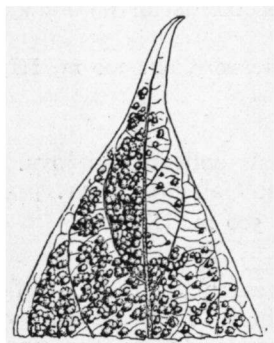


Fig. 10. *Gironniera subaequalis* PLANCH., no. 1578.

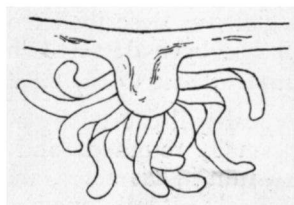


Fig. 11. *Gironniera subaequalis* PLANCH., no. 1578.

FAMILY OF THE MORACEAE.

Antiaris toxicaria LESCH.

182. A leaf-gall caused by a gall-midge.

The galls are not $\frac{3}{4}$ mm but 3 mm across. They were described from Halmaheira and New Guinea; afterwards they were collected in Borneo. Gall no. 20725.

Borneo, S. E. Division, Boelangan, Salimbatoe, alt. 50 m, Experimental station for Forestry leg., IV, 1927.

Artocarpus communis FORST.

1579. A leaf-gall caused by a psyllid.

These galls protrude chiefly on the underside of the leaf. They are situated in rows, parallel to the secondary nerves, see figure 12. They are discoidal or more oval swellings with a flat depression in the centre. This may be caused by the drying of the material. The galls are 5 to 8 mm across and 2 mm high. On the upperside of the leaf there are semi-lenticular excrescences. The wall is rather thin, surrounding a spacious larva-chamber. The psyllids leave their galls though an irregular opening on the underside. Gall no. 21768.

Amboina, near the coast, IV, 1926.

Conocephalus naucleiflorus ENGL.

1580. An aerial-root-gall caused by a cicade.

The aerial roots hang down and are no more than 1 to 2 mm thick. Here develop brown, ball-shaped galls, 10 to 20 mm, sometimes 30 mm across with an irregular surface. They are attached to the root by a very small part only and consist of a watery parenchymatous tissue. Gall no. 21765.

Java, Legok Djenang, Tapos near Buitenzorg, alt. 900 m, III, 1928.

Ficus alba REINW.

199. A leaf-gall caused by a gall-mite.

This gall was described from materials collected in Java. Afterwards it has been detected in Sumatra. Gall no. 20431.

Sumatra, East Coast, Sibolangit, alt. 500 m, IX, 1929.

1581. A leaf-gall caused by a gall-midge.

Very small, rounded, and flat excrescences of the leaf-blade, about $1\frac{1}{2}$ mm in diameter, and $\frac{1}{2}$ mm high. They are chiefly developed on the underside, on the upperside there is only a slight swelling. Gall no. 21640.

Java, Bolang near Buitenzorg, alt. 600 m, V, 1924.

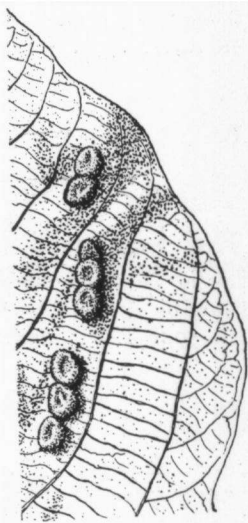


Fig. 12. *Artocarpus communis* FORST., no. 1579.

Ficus annulata BL.

1582. A leaf-gall caused by a gall-midge.

This gall is developed on both sides of the leaf-blade, it is more or less juicy, and of a white colour. On the underside there is an outgrowth, about 1 mm high and $\frac{3}{4}$ mm across; the top of the gall shows a circular, flat depression, separated from the gall-chamber by a thin disc. This disc opens when the gall-inhabitant hatches. On the upperside of the leaf there is a semi-globular swelling, about $\frac{3}{4}$ mm across. Gall no. 21794.

Java, Poerasèda near Leuwiliang, Buitenzorg, alt. 450 m, II, 1929.

Ficus Benjamina L.

211. A leaf-gall caused by a gall-midge.

1940. W. M. DOCTERS VAN LEEUWEN, p. 40.

This gall was described from materials collected in Java, it has now also been collected in Enggano. Gall no. 20438.

Enggano-island, Boea-boea, W. J. LÜTJEHARMS coll., VI, 1936.

1583. A leaf-gall caused by a gall-midge.

A gall visible on both sides of the leaf-blade. Very flat swelling, oval, 2 mm long, and $1\frac{1}{2}$ mm broad. Inside, there is a tiny larva-chamber surrounded by a hard wall. Mostly one leaf bears many galls; sometimes the galls coalesce, see figure 13. Gall no. 21795.

Soemba, East, Mao Marroe, alt. 450 m, IBOET coll., V, 1925.



Fig. 13. *Ficus Benamina* L., no. 1583.

1584. A leaf-gall caused by a gall-midge.

1926c. VAN DER MEER MOHR, p. 2.

This gall is described by VAN DER MEER MOHR, but is also represented in our collections. It is of a very peculiar type, it begins as a narrow mine, but the wall of this canal thickens and hardens, so that long and narrow swellings are developed protruding on the underside of the leaf. The reverse side shows a longitudinal shallow depression. The galls are 12 to 20 mm long and 2 mm broad. Gall no. 21796.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., IV, 1926.

1585. A leaf-gall caused by a hymenopteron.

1929. VAN DER MEER MOHR, p. 2.

This gall is not represented in our collections, it has been described by VAN DER MEER MOHR, in the following words. "Ovoid or lenticular gall, about $1\frac{1}{2}$ mm high and 2 mm across, the surface is pale-yellow and the gall is developed on both sides of the leaf-blade. The galls are often coalescent and thus the limb of the leaf may almost be absent".

Sumatra, East Coast, Medan, IV, 1929.

***Ficus crininervia* MIQ.**

1586. A stem-gall caused by a hymenopteron.

This *Ficus* creeps with slender stems between stones and under moss-cushions; the galls are also covered by the moss. They are ball-shaped excrescences developed on one side of the thin twigs or the twig is surrounded excentrically by the gall which is from 10 to 15 mm across. Inside, there are many rounded larva-chambers, about 2 mm in diameter, and packed close together, separated from each other by a thin, hard wall. Gall no. 21797.

Java, Mt. Perbakti, Salak above Tjitjoeroek, alt. 1500 m, C. G. G. J. VAN STEENIS coll., I, 1928.

Ficus diversifolia BL.

1587. A leaf-gall caused by a gall-midge.

This gall develops on the underside of the leaf. It is a circular or lenticular swelling; in the former case the gall is 3 to 4 mm across, in the latter from 5 to 6 mm long and 4 mm broad, its height is only $1\frac{1}{2}$ to 2 mm. On the upperside there is a corresponding spot of a black colour. It contains a flat larva-chamber with a hard wall. Gall no. 21798.

Java, Mt. Salak, crater, alt. 1500 m, III, 1928.

Ficus fistulosa REINW.

223. A leaf-gall caused by a gall-mite.

1936, W. M. DOCTERS VAN LEEUWEN, p. 290, no. II.

This gall is known as occurring in Java, Krakatau, Sebesi, and Salajar, it is now also found in Sumatra. Gall no. 20193.

Sumatra, East-Coast, Sibolangit, alt. 500 m, X, 1929.

Ficus fulva REINW.

1588. A leaf-gall caused by a gall-mite.

On the upperside of the leaf develop yellow, almost circular, flat bladders. They are about 4 mm in diameter. On the reverse side the bladders are clad with a thick, white erineum, consisting of multicellular, unbranched, and branched hairlets. Gall no. 21634.

Java, Mt. Kembang, Leuwiliang near Buitenzorg, alt. 700 m, R. C. BAKHUIZEN VAN DEN BRINK coll., VI, 1924.

1589. A leaf-gall caused by a gall-mite.

On the upperside of the leaf there are almost spherical, yellowish-brown, haired excrescences, about 2 mm across, and contracted at their bases. The reverse side shows only a patch of brown hairs and between them a small opening gives access to the gall-chamber. The inner wall is glossy, the short tube connecting the cavity with the air excepted. Gall no. 21799.

Sumatra, Palembang, Mt. Raja, alt. 1300 m, C. G. G. J. VAN STEENIS coll., XI, 1929.

Ficus glabella BL.

1590. A leaf-gall caused by a gall-midge.

This gall is developed only on the underside of the leaf, it is semi-spherical, about 1 mm across, attached to the leaf-blade by a broad base. The young galls are yellowish-green, later they become black and glossy. The spacious larva-chamber is surrounded by a hard wall. Gall no. 21800.

Java, Leuwiliang near Buitenzorg, alt 250 m, R. C. BAKHUIZEN VAN DEN BRINK coll., VIII, 1931.

Ficus glomerata ROXB.

231. A leaf-gall caused by a psyllid: *Pauropsylla depressa* CRAWF.

This gall is described from Java, Sumatra, Celebes, and Salajar, it is now also known as occurring in Soemba. Gall no. 20125.

Soemba, Kabaroo near Waingapoe, IBOET coll., III, 1925.

Ficus indica L.

1591. A stem-gall caused by a hymenopteron.

Fusiform swellings of the twigs, sometimes situated at the top, but mostly on the lower parts of the branches. They are from 10 to 20 mm long and from 8 to 12 mm across. Inside, a parenchymatous tissue has developed from the woody parts of the stem; this tissue contains several spherical larva-chambers, each surrounded by a hard wall. Gall no. 21801.

Java, Pasir Ipis, Leuwiliang near Buitenzorg, alt. 250 m, R. C. BAKHUIZEN VAN DEN BRINK coll., I, 1928.

Ficus infectoria ROXB.

237. A leaf-gall caused by a gall-midge.

This gall was described from Java and Tanimber, it was also collected in Sumatra and Bali. Gall no. 20128.

Sumatra, Fort de Kock, alt 1200 m, E. JACOBSON coll., XI, 1924.

Bali, Mt. Pala, alt. 500 m, SARIP coll., IX, 1918.

1592. A leaf-gall caused by a gall-midge.

This gall is situated on the underside of the leaf, along the midrib, occasionally also along the secondary nerves. It is a discoid gall, about 3 mm in diameter and $1\frac{1}{2}$ mm high, and attached to the nerve with a small part only. The upperside of the gall shows a central depression, see figure 14. The larva-chamber is spherical, surrounded by a thick wall. Gall no. 21802.

Bali, Mt. Pala, alt. 525 m, SARIP coll., IX, 1918.

Ficus pilosa REINW.

245. An aerial-root-gall caused by a hymenopteron.

1929. FERRIÈRE, p. 147, fig. 2, 3.

The gall-causer was described by CH. FERRIÈRE as *Decatoma spinifera*. Gall no. 20133.

Ficus pisifera WALL.

1593. A root-gall caused by a hymenopteron.

This gall is a semi-globular swelling of the root, lopsidedly developed, and only formed out

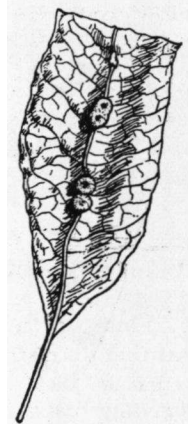


Fig. 14. *Ficus infectoria* ROXB., no. 1592.

of the bark, covered with the same red-brown cork as the normal root. The swelling is about 4 mm across and 3 mm high. Inside, there is a longitudinal larva-chamber situated perpendicularly to the axis of the root. The galls are mostly situated in rows, sometimes they are coalescent. Gall no. 20432.

Java, Tjisaroewa near Buitenzorg, alt. 1000 m, X, 1931.

Ficus procera REINW.

1594. A leaf-gall caused by a gall-midge.

1932a. DOCTERS VAN LEEUWEN, p. 2, fig. 1.

This gall is situated on the upper surface of the leaf. It has the shape of a small pie. The gall consists of two parts, firstly a ball-shaped basal part, about 6 mm across, attached with a broad base to the surface of the leaf, and, secondly, a short tube covered with a flat lid. Inside, there is a cylindrical cavity which is divided by a membrane into two divisions. The smaller and lower division is inhabited by a larva of a gall-midge. Gall no. 21803.

Sumatra, Island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1927.

1595. A leaf-gall caused by a gall-midge.

1932a. DOCTERS VAN LEEUWEN, p. 2.

This is a flat, circular swelling, developed on both sides of the leaf-blade, about 3 mm across, and $1\frac{1}{2}$ mm high. Inside, there is a tiny, flat larva-chamber. Mostly the galls occur in great numbers on each infected leaf and often mixed with the preceding gall. Gall no. 21804.

Sumatra, Island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1927.

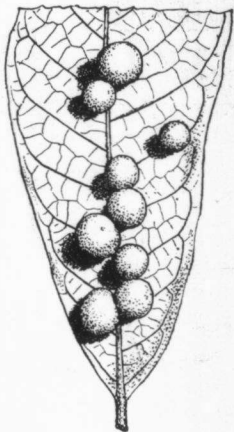


Fig. 15. *Ficus pubinervis* BL., no. 1596.

Ficus pubinervis BL.

1596. A leaf-gall caused by a psyllid.

This gall is developed on the upperside of the leaf along the midrib or along its offsprings. The gall is more or less spherical, 5 to 7 mm across, see figure 15. The base of the gall is contracted. On the underside of the leaf there is only a short, conical excrescence with an opening in the tip; a narrow canal gives access to a spacious larva-chamber. The surface of the gall is thickly pubescent with short, white hairlets. The colour

is green, sometimes with a red hue on the top. Gall no. 21805.
 Soemba, Mao Marroe, alt. 450 m, IBOET coll., V, 1925.

***Ficus punctata* THUNB.**

1597. A bud-gall caused by a hymenopteron.

The end of a short twig is swollen into a spherical or more pear-shaped gall, 3 tot 4 mm across. The surface is glossy and yellow-green. Inside, there are one or two larva-chambers, see figure 16. Gall no. 21630.

Java, Tjisalak near Buitenzorg, alt. 1000 m, IV, 1924.

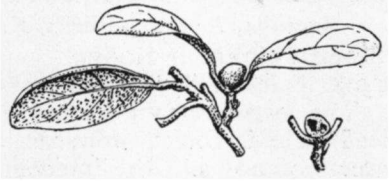


Fig. 16. *Ficus punctata* THUNB., no. 1597.

***Ficus recurva* BL.**

258. A stem-gall caused by a hymenopteron.

1929. FERRIÈRE, p. 148, fig. 4.

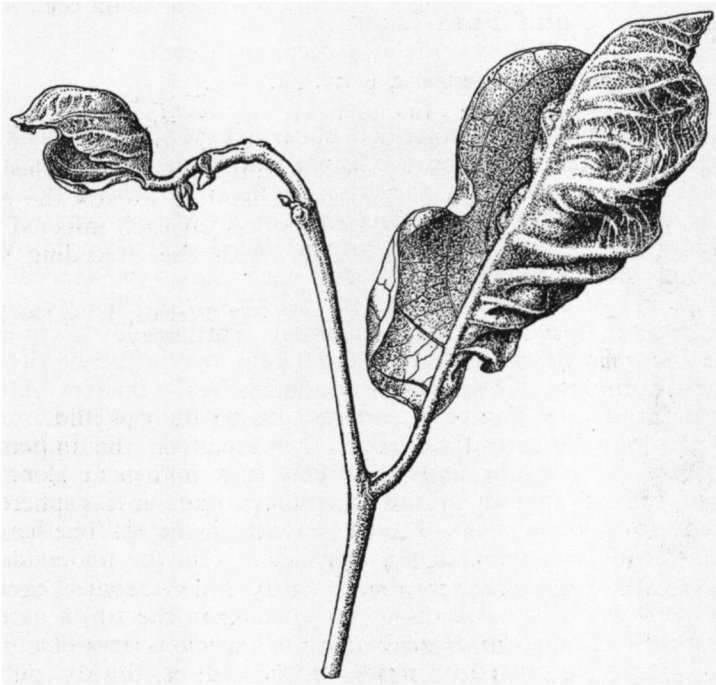


Fig. 17. *Sloetia elongata* KOORD., no. 1598.

CH. FERRIÈRE described the gall-causer as: *Leeuweniella ficophila*.
Gall no. 20145.

Ficus variegata BL.

286. A leaf-gall caused by *Pauropsylla udei* RUEBS.

This gall so common in Java and also found in Sumatra and in the island of Sebesi was later collected in Soemba. Gall no. 20167.

Soemba, Kambèra-district, K. W. DAMMERMAN coll., III, 1925.

Sloetia elongata KOORD.

1598. A leaf-gall caused by a psyllid.

The leaves remain smaller, both parts or only one half of the leaf-blade is folded upwards. The offsprings of the main-nerve are thickened and the intervening parts are more or less sunken. Moreover, the infected parts are curved so that a spacious larva-chamber is formed, see figure 17. Gall no. 21808.

Sumatra, East Coast, Berastagi, alt. 600 m, H. H. KARNY coll., X, 1925.

FAMILY OF THE URTICACEAE.

Elatostema sesquifolium HASSK.

1599. A thrips-gall grown out of a cecidomyid-gall.

1928a. DOCTERS VAN LEEUWEN, p. 99, fig. 1—9.

1928—29. KARNY, p. 33.

The gall-midge-gall is described under no. 302 in our book. It is a spherical excrescence on the leaves and stems and it has deep incisions which run from the base to the top. These incisions are the openings between tentacle-like outgrowths which remain closely pressed against the gall proper. We found also galls with these outgrowths spread star-like and such galls were reproduced in figure 211 of our book. It was several years later that we found out that these specimens were abnormal. Thrips lay their eggs in the incisions described above and under the influence of this new gall-stimulus the spherical cecidomyid-gall changes into a star-like thrips-gall. The basal part remains unchanged, the appendices grow out and spread; moreover, they are often spirally twisted and covered with white hairlets. In case of a very early infection the gall consists mainly of the appendices, the basal part being reduced to a small stalk. KARNY described the gall-causer as: *Gyniakothis devriesii*. Gall no. 21809.

Java, Mt. Oenganan, alt. 1000 m, III, 1913; Mt. Gedé near Tjibodas, alt. 1500 m, II, 1925, IV, 1926.

Elatostema strigosum HASSK.

1600. A stem-gall caused by a gall-midge.

Tiny galls, about $\frac{1}{2}$ mm in diameter, are attached in great numbers

to the surface of the stem. They are situated on a short pedicel and are more or less spherical with 4 to 5 excrescences on the top part of the gall. These excrescences are curved outwards and give the galls the appearance of tiny stars. The wall surrounding the tiny larva-chamber is juicy. The galls are coloured bright-red. Gall no. 21726.

Java, Siteo Goenoeng near Soekaboemie, alt. 1000 m, H. WINKLER coll., X, 1924.

Maoutia Puya WEDD.

1601. A stem-gall caused by a coccid.

The internodes at the end of the branches remain short and are swollen, so that the leaves form an irregular bunch. These leaves are folded and rolled and those at the top remain small. Gall no. 21810.

Sumatra, Tapianoei, Simakoeck, alt. 1100 m, J. C. VAN DER MEER MOHR coll., VIII, 1928.

Pipturus incanus WEDD.

319. A leaf-gall caused by a gall-mite.

This gall described from Java, Krakatau, Sebesi, and Salajar was also collected in Soemba. Gall no. 20754.

Soemba, Laoro-district, alt. 100 m, K. W. DAMMERMAN coll., IV, 1925.

Trema orientalis BL.

1602. A root-gall caused by a nematode.

1929. VAN DER MEER MOHR, p. 1.

Nodosities on the roots are mentioned by VAN DER MEER MOHR.

Sumatra, Lau Boentoe, Koala, III, 1926.

Villebrunea rubescens BL.

1603. A stem-gall caused by a coccid.

The branches are strongly swollen and thickly covered with bunches of short, thin twigs which are leafless. The end of the infected branch remains normal with well-developed leaves, but on the infected part the leaves are absent. Gall no. 21811.

Java, Buitenzorg, botanic gardens, alt. 250 m, E. JACOBSON coll., I, 1915.

FAMILY OF THE ARISTOLOCHIACEAE.

Apama corymbosa SOLER.

1604. A leaf-gall caused by a gall-midge.

These galls are mainly developed on the upperside of the leaves and they form swellings of the mid-rib or its offsprings, see

figure 18. The galls are flattened, more or less cylindrical bodies, 3 to 6 mm long and 1 to 3 mm across. The surface is glabrous. There is only a slight thickening of the nerves on the underside of the leaf and here the gall is surrounded by a shallow depression. The larva-chamber is longitudinal and narrow, it is surrounded by a hard wall.

This gall is represented also in our collections from Malakka, Taiping Hill, collected by HANIF and NUR, II, 1917. Gall no. 21696.

Sumatra, Aek Merbau, alt. 150 m, J. A. LOERZING coll., IV, 1927.

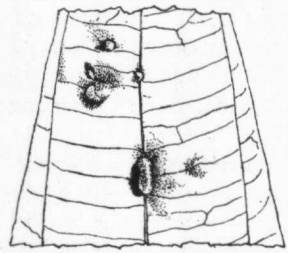


Fig. 18. *Apama corymbosa* SOLER., no. 1604.

Aristolochia Tagala L.

1605. A leaf- and bud-gall caused by a gall-midge.

1936. DOCTERS VAN LEEUWEN, p. 289, no. 1.

The axil-buds swell up to form irregular, knobby, light-green, and glabrous galls. They are 5 mm by 4 mm in diameter. Within, there are a large number of small, round larva-chambers. The infected leaves remain small, and on the base occurs a compound gall, see figure 19. The underside of the gall consists of oval, flattened excrescences, the upperside of the gall is less strongly developed. The surface, protruding a little above the leaf, is irregular, due to tiny protuberances and folds. The tissue of the gall consists of a watery parenchym, in which no vessels occur. Gall no. 21651.

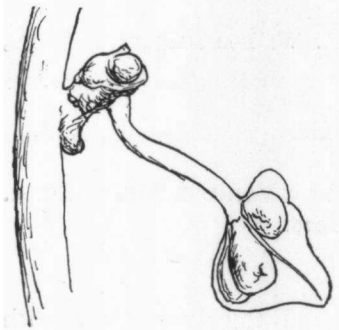


Fig. 19. *Aristolochia Tagala* L., no. 1605.

Krakatau, near the sea, VII, 1924.

FAMILY OF THE LORANTHACEAE.

The Netherlands' East Indies' representatives of this family have been studied by DANSER (1931, pp. 235—519). The result was that a great number of names had to be altered. This was particularly so with the species belonging to the genus *Scurrula*; materials that in our book had been classified with one species had to be

devided over several species. The alterations follow below; the new galls come next.

Elytranthe gemmiflora G. DON. should be *Lepeostegeres gemmiflorus* BL.

Elytranthe globosa ENGL. should be *Macrosolen cochinchinensis* v. TIEGH.

Loranthus axanthus KORTH. should be *Barathranthus axanthus* MIQ.

Loranthus Korthalsii MOLKENB. should be *Scurrula Korthalsii* DANS. The determination of the sterile material is somewhat doubtful.

Loranthus lepidotus BL. should be *Scurrula lepidota* DANS.

No. 351. The material of this stem-gall from Tempoeran should be classed with *Scurrula Junghuhni* DANS. Its new number is 21834. The material from Mt. Moeriah and from Mt. Telamaja should be classed with *Scurrula lepidota* DANS., gall no. 20777.

No. 352. This flower-gall from Java belongs to *Scurrula ferruginea* DANS., gall no. 20775.

No. 353. This leaf-gall from Java and Sumatra belongs to *Scurrula ferruginea* DANS., no. 20774.

No. 354. This flower-gall from Java belongs to *Scurrula lepidota* DANS. The number of the gall is not 20788, but 20778.

No. 355. This leaf-gall from Java belongs to *Scurrula Junghuhni* DANS., gall no. 20791.

No. 356. This leaf-gall from Java belongs to *Scurrula Junghuhni* DANS., gall no. 20779.

Loranthus Oortianus KORTH. should be *Scurrula Oortiana* DANS.

Loranthus pentandrus L. should be *Dendrophthoe pentandra* MIQ.

Loranthus praelongus BL. should be *Dendrophthoe praelonga* MIQ.

Loranthus Schultesii BL. should be *Scurrula atropurpurea* DANS.

No. 364. This stem-gall from Java belongs to *Scurrula Junghuhni* DANS., No. 20786.

No. 368. This leaf-gall from Java belongs to *Scurrula Junghuhni* DANS., No. 21472.

New Galls.

Amyema tristis v. TIEGH.

1606. A leaf-gall caused by a gall-midge.

This is a thin, discoid swelling of the leaf. The galls are circular, from 5 to 8 mm across and about $\frac{1}{2}$ mm thick. On the upperside the galls are more or less concave, on the underside slightly convex.

The surface is glossy. The larva-chamber is also circular and very low. Gall no. 21812.

Ball, Mt. Kelataka, alt. 575 m, SARIP coll., VII, 1918.

Baratranthus axanthus MIQ.

1607. A leaf-gall caused by a gall-midge.

Lenticular swellings developed towards both sides of the leaf-blade. They are 3 mm across and about 2 mm high. The surface is glossy. The gall-chamber is circular and about 1 mm high. Sometimes the galls are developed on the petiole, forming lopsided swellings. Gall no. 21813.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, II, 1932.

Dendrophthoe pentandra MIQ.

1608. A stem-gall caused by a coleopteron.

Spherical excrescences develop lopsidedly on the stems, they are about 7 mm across, see figure 20. There is a spacious larva-chamber tenanted by the grub of a weevil. The same gall was already described from *Macrosolen cochinchinensis* v. TIEGH., formerly *Elytranthe globosa* ENGL., see no. 345, fig. 247. Gall no. 21667.

Java, Buitenzorg, botanic gardens, alt. 250 m, VI, 1925.

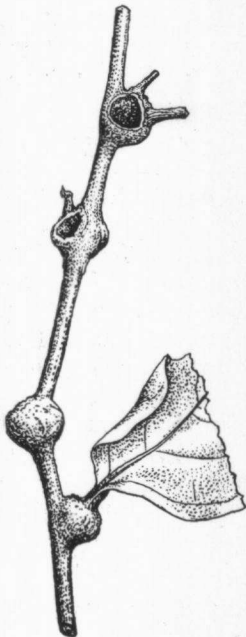


Fig. 20. *Dendrophthoe pentandra* MIQ., no. 1608.

1609. A stem-gall caused by a hymenopteron.

The single galls are very small, but they are gregariously assembled, and form together an irregular, more or less spindle-shaped swelling of the thin twigs. The galls proper develop on the wood, the bark remaining unaltered. The larva-chambers are spherical, less than one mm in diameter and situated in rows. Gall no. 21814.

Java, Buitenzorg, botanic gardens, alt. 250 m, V, 1927.

1610. A leaf-gall caused by an aleurodid.

The underside of the leaf is strewn with numerous minute, concave depressions, less than 1 mm across, in which the nymphs of the aleurodids fit snugly. They form tiny, yellow bladders on the upperside of the leaf.

Gall no. 21815.

Java, Buitenzorg, botanic gardens, alt. 250 m, V, 1927.

Macrosolen cochinchinensis v. TIEGH.

1611. A flower-gall caused by a gall-midge.

The perianth is distended and balloon-shaped. The infected flowers have the same colour as the normal ones, and they remain closed. The sexual organs are poorly developed and the spacious larva-chamber is tenanted by one or two gall-midge larvae. Gall no. 21816.

Java, Poerasèda near Buitenzorg, alt. 450 m, II, 1929.

1612. A leaf-gall caused by a gall-midge.

The main-nerve is infected and a row of shortly, spindle-shaped galls develop, see figure 21. The gall protrudes on the upper- as well as on the undersurface of the leaf; it is covered with a corky layer. The larva chambers are longitudinal and narrow. Gall no. 21642.

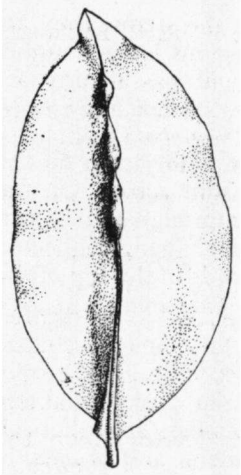


Fig. 21. *Macrosolen cochinchinensis v. TIEGH.*, no. 1612.

Java, Buitenzorg, botanic gardens, alt. 250 m, XI, 1924.

1613. A leaf-gall caused by a gall-midge.

Bright-green, spherical galls are developed on the underside of the leaf, see figure 22. They are 2 to 5 mm across and attached to the leaf-blade by a small part only. On the reverse side of the leaf there is no trace of the gall to be seen. The thin, spherical larva-chamber is surrounded by a juicy wall. The surface is glossy and green. Gall no. 21537.

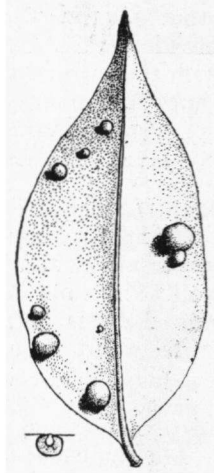


Fig. 22. *Macrosolen cochinchinensis v. TIEGH.*, no. 1613.

Java, Buitenzorg, botanic gardens, alt. 250 m, IX, 1924, and II, 1925.

1614. A fruit-gall caused by a lepidopteron.

The young gynoecium is swollen and there is a spacious cavity inside tenanted by a small caterpillar. The perianth is slightly swollen and more or less irregularly developed, often bulging at the base. Gall no. 21817.

Java, Buitenzorg, botanic gardens, alt. 250 m, II, 1930.

Macrosolen tetragonum MIQ.

1615. A leaf-gall caused by an aphid.

Both halves of the leaf-blade are rolled upwards and, moreover, the infected leaves are often spirally twisted and contorted. These leaves remain smaller and are lighter-green than normal. They are mostly situated close together at the ends of the twigs. Gall no. 21818.

Java, Tjandi near Samarang, alt. 25 m, XI, 1914.

Scurrula ferruginea DANS.

1616. A leaf-gall caused by a hymenopteron.

The whole leaf is changed into a spherical gall, 5 to 8 mm across. The surface of the gall is thickly covered with a woolly mass of red-brown hairs and sometimes small parts of the leaf are visible on the gall. There is a central, spherical larva-chamber surrounded by a hard wall. Gall no. 21835.

Java, Bodjang Konèng near Buitenzorg, alt. 600 m, R. C. BAKHUIZEN VAN DEN BRINK coll., IX, 1928.

Scurrula Junghuhnii DANS.

1617. A leaf-gall caused by a gall-midge.

The galls are visible on both sides of the leaf, they form on the upperside low, rounded excrescences, about $2\frac{1}{2}$ mm across. On the other side the galls are more cone-shaped, 2 to 4 mm high and $2\frac{1}{2}$ mm broad at their base. The larva-chamber is pear-shaped, connected with the outside through a narrow duct which ends in the top of the cone. A similar gall is known of *Scurrula atropurpurea* DANS., see no. 367, fig. 262. Gall no. 21819.

Java, Tjisaroewa near Buitenzorg, alt. 900 m, X, 1931.

1618. A leaf-gall caused by a psyllid.

Circular depressions, not 1 mm across are developed on the upperside of the leaf. They are surrounded by a very low circular wall. The hole is filled by the larva of a psyllid. On the reverse side there is only a slight swelling, scarcely protruding above the surface and about $\frac{1}{4}$ mm across. Gall no. 21820.

Java, Tjisaroewa near Buitenzorg, alt. 900 m, X, 1931.

1619. A leaf-gall caused by a braconid.

The same gall as no. 366 on *Scurrula atropurpurea* DANS., spherical or more oval, from 5 to 20 mm across. The gall develops on both sides of the leaf-blade and contains a small larva-chamber surrounded by a thick, soft, and parenchymatous wall. Gall no. 21833.

Java, Klèdoeng, Kedoe, alt. 1600 m, V, 1927; Mt. Ardjoena near Poenten, alt. 1250 m, A. J. ULTEE coll., VI, 1928.

***Scurrula lepidota* DANS.**

1620. A stem-gall caused by a lepidopteron.

Under the nodes the stem is distended into a more or less spindle-shaped gall, the top is the broadest part, gradually narrowing into the normal stem. The gall is about 10 mm long and developed lopsidedly. The longitudinal larva-chamber lies in the swollen bark, the wood remaining unaltered. When very young shoots are infected they are wholly taken up in the gall production. Gall no. 21821.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, II, 1930.

1621. A bud-gall caused by a gall-midge.

Spherical galls, about 4 mm across. The surface is covered with red-brown hairlets. The larva-chamber is spherical and surrounded by a thick wall. Gall no. 21836.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, II, 1930.

***Scurrula parasitica* L.**

1622. A bud-gall caused by a psyllid.

The axil-buds, sometimes also the end-buds are changed into cylindrical or pear-shaped galls. They are from 4 to 5 mm long and about $2\frac{1}{2}$ mm across. The surface is glabrous and red or brown-red. The gall-chamber is longitudinal and it opens at the top by a small aperture. Sometimes small leaves are attached to the surface of the gall. Gall no. 21822.

Java, Poentjak near Buitenzorg, alt. 1400 m, III, 1927.

***Viscum articulatum* BURM.**

1623. A twig-gall caused by a coccid.

Short, thin twigs bunch together, forming a kind of loose witches' broom. Gall no. 21823.

Java, Gedangan near Samarang, alt. 50 m, XI, 1912.

FAMILY OF THE SANTALACEAE.

***Santalum album* L.**

1624. A leaf-gall caused by a coccid.

The uppersurface of the leaf is strewn with hundreds of tiny, horn-like excrescences. They are $\frac{1}{2}$ to $1\frac{1}{2}$ mm long and about $\frac{1}{2}$ mm thick, their surface is glabrous. On the reverse side a small opening gives access to the gall-chamber. Strongly infected leaves remain smaller and are rolled inwards. Gall no. 21824.

Timor, Netherlands' part of the island, collected by a forester, 1929.

FAMILY OF THE MENISPERMACEAE.

Pericampylus glaucus MERR.

386. A leaf-gall caused by a gall-midge.

This gall, common in Java and also collected in Sumatra, Krakatau, and Sebesi was found in the island of Ambon. Gall no. 20812.

Ambon, near Hoetoemari, A. RANT coll., VI, 1929.

FAMILY OF THE MAGNOLIACEAE.

Elmerillia celebica DANDY.

1625. A leaf-gall caused by a gall-midge.

This gall is chiefly developed on the underside of the leaf, it is spherical and glabrous, 2 to 3 mm across. The gall-chamber is small and surrounded by a hard wall and opening by a narrow canal on the uppersurface of the leaf. From the dried material at our disposal it was not possible to make out if this opening is always there or only when the midge hatches. Gall no. 21825.

Celebes, Minahassa, Menado, S. J. KOORDERS coll.

Kadsura scandens BL.

1626. A stem-gall caused by an insect.

This gall occurs on the thick, climbing stems as well as on the thinner leaf-bearing ones. In the latter case they are much smaller, 30 to 40 mm long and 15 to 22 mm across.

The gall on the thick stems are up to 80 mm long and 25 to 35 mm across. They form irregular, cylindrical swellings, ending abruptly where the stem is not infected. The gall is formed out of the bark and contains hundreds of gall-chambers which are cylindrical, 4 to 6 mm long and 2 mm broad, arranged side by side and with their longitudinal axis perpendicular to the axis of the stem. The surface is knobby but this may be the result of exsiccation. The gall-inhabitants had left the galls, they may have been gall-midges or a hymenopterous insect. Gall no. 21826.

Sumatra, West Coast, Batang Paloeboek, alt. 1200 m, E. JACOBSON coll., XI, 1925.



Fig. 23. *Talauma Candollei* BL., no. 1627.

Talauma Candollei BL.

1627. A stem-gall caused by a hymenopteron.

The top of a branch is swollen into a more or less fusiform, green gall, about 2 mm long and 8 mm across, see figure 23. A longitudinal and spacious larva-chamber is surrounded by a hard wall and

inside live many larvae of a hymenopteron. Gall no. 21653.
Java, Mt. Gedé, Tjibodas, alt. 1500 m, XI, 1924.

Talauma gigantifolia MIQ.

1628. A leaf-gall caused by a gall-midge.

The underside of the leaf is irregularly strewn with circular, button-like galls. They are often situated along the border of the leaf. This gall is 3 mm across and the centre part only $\frac{1}{2}$ mm thick, the border 1 mm. The larva-chamber is a small, cylindrical hole situated in the centre of the gall. The midges hatch through a narrow opening at the upperside of the leaf, where the gall itself is not visible, or through an opening at the underside. The border-galls are not circular, but more or less reniform. Gall no. 21827.

Sumatra, Palembang, Lematang Ilir, alt. 75 m, forester coll., II, 1924.

FAMILY OF THE ANONACEAE.

Artabotrys species.

1629. A leaf-gall caused by a gall-midge.

The same gall as the one described on *Artabotrys suaveolens* BL., see our book, no. 397, figure 285. The gall is ovoid, 10 mm high and 6 mm across, attached to the underside of the leaf by a broad base and gradually narrowing into a long, snout-like top. The larva-chamber is spherical and surrounded by a thick wall. Gall no. 21731.

Riouw-Archipelago, island of Doerian, alt. 25 m, RACHMAT coll., VI, 1929.

Melodorum Kentii HOOK. F. et TH.

1630. A stem-gall caused by a coleopteron.

The young twigs show long, more or less cylindrical swellings which are often curved or twisted. They are from 10 to 150 mm long and 3 to 4 mm across. Inside, there are one or more elongated larva-chambers surrounded by the distended wood, the bark remaining normal. According to Dr. C. G. G. J. VAN STEENIS the gall has also been collected in Java, Tjiapoes, HALLIER coll.; Josoredjo, C. A. BACKER coll.; Simaloer, ACHMAT coll.; Borneo, Soengai Landak, J. E. TEIJSMANN coll., but I have not seen these materials which are kept in the herbarium at Buitenzorg. Gall no. 21742.

Java, Mt. Liang in Batavia Residency, alt. 600 m, C. G. G. J. VAN STEENIS coll., X, 1928.

Oxymitra species.

1631. A leaf-gall caused by a gall-mite.

Irregular, flat bladders are developed on the upperside of the

leaf, chiefly along the main-nerve. They are covered with golden-brown hairlets. On the reverse side develops a thick erineum, consisting of dark-brown hairlets, see figure 24.
Gall no. 21743.

Sumatra, East Coast, island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1927.

***Polyalthia subcordata* BL.**

408. A fruit-gall caused by a gall-midge.

1927. FELT, p. 385.

FELT described the gall-causer to be *Calopedia polyalthiae*. Gall no. 20809.

***Polyalthia* species.**

1632. A leaf-gall caused by a gall-midge.

On the upperside of the leaf are attached discoid galls, about 2 mm in diameter and 1 mm high. The central part of the gall is slightly

sunken with a knobby protuberance in the middle. The surface is glabrous and a thick wall surrounds a tiny, flat larva-chamber. Gall no. 21744.

Borneo, South East, Koetei Godang Tengeh, alt. 15 m, forester coll., XII, 1924.

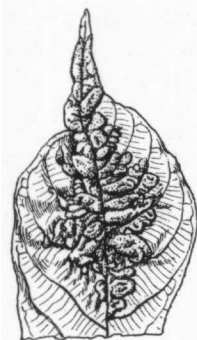


Fig. 24. *Oxymitra* species, no. 1631.



Fig. 25. *Knema laurina* WARB., no. 1633.

FAMILY OF THE MYRISTICACEAE.

***Knema laurina* WARB.**

1633. A stem-gall caused by a gall-midge.

The same gall as the one described on *Knema glauca* WARB., see no. 415, figure 290, but in this case the galls are gregarious, forming up to 100 mm long and 20 mm thick swellings of the stem, see figure 25. Sunken in the bark of the gall are seen bunches of stiff, red-brown hairs, who are attached to the bottom of a cylindrical depression. The base of this depression is the upper wall of the gall-chamber which is spherical or more or less longitudinal, surrounded by a hard wall. The whole swelling consists of hundreds of single galls situated close together. Gall no. 21828.

Java. Dépok, Batavia residency, alt. 50 m, J. G. B. BEUMÉE coll., VIII, 1927.

FAMILY OF THE LAURACEAE.

Cinnamomum Burmanni Bl.

1634. A leaf-gall caused by a psyllid.

On the upperside of the leaf are attached spherical or oval galls, about 3 mm across and narrow at their base, see figure 26. The surface is green and glabrous. The gall-chamber is spacious and opens at the underside of the leaf with a wide, circular aperture. Gall no. 21829.



Fig. 26. *Cinnamomum Burmanni* Bl., no. 1634.

Lombok, Lehon Poeloet, alt. 700 m, forester coll., VII, 1927.

Cinnamomum iners Bl.

1635. A flower-gall caused by a psyllid.

The sepals have grown together and form irregular, spherical or more oval clumps, see figure 27. In the surface of the gall are many tiny, round holes, each containing the larva of a psyllid. Gall no. 21678.

Java, Rembang, Pedangan, W. A. DE BOER coll., VII, 1925.

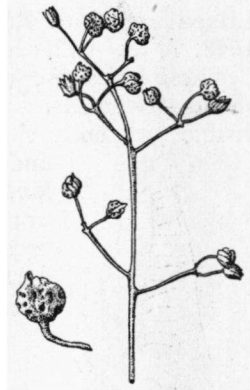


Fig. 27. *Cinnamomum iners* Bl., no. 1635.

Cryptomeria ferrea Bl.

1636. A leaf-gall caused by a gall-mite.

Star-like galls of a red-brown colour situated on the uppersurface or on the undersurface of the leaf. On the reverse side only a very low pinpoint-like swelling is visible. The gall consists of a number of thread-like structures attached to one point and stretching in all directions. The gall is about 3 mm across and thickly covered with red-brown hairlets. Gall no. 21830.

Java, Batavia Residency, Depok, alt. 50 m, J. G. B. BEUMÉE coll., II, 1924.

Endiandra rubescens MIQ.

1637. A leaf-gall caused by a thysanopteron.

Both halves of the leaf-blade are rolled upwards so that the rolls meet one another above the main-nerve, see figure 28. The outer surface of the gall is covered with low, rounded protuberances corresponding with shallow depressions on the innerside. The surface is very rough and in the beginning the colour is purple,

later growing rather more green. Sometimes, if the infection is late, only the borders of the leaf roll upwards. Gall no. 21674.

Java, Buitenzorg, botanic gardens, alt. 250 m, II, 1920; Mt. Tjibodas near Tjampea, alt. 200 m, VI, 1925, and III, 1926.

Iteodaphne confusa BL.

443. A leaf-gall caused by a gall-mite.

This gall was described from Java, but was now also collected in Sumatra. Gall no. 20842.

Sumatra, Palembang, Mt. Pakiwang, alt. 600 m, C. G. G. J. VAN STEENIS coll., XI, 1929.

Litsea amara BL.

448. A leaf-gall caused by a gall-mite.

This gall, described from Java, was also collected in Sumatra. Gall no. 20582.

Sumatra, East Coast, Petani-river, alt. 1100 m, X, 1929.

Litsea angulata BL.

1638. A leaf-gall caused by a gall-midge.

These galls are developed on the strong offshoots of the main-nerve, see figure 29. They are visible on both sides of the leaf-blade, on the underside they are oval, 4 to 6 mm long and 2 to 3 mm broad. On the upperside exists a shallow depression. The larva-chamber is a narrow, longitudinal canal. Gall no. 21724.

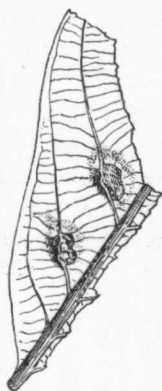


Fig. 29. *Litsea angulata* BL., no. 1638.

1638.

Java, Mt. Gedé, Kandang Badak, alt. 2500 m, II and X, 1927 and XII, 1929; Mt. Salak, summit, alt. 2100 m, IX, 1931.

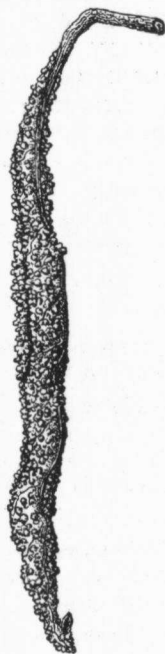


Fig. 28. *Endiandra rubescens* MIQ., no. 1637.

Java, Priangan, Takoka, alt. 1500 m, S. H. KOORDERS coll., III, 1893.

Litsea Cubeba PERS.

1639. A leaf-gall caused by a gall-mite.

The upperside of the leaf is strewn with hundreds of small, horn-like galls, they are 1 to 3 mm high and 1 mm across. On the underside there is only a circular opening giving access to the gall-chamber. Gall no. 21831.

Java, Mt. Gedé, Kandang Badak, alt. 2500 m, II and X, 1927 and XII, 1929; Mt. Salak, summit,

Litsea diversifolia BL.

1640. A leaf-gall caused by a psyllid.

Almost spherical galls are attached to the upper side of the leaves, see figure 30. They are 4 to 5 mm across and connected with the leaf by a broad base. Their surface is glossy and dark-green or bright-red. The spacious larva-chamber is surrounded by a thin, but hard wall. On the underside of the leaf the gall forms a tiny, conical protuberance with a small opening in the top which through a narrow canal gives access to the gall-chamber. Gall no. 21668.

Java, Mt. Tjikorai, alt. 2400 m, V, 1925;
Mt. Papandajan, alt. 2200 m, V, 1930.



Fig. 30. *Litsea diversifolia* BL., no. 1640.

Litsea odorifera VAL.

1641. A leaf-gall caused by a gall-mite.

These galls are developed either on the upper-, or on the underside of the leaf. They are irregular, spherical, yellowish and 2 to 4 mm across. On the reverse side there is a conical part ending in a narrow chimney, see figure 31, which gives access to the spacious gall-chamber. The inner wall is densely covered with long, curled, multicellular hairlets which fill the whole gall-cavity. Gall no. 21623.

Java, Buitenzorg, botanic gardens, alt 250 m, V, 1925.

Litsea tomentosa BL.

1642. A leaf-gall caused by a gall-mite.

On the upper surface of the leaf are irregular, yellowish, and very low bladders, 3 to 15 mm across. These bladders are covered on the underside with a thick, velvet-like, roe-brown erineum, consisting of multicellular, unbranched hairlets. Gall no. 21636.

Java, Bolang near Buitenzorg, alt. 600 m, R. C. BAKHUIZEN VAN DEN BRINK coll., VI, 1924.

Phoebe declinata NEES.

468. A stem-gall caused by a gall-midge.

1927, FELT, p. 388.

The gall-causer was described by FELT as *Diceromyia orientalis*. Gall no. 21478.

1643. A bud-gall caused by a gall-midge.

The buds are swollen into onion-like galls. The lower part is oval,

5 to 6 mm long and 4 to 5 mm broad, this part is gradually narrowing into a longer or shorter snout-like appendix, see figure 32. The surface is dark-red and glossy. There are one or two larva-chambers surrounded by a thick wall. Gall no. 21650.

Java, Mt. Gedé, Tjibodas, alt. 1400 m, XII, 1924.

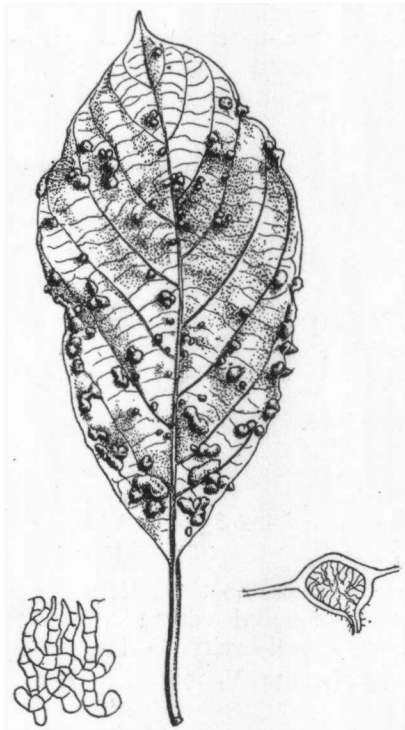


Fig. 31. *Litsea odorifera* VAL., no. 1641.

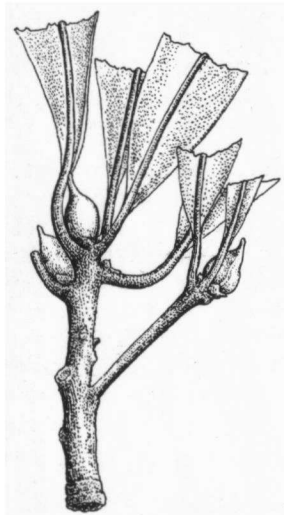


Fig. 32. *Phoebe declinata* NEES., no. 1643.

1644. A leaf-gall caused by a psyllid.

Spherical or more oval galls are attached to the uppersurface of the leaf, see figure 33, often near the border, but also on the mid-rib or elsewhere. The galls are 5 to 6 mm across, their surface is glossy; the wall encloses a spacious larva-chamber. The wall bursts at maturity by several slits and the so formed parts curl backwards and are spread on the leaf-surface. Gall no. 21832.

Sumatra, Benkoelen, Redjang Lebong, forester coll., VII, 1921; Palembang, Mt. Pakiwang, alt. 600 m, C. G. G. J. VAN STEENIS coll., X, 1929.

FAMILY OF THE PITTIOSPORACEAE.

Pittosporum species.

1645. A leaf-gall caused by a psyllid.

Low, conical galls on the upperside of the leaf, their base is circular, about 4 mm across, they are about 3 mm high. In the centre the gall narrows into a horn-like point. On the other side there is only a short, chimney-like outgrowth with an opening at the top which gives access to the gall-chamber through a narrow canal. The galls often coalesce, see figure 34. Gall no. 21837.

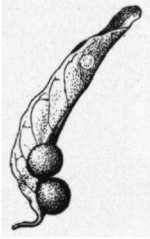


Fig. 33. *Phoebe declinata* NEES.,
no. 1644.

Soemba, Kanangga, alt. 850 m, P. FRANCK coll., V, 1925.

FAMILY OF THE HAMAMELIDACEAE.

Altingia excelsa NOR.

1646. A leaf-gall caused by a gall-mite.

These galls form low, cylindrical bladders on the upperside of the leaf, 6 to 7 mm across. On the reverse side the inside of these bladders is covered by a granular tomentum. Gall no. 21838.

Java, Mt. Gedé, Tjibodas, alt. 1400 m, II, 1927.

1647. A leaf-gall caused by a gall-midge.

Slight, disc-like swellings on the underside of the leaf, occasionally on the upperside. On the reverse side the galls are hardly visible. They are $1\frac{1}{2}$ to 3 mm across and less than 1 mm thick, and contain a small gall-chamber. Gall no. 21839.

Java, Priangan, Takoka, alt. 1500 m, S. H. KOORDERS coll., III, 1893.

Distylium stellare O.K.

1648. A leaf-gall caused by a gall-mite.

Small, oval, or cylindrical, yellowish bladders on the upperside of the leaf. They are 1 to 3 mm across and about 1 mm high. On the reverse side the wall of the bladders are covered with a brown, velvety erineum. Gall no. 21622.

Java, Mt. Tjikorai, summit, alt. 2800 m, V, 1925.

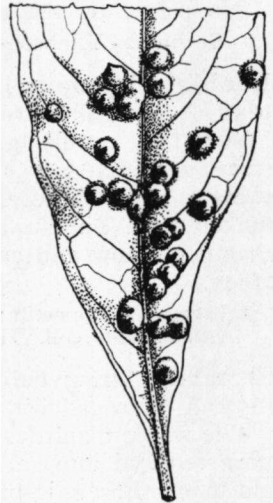


Fig. 34. *Pittosporum* species, no. 1645.

FAMILY OF THE ROSACEAE.

Rubus alpestris BL. × **R. elongatus** REINW.

1649. A stem-gall caused by a lepidopteron.

These galls are irregular, spindle-shaped swellings of the young twigs, 10 to 20 mm long. The wood is swollen and the bark remains unaltered. The longitudinal larva-chamber is surrounded by the wood. Gall no. 21840.

Java, Mt. Gedé, hot falls above Tjibodas, alt. 2100 m, XII, 1929.

Rubus rosaeifolius SM.

500. A leaf-gall caused by *Phytoptus rubrierineus* NAL.

This gall common in Java was also collected in Celebes. Gall no. 20881.

Celebes, Malino near Makassar, A. RANT coll., X, 1931.

FAMILY OF THE LEGUMINOSAE.

Albizzia falcata BACK.

1650. A root-gall caused by a nematod.

1929, VAN DER MEER MOHR, p. 1.

Nodosities on the rootlets.

Sumatra, Timbang Langkat near Bindjei, I, 1927.

Bauhinia leptopus PERL.

1651. A leaf-gall caused by a gall-midge.

Very flat, circular galls on the underside of the leaf, 4 to 5 mm across and less than $\frac{1}{2}$ mm thick. In the centre is a protruberance as big as a pin's head. On the upperside there exists only a somewhat sunken spot. The surface is glabrous and glossy. The single larva-chamber is low and circular, surrounded by a thick wall. Gall no. 21841.

Java, Mt. Tjipoetih near Nangèla, Buitenzorg, alt. 600 m, C. G. G. J. VAN STEENIS coll., II, 1929.

Crotalaria anagyroides H.B. et K.

1652. A stem gall caused by a hemipteron.

The whole plant develops poorly, the leaves remain small and are often reduced into scales, the internodes of the stem remain short and many short side-branches develop. In case of a strong infection the whole plant gives the impression to be covered with witches' brooms, see figure 35. The inflorescences are mostly strongly reduced or do not develop at all. Flowers and fruits are mostly absent after the infection by a small bug. Gall no. 21713.

Java, Buitenzorg, botanic gardens, alt. 250 m, XI, 1925.

Crotalaria incana L.

1653. A gall on the inflorescences caused by a gall-mite.

Viridescence of the flowers. In case of a strong infection all the parts of the flowers are reduced to scales and form thick bunches, but even in such strongly viridescence inflorescences flowers may develop, see figure 36. In such a case the flowers are not normal and the anthers free. Leaves too may develop between the scales. Gall no. 21842.

Sumatra, Fort de Kock, alt. 900 m, E. JACOBSON coll., XI, 1924.



Fig. 35. *Crotalaria anagyroides* HB. et K., no. 1652.

Crotalaria striata DC.

541. A gall on the inflorescences caused by a gall-mite.

This gall described from Java was also discovered in Ambon. Gall no. 20294.

Ambon, Karang Pandjang, A. RANT coll., VI, 1929.

Derris elliptica BTH.

1654. A petiole-gall caused by a coccid.

1932, VAN DER MEER MOHR, p. 3, fig. 1.

These galls are shallow depressions with a walled margin and covered with a brown corky tissue. The gall-producer is *Lecaniodiaspis azadirachtae* GREEN.

Sumatra, Medan, VI, 1931.

1655. A fruit-gall caused by a hymenopteron.

1932, VAN DER MEER MOHR, p. 3, fig. 2.

1932, FERRIÈRE, p. 1, fig. 1.

The normal development of the seed is checked and the pods remain small, at the same time becoming swollen and deformed. In most cases the seeds are aborted. There are several larva-chambers separated from each other by thick septa; each cell shows a small, rounded hole after the emergence of the wasp. This chalcidid was named *Protanostigma derricola* by FERRIÈRE.

Sumatra, Medan, J. C. VAN DER MEER MOHR coll., II, 1931.

Desmodium umbellatum DC.

1656. A stem-gall caused by a lepidopteron.

The stem is distended into a fusiform gall, about 40 mm long



Fig. 36. *Crotalaria incana* L., no. 1653.

and in the centre 8 mm thick, see figure 37. The larva-chamber is a canal surrounded by the thickened wood; the bark is often corrugated and rough. Gall no. 21843.

Java, Priangan, Tjiloa, Zandbaai, beach, VII, 1929.



Dunbaria rubella SPAU.

1657. A leaf-gall caused by a gall-midge.

Spindle-shaped galls on the strong offsprings of the mid-rib, about 6 mm long and 3 mm thick. They are visible on both sides of the leaf. The surface is glabrous and white or yellowish. The larva-chamber is longitudinal and narrow, surrounded by a thick wall. Gall no. 21844.

Java, Plabocan near Weliri, forest behind the beach, IX, 1912.

Fig. 37. *Desmodium umbellatum* DC., no. 1656.

Erythrina variegata L. var. orientalis MERR.

1658. A stalk-gall caused by a coccid.

1936, DOCTERS VAN LEEUWEN, p. 289, no. 9.

The tops of young plants were strongly infected, the coccids had accumulated on the stalk, petioles, and the leaves. Consequently, these parts had thickened and were closely pressed together, the leaves were wrinkled, and had remained small. Thus, lumps of twisted leaves originated, as the internodes of the stem remained short, just as the petioles. Gall no. 21641.

Krakatau, South East side, VII, 1924.

Flemmingia congesta ROXB.

1659. A stem-gall caused by a gall-midge.

Spindle-shaped swellings of the twigs, 6 to 8 mm long and 5 mm across. The bark is unchanged, but the wood distended. A number of narrow, longitudinal larva-chambers are irregularly imbedded in the woody part. Gall no. 21845.

Java, Dépok, alt. 50 m, X, 1925.

Glycine soja BTH.

1660. A root-gall caused by a nematod.

1926c., VAN DER MEER MOHR, p. 2.

Nodosities on the rootlets.

Sumatra, Medan.

Indigofera guatemalensis MOC, LESS et COV.

1661. A stem-gall caused by a coccid.

The internodes of the top of a branch remain short, the stem is thickened, and curved or twisted. The leaves of the infected parts

remain smaller and are wrinkled. Thick bunches of leaves and flowers are thus formed. Gall no. 21846.

Java, Buitenzorg, botanic gardens, alt. 250 m, VI, 1927.

Milletia sericea W. et A.

567. A fruit-gall caused by a hymenopteron.

1929, FERRIÈRE, p. 156, fig. 8 and 9.

The chalcidid, causer of this gall was named by FERRIÈRE *Protanaostigma milletiae*. Gall no. 20893.

1662. A leaf-gall caused by a gall-midge.

1926c, VAN DER MEER MOHR, p. 3, fig. 1.

Flat galls on both sides of the leaf. According to VAN DER MEER MOHR this gall resembles the gall on the leaves of *Ryssopterys tiliifolius* JUSS., see our book, no. 655, p. 272, fig. 454; but the under- as well as the upperside are glabrous.

Sumatra, East Coast, Bekalla, J. C. VAN DER MEER MOHR coll.

Mimosa pudica L.

1663. A root-gall caused by a nematod.

1926a, J. C. VAN DER MEER MOHR, p. 3.

Nodosities on the rootlets.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

1664. A stem-gall caused by a coccid.

1926b, J. C. VAN DER MEER MOHR, p. 2.

The end of the twig is swollen, the internodes remain short and bunches of leaves are formed. Gall no. 21847.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

Mucuna Junghuhnii BACK.

1665. A leaf-gall caused by a gall-midge.

Tiny, lenticular, and circular swellings, chiefly on the upperside of the leaves, no more than $1\frac{1}{2}$ mm across. They are protruding above the surface of the leaf as very low swellings; on the underside there is a shallow, circular depression, covered with white hairlets. The larva-chamber is flat with a thin wall. Gall no. 21848.

Java, Mt. Salak, Sambangan, C. A. BACKER coll., XII, 1912.

Mucuna pruriens DC.

1666. A bud and inflorescence-gall caused by a gall-mite.

The buds and inflorescences change into large witches' brooms, see figure 38. The gall consists of thin twigs and bract-like leaves, the flowers also turn into branches with scales. Sometimes normal organs may develop between the infected ones. The witches' broom

may become very large, up to 400 mm long and broad. Gall no. 21489.
Java, Mt. Panisian near Buitenzorg, alt. 600 m, XI, 1925.

Phaseolus radiatus L.

1667. A root-gall caused by a nematod.

1926c, J. C. VAN DER MEER MOHR, p. 3.

Nodosities on the rootlets.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

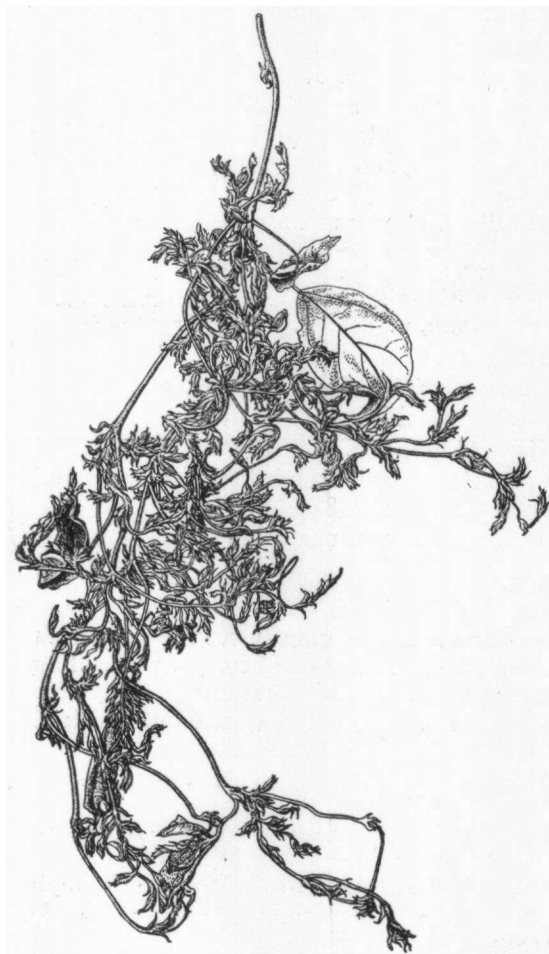


Fig. 38. *Mucuna pruriens* DC., no. 1666.

Pongamia pinnata
MERR.

584. A fruit-gall caused by an insect.

This gall, described from Java, Salajar, and the Soela Islands was also collected in Celebes and on the island of Bawean, North of Java. Gall no. 20910.

Bawean Island,
 Manoeri, KARTACOLL,
 V, 1928.

Celebes, Kendari,
 alt. 150 m, KJELLBERG
 coll., II, 1929.

FAMILY OF THE
RUTACEAE.

Citrus decumana L.
 601. A fruit-gall caused by *Prays endocarpa*
 MEYER.

1926b, J. C. VAN DER
 MEER MOHR, p. 2.

This gall described from Java, occurs also in Sumatra. Gall no. 21496.

Sumatra, East Coast,
 Medan.

1668. A leaf-gall caused by an aphid.

1929, J. C. VAN DER MEER MOHR, p. 2.

The border of the leaf is curved backwards.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., II, 1929.

Evodia species.

1669. A leaf-gall caused by a gall-mite.

Very flat, irregular bladders on the upperside of the leaves, on the reverse side a red-brown erineum. Sometimes only the erineum is developed and the upperside remains unaltered, see figure 39. Gall no. 21849.

Java, Mt. Salak, Goe-noeng Boender, alt. 600 m, VIII, 1929.

Salajar, summit of Mt. Bantanoë Haroe, alt. 600 m, V, 1913.

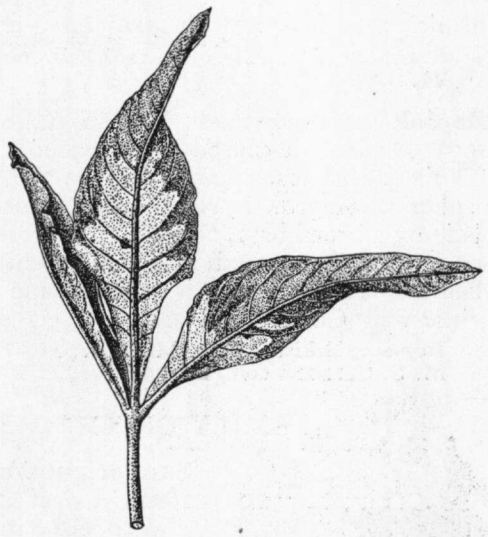


Fig. 39. *Evodia* species, no. 1669.

Glycosmis cochinchinensis PIERRE.

1670. A leaf-gall caused by a gall-mite.

This gall develops on the upperside of the leaf only, on the underside there is a tiny opening, not $\frac{1}{4}$ mm across which gives access to the gall-chamber. This gall is a horn-like outgrowth, almost cylindrical, but at the upper end broader than lower down and ending in a sharp point. The gall is from 5 to 6 mm long and about 1 mm thick. Gall no. 21850.

Soemba, Laoro district, beach near Karoni, IBOET coll., IV, 1925.

Micromelum pubescens BL.

1671. A leaf-gall caused by a gall-mite.

Small, knobby outgrowths on the upperside of the leaves, mostly along the main nerve, 1 to 3 mm across. On the underside exists a chimney-like outgrowth more or less coniform, $\frac{1}{2}$ to 1 mm high, with a small aperture in the top. A narrow duct gives access to the gall-chamber. Gall no. 21851.

Soemba, Mao Marroe, P. FRANCK coll., V, 1925.

FAMILY OF THE BURSERACEAE.

Canarium pseudodecumanum HOCHR.

1672. A leaf-gall caused by a gall-midge.

The leaves are strewn with small, flat, spherical galls, about 2 mm across. They are developed on the underside of the leaf. The gall-chamber is cylindrical, surrounded by a thin layer of sclerenchymatous tissue, the rest consists of parenchym and epidermis. This is covered with short hairlets. On the upperside of the leaf only a darker, hardened spot is visible. Near the main-nerve the galls coalesce, forming a hard layer with many larva-chambers. Gall no. 21852.

Sumatra, Lampong districts, Telok Betong, alt. 100 m, forester coll., VI, 1925.

Haplolobus borneensis H. J. LAM.

1673. A leaf-gall caused by a psyllid.

This gall is developed chiefly on the underside of the leaf, it is a spherical outgrowth, about 8 mm across, and attached to the leaf-blade by a broad base, about 4 mm across. On the reverse side there is a hardened spot with an opening which gives access to the gall-chamber. This chamber is spacious and surrounded by a thin and brittle wall. Gall no. 21853.

Borneo, British North, Mt. Kinabalu, Tenompok, alt. 1800 m, J. and M. S. CLEMENS coll., IV, 1932.

FAMILY OF THE MELIACEAE.

Sandoricum borneense MIQ.

1674. A leaf-gall caused by a gall-mite.

Very flat, irregularly rounded or oval bladders on the upperside of the leaf, see figure 40. The reverse is covered with a white erineum. This may even grow on and along the nerves, in which case nothing of the gall is visible on the upperside of the leaf. Gall no 21854.

Borneo, Soengai Sambas, H. HALLIER coll., 1893.

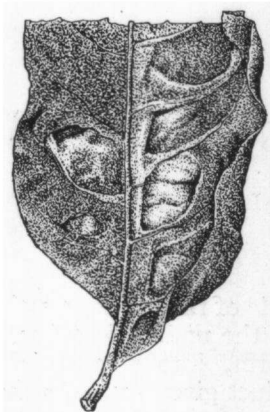


Fig. 40. *Sandoricum borneense* MIQ., no. 1674.

FAMILY OF THE POLYGALACEAE.

Xanthophyllum affine KORTH.

1675. A leaf-gall caused by a gall-midge.

1940, DOCTERS VAN LEEUWEN, p. 410, no. 15.

Bean-like excrescences on the upperside

of the leaf, about 5 to 7 mm long, 3 to 4 mm broad, and 4 to 5 mm high. The surface is glossy and in the dried material at our disposal of a yellowish-brown colour. On the underside there is only a curved, flat depression. The larva-chamber is longitudinal. The same gall was described from Java on *Xanthophyllum vitellinum* NEES. (See our book p. 274, no. 662, fig. 461), but the galls of *Xanthophyllum affine* are shorter and broader. The material is kept in the Herbarium at Leiden.

Enggano, Boea-Boea, alt. 100 m, forest, W. J. LÜTJEHARMS coll., VI, 1936.

1676. A leaf-gall caused by a gall-midge.

1940. DOCTERS VAN LEEUWEN, p. 410, no. 16, fig. 3.

This gall is a flat swelling developed on both sides of the leaf-blade and almost identical on both sides, about 3 to 4 mm across and 2 to 3 mm high. The gall is affixed to the leaf by a thin, very short, central part and on either side of the leaf it grows out like a small rivet. The larva-chamber is small and extends in both parts of the gall. The material is kept in the Herbarium at Leiden.

Enggano, Boea-Boea, alt. 100 m, forest, W. J. LÜTJEHARMS coll., VI, 1936.

FAMILY OF THE EUPHORBIACEAE.

Acalypha boehmerioides MIQ.

1677. A leaf-gall caused by an aphid.

1926b, J. C. VAN DER MEER MOHR, p. 1.

The same gall as the one on *Acalypha indica* L. (see our book p. 276, no. 666, fig. 465). The partly atrophied and twisted leaves form a bunch at the end of the distended young sprout. Gall no. 21855.

Sumatra, East Coast, Maryland, J. C. VAN DER MEER MOHR coll., VI, 1926.

Acalypha hispida BURM.

1678. A stem-gall caused by a coccid.

1926b, J. C. VAN DER MEER MOHR, p. 2.

The top of the stem is distended, the internodes shortened, and the leaves remain shorter and are wrinkled and twisted and form a bunch at the end of the stems. Gall no. 21856.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., V, 1926.

Antidesma Bunias SPR.1679. A leaf-gall caused by *Rhipiphorothrips pulchellus* MORGAN.

1926. PRIESNER, p. 39, 40.

This gall is mentioned by PRIESNER as a leaf-gall but not described in his study of the thrips which causes the gall. I have never seen it, but it is probably a leaf-rolling.

Java, Buitenzorg, alt. 250 m, A. J. GARRETSEN coll., II, 1923.

Antidesma velutinosum BL.

1680. A leaf-gall caused by a gall-midge.

Tiny, spherical galls on the underside of the leaf-blade, on the reverse side there is no trace of the gall to be seen. It is 2 to 3 mm across and the surface is brilliant red and thickly covered with stiff, white bristles. The larva-chamber is spherical, surrounded by a thin wall. Gall no. 21857.

Java, Mt. Misigit near Nanggèla, Buitenzorg, alt. 600 m, II, 1929.

Aporosa lunulata KURZ.

1681. An inflorescence-gall caused by a gall-mite.

The flowers of the infected trees show a high degree of viridescence, see figure 41. No trace of sepals, petals, or sexual organs is left, all these organs are changed into short bracts which are arranged on short twigs. Gall no. 21670.

Java, Tjisaroewa near Buitenzorg, alt. 800 m, X, 1924.

Blumeodendron Elateriospermum J.J.S.

1682. A leaf-gall caused probably by a psyllid.

Flat, more or less oval bladders, about 5 mm long and 4 mm broad, are developed on the upperside of the leaf-blade; on the reverse side there is a wide opening. Moreover, the infected leaves are curved downwards. The

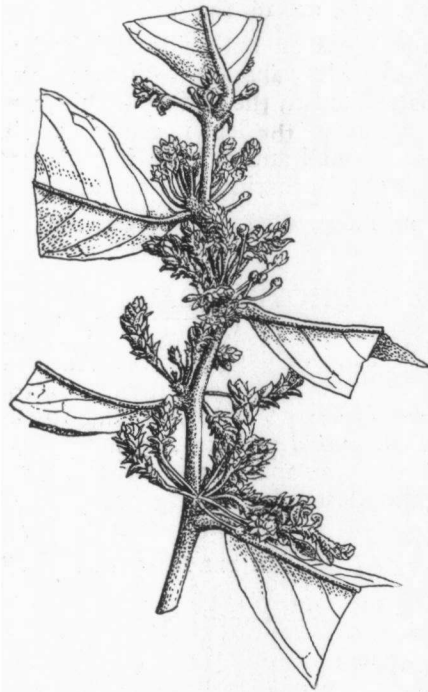


Fig. 41. *Aporosa lunulata* KURZ., no. 1681.

galls were empty in the dried material at our disposal, but it is quite well probable that a psyllid is the causer. Gall no. 21718.

Java, Buitenzorg, botanic gardens, alt. 250 m, 1924.

Bridelia tomentosa BL.

1683. A stem-gall caused by a coccid.

1929, J. C. VAN DER MEER MOHR, p. I.

The end of the twigs is swollen, the internodes remain short, and the leaves are curled and accumulated at the end of the stem.

Sumatra, East Coast, Medan J. C. VAN DER MEER MOHR coll.

Chaetocarpus species.

1684. A stem-gall caused by a lepidopteron.

Spindle-shaped or more oval swellings of the stem, covered with the same gray-brown cork as the normal stem. The galls are from 8 to 12 mm long and from 4 to 7 mm across, see figure 42. The larva-chamber is longitudinal, surrounded by the thickened wood, the bark remains unaltered. Gall no. 21858.



Fig. 42. *Chaetocarpus* species, no. 1684.

Borneo, South East, Koetai Talawan, alt. 75 m, forester coll., IX, 1927.

Croton argyratus BL.

1685. A leaf-gall caused by a gall-mite.

These are flat outgrowths protruding towards both sides of the leaf-blade, 1 to 3 mm across and $\frac{1}{2}$ to 1 mm high, see figure 43. A tiny opening in the centre of the gall is situated on the underside of the gall. This opening gives access to the flat gall-chamber. Gall no. 21721.

Sumatra, Padang Highlands Poentian, alt. 1000 m, E. JACOBSON coll., III, 1915.

Croton species.

1686. A flower-gall caused by a gall-midge.

The gynaecium is changed into a spindle-shaped gall, about 8 mm long and 3 mm across, see figure 44. The galls are situated on the end of a short and thin pedicel. The larva-chamber is longitudinal, surrounded by a hard wall. The surface is glabrous. Gall no. 21859.

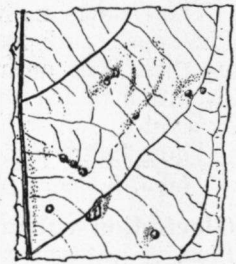


Fig. 43. *Croton argyratus* BL., no. 1685.

Celebes, South West, Bonto Parang, alt. 5 m, H. BÜNNEMEIJER coll., III, 1927.

Drypetes longifolia PAX et HOFFM.

719. A gall on the stem and mid-rib caused by a gall-midge.

This gall described from Java was also collected in Soemba. Gall no. 20507.

Soemba, East, Kananggan, alt. 700 m, P. FRANCK coll., V, 1925.



Fig. 44. Croton species, no. 1686.

Endospermum species.

1687. A leaf-gall caused by a gall-mite.

The upper side of the leaf is covered with a velvety, brown-red erineum, on the reverse side the gall is not visible. In case of a weak infection the erineum are situated along the main-nerve and its strong offsprings, in case of a strong infection the whole surface of the leaf may be covered with the hairgrowth. The hairs are club-shaped. Gall no. 21860.

Sumatra, Palembang, Banjoecasin, F. H. ENDERT coll., IX, 1920.

Euphorbia hirta L.1688. A leaf-gall caused by *Haplothrips? euphorbiae* PRIESN.

1931. PRIESNER, p. 1, fig. 1—3.

1932. VAN DER MEER MOHR, p. 3.

The insects stick to the underside of the leaves, their sucking action resulting in a more or less distinctly wrinkled appearance of the leaves.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

Glochidion philippicum ROB.

1689. A flower-gall caused by a gall-midge.

The flowers are swollen into spherical galls, about 3 mm across. The sepals and petals remain closed and are more or less grown together. The anthers hardly develop. The swelling is due to a distention of the ovary. The gall-chamber is spherical surrounded by a thick, soft wall.

The galls are placed at the end of a long, thin stalk. Gall no. 21861.

Java, Buitenzorg, alt. 250 m, C. G. G. J. VAN STEENIS coll., IV, 1929.

Glochidion rubrum BL.

1690. A leaf-gall caused by an aphid.

1932a. DOCTERS VAN LEEUWEN, p. 2, no. 5.

The young leaves are curled and twisted and accumulated at the end of the twigs. Gall no. 21862.

Sumatra, Island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1927.

Glochidion zeylanicum JUSS.

1691. A leaf-gall caused by a gall-mite.

The underside of the leaf is partly or totally covered with a white erineum. This consists of club-shaped hairs and forms granular, glittering patches. On the reverse side nothing of the gall is visible. Gall no. 21863.

Java, Buitenzorg, botanic gardens, alt. 250 m, V, 1927.

Glochidion species.

1692. A stem-gall caused by a lepidopteron.

Spindle-shaped swellings of the thick and of the thin twigs. They are 40 to 80 mm long and 8 to 20 mm across, see figure 45. The gall consists of the swollen wood, the bark remaining unchanged. Generally the infected twig continues growing; sometimes the growing apex is arrested in its growth for a time, but resumes developing when the occupant has left the gall. Gall no. 21864.

Ambon, Batoe Merah, A. RANT coll., VI, 1929.

Macaranga involucrata BAILL.

1693. A leaf-gall caused by a gall-mite.

These galls are developed on the underside of the leaf and they are situated on the nerves. They are about $\frac{1}{2}$ mm across and almost spherical or more oval, see figure 46. The surface is thickly covered with white hairlets. The gall-chamber is small and spherical. Gall no. 21722.

Ceram, Toeloearang river, alt. 100 m, KORNASSI coll., VIII, 1914.

FAMILY OF THE ANACARDIACEAE.

Buchanania arborescens BL.

793. A leaf-gall caused by a gall-midge.

This gall, common in Java and described from Salajar, is now also collected in Soemba. Gall no. 20097.

Soemba, Maoemarroe near Waingappoe, IBOET coll., III, 1925.

Mangifera foetida LOUR.

1694. A leaf-gall caused by a gall-midge.

The same gall as the one described on *Mangifera indica* L. (see our book p. 324, no. 801, fig. 577) caused by *Procontarinia matteiana* KIEFF. et CECC. Tiny, flat, circular galls, about 2 mm across pro-



Fig. 45. *Glochidion* species, no. 1692.

truding slightly on both sides of the leaf-blade. Gall no. 21745.
Java, Mt. Panisian near Buitenzorg, alt. 600 m, XII, 1925.

Mangifera indica L.

1695. A leaf-gall caused by a gall-midge.

The underside of the leaf is strewn with hundreds of light-brown galls, on the reverse side there exists only a circular spot with an almost imperceptible, invisible, circular wall and a protuberance as large as a pin's head in the centre. On the underside the galls are conical with a flat, yellow top, 2 mm across and about 2 mm high. There are 7 to 8 longitudinal, slightly protruding ridges ending abruptly under the top. The larva-chamber is ovoid and the midges emerge through a circular opening in

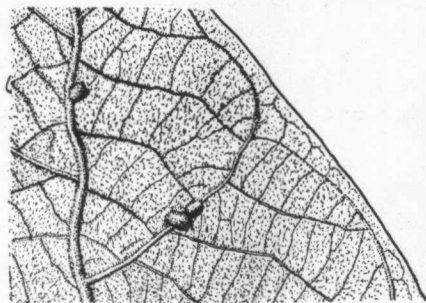


Fig. 46. *Macaranga involucrata* BAILL.,
 no. 1693.

the top. The galls are attached to the leaf-blade by a narrow base, the rest of the underside of the gall touches the leaf. Gall no. 21746.

Java, Mt. Tjipoetih near Poerasèda, Buitenzorg, alt. 500 m, II, 1929.

Mangifera species diversae.

1696. A leaf-gall caused by a gall-midge.

1940, DOCTERS VAN LEEUWEN, p. 407, no. 6, fig. 2.

Globular galls affixed to the underside of the leaf-blade. They are about 2 mm across and attached to the leaf by a broad base. On the upper surface there exists only a tiny, flat, discoloured swelling. The surface of the gall is covered with straight, brown hairs which give the gall a fluffy aspect. The length of the gall-chamber is twice its width and the globular shape is formed by the outstanding hairs. The wall is very thin, surrounding a spacious larva-chamber.

Between the galls there are a great many flat, hairy cushions, about 1 mm across. Inside there is no gall-chamber and the hairs are identical with the hairs attached to the surface of the galls, described above. These cushions are galls which, by some cause or other, have not developed normally, the inhabitants having died. The material is kept in the Herbarium at Leiden.

Enggano, Koho Ahepea, alt. 200 m, W. J. LÜTJEHARMS coll., VI, 1936.

1697. A gall on the main-nerve and on the twigs caused by a gall-midge.

1940, DOCTERS VAN LEEUWEN, p. 408, no. 7.

On the underside of the leaf, part of the main-nerve is abruptly swollen into an oval or almost globular gall, 5 to 6 mm long, and 4 to 5 mm broad and high. The surface is covered with a corky layer. Inside there is a rounded larva-chamber surrounded by a thick, hard wall. On the upperside of the leaf only a slight longitudinal swelling of the mid-rib is visible. The same galls occur also on the young twigs, they are lopsidedly developed swellings, up to 10 mm long, and 8 mm broad and high. The material is kept in the Herbarium at Leiden.

Enggano, Koho Ahepa, alt. 200 m, W. J. LÜTJEHARMS coll., VI, 1936.

1698. A leaf-gall caused by a gall-midge.

The single galls are conical at the underside and more or less semi-spherical on the upperside of the leaf. The top shows a deep slit in which the opening is formed when the midge hatches. The galls are mostly gregarious, forming longitudinal excrescences with the slits of the different galls joining to one long canal. The larva-chamber is cylindrical, surrounded by a hard wall. Gall no. 21747.

Celebes, South West, Sirondjong near Lombasi, alt. 900 m, H. BÜNNE-MEIJER coll., V, 1921.

1699. A leaf-gall caused by a gall-midge.

About the same gall as the one described on *Mangifera indica* L. (see our book p. 324, no. 802, fig. 578). The galls are situated on the upperside of the leaves and they are mainly cylindrical, but at the same time slightly conical, about $1\frac{1}{2}$ mm high and at their base 1 mm broad. The top is rounded, glossy, and yellow. The epidermis of the leaf forms a low collar round the base of the gall, on the underside of the leaf-blade there is only a flat swelling. Gall no. 21748.

Sumatra, South, Mt. Raté near Wai Lima, Lampong, alt. 400 m, H. KARNY coll., XI, 1921.

1700. A leaf-gall caused by a gall-midge.

The galls extend partly on the upper-, partly on the underside of the leaf-blade. They are conical on the upperside, 2 mm across and about $1\frac{1}{2}$ mm high. The top has a circular depression with a rounded, yellow-brown border. The galls are conical on the underside, about 1 mm high and the surface is covered with irregular, longitudinal ridges. The gall-chamber is spherical, the midges emerge through a circular opening in the centre of the depression. Gall no. 21749.

Celebes, Makassar, Waterfall of Bantimoeroeng, A. RANT coll., XI, 1931.

Melanochyla tomentosa HOOK.F.

1701. A leaf-gall caused by a thysanopteron.

A very simple gall. The thrips live on the underside of the leaf-blade and form irregular, yellow, or reddish spots on the upperside which in case of a strong infection coalesce. Gall no. 21732.

Java, Dépok, alt. 50 m, X, 1925.

Semecarpus species.

1702. A leaf-gall caused by a gall-midge.

On the underside of the leaf are developed cylindrical or more conical excrescences about $1\frac{1}{2}$ mm across and 1 mm high. The top is blunt with a circular, undeeep depression. On the upperside of the leaf the galls are almost invisible. The larva-chamber is spacious and ovoid with a hard wall. The surface is yellow-brown and glossy. The midges emerge through a circular opening in the top of the gall. Gall no. 21750.

Borneo, Soengai Sibouw, H. HALLIER coll., 1893.

Spondias mangifera WILLD.

1703. A leaf-gall caused by a psyllid.

1926c. VAN DER MEER MOHR, p. 3.

The leaflets are slightly thickened, fleshy and rolled downwards. The axis of the compound leaf shows partly a spiral contortion.

Sumatra, East Coast, J. C. VAN DER MEER MOHR coll.

FAMILY OF THE AQUIFOLIACEAE.

Ilex bogoriensis LOES.

1704. A leaf-gall caused by a psyllid.

The same gall previously described from *Ilex alternifolia* LOES. (see our book p. 326, no. 807) and from *Ilex cymosa* BL. (see our book p. 327, no. 811, fig. 586). Bursiform galls developed along the mid-rib, consisting of a spherical folding of both sides along the main-nerve over a short distance. The swellings are about 5 mm across, and enclose a spacious larva-chamber. Mostly from two to five galls are situated in a row close together along the mid-rib. Gall no. 21756.

Java, Buitenzorg, botanic gardens, alt. 250 m, I, 1928.

FAMILY OF THE CELASTRACEAE.

Elaeodendron glaucum PERS.

1705. A stem-gall caused by a lepidopteron.

Fusiform or more cylindrical swellings on the branches, see figure 47. These galls consist of a swelling of the wood, the bark

remaining unaltered. The larva-chamber is longitudinal. Gall no. 21627.

Java, Besoekie, Poeger Watangan, S. H. KOORDERS coll., IX, 1889.

FAMILY OF THE ACERACEAE.

Acer niveum BL.

1706. A witches' broom caused by a gall-mite.

The buds at the end of the twigs change into large witches' brooms, often more than 150 mm across. The twigs of the broom are covered with bracts and the buds at the end of the twigs are covered with ferruginous hairlets. Gall no. 21740.

Java, Mt. Papandajan, alt. 2200 m, I, 1930.

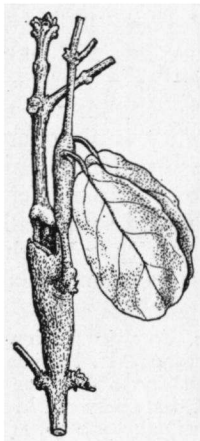


Fig. 47. *Elaeodendron glaucum* PERS., no. 1705.

leaf. Gall no. 21878.

Java, Mt. Salak, alt. 700 m, S. H. KOORDERS coll., X, 1896.

FAMILY OF THE SAPINDACEAE.

Arytera littoralis BL.

1708. A leaf-gall caused by a gall-midge.

These galls are situated on the upper-, or on the undersurface of the leaf-blade. They are flat and disc-like, attached to the leaf by a tiny, scarcely developed pedicel, and the borders of the gall are curved upwards, see figure 49. In the centre an often oblique protuberance is situated. The galls are from 4 to 5 mm across and about 1 mm high, the protuberance 1 to 2

FAMILY OF THE ICACINACEAE.

Stemonurus secundiflorus BL.

1707. A leaf-gall caused probably by a psyllid.

Mostly along the mid-rib, but also on other parts of the leaf-blade are developed spherical excrescences, about 4 mm across, attached with a broad base, see figure 48. On the reverse side there is an opening surrounded by a low rim. The gall-chamber is spherical, surrounded by a thick wall, and connected with the outside by a narrow canal, ending at the underside of the

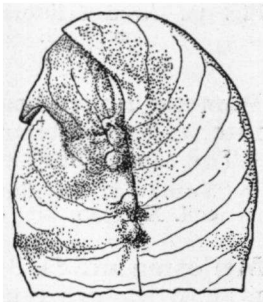


Fig. 48. *Stemonurus secundiflorus* BL., no. 1707.

mm high. The larva-chamber is circular and low. Gall no. 21709.

Salajar group, Kalao, V, 1913.

Boeton, Moena, alt. 20 m, forester coll., X, 1922.

Soemba, Kananggar, alt. 700 m, K. DAMMERMAN coll., V, 1925.

Pometia pinnata FORST.

1709. A witches' broom probably caused by a gall-mite.

Gigantic witches' brooms develop out of the leaves. The whole leaf or part of it is changed into a bunch of slender, often curved nerves with strongly reduced leaves. This abnormality is described by M. KOERNICKE (1908, p. 807) as a teratologicum, the cause was not known to him. This abnormality is abundant on one of the trees in the botanic gardens at Buitenzorg and in very young material we found some gall-mites. We assume that they are the causers of this witches' broom. Gall no. 21865.

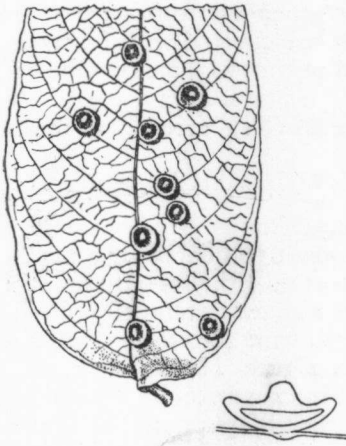


Fig. 49. *Aryterea littoralis* BL., no. 1708.

Java, Buitenzorg, botanic gardens, alt. 250 m, VI, 1926; Mt. Panisian near Buitenzorg, alt. 600 m, XII, 1925.

Sumatra, East Coast, between Medan and Sibolangit, alt. 300 m, III, 1919.

New Guinea, North side, common along the Mamberamo river, 1926.

Pometia tomentosa T. et B.

1710. A witches' broom probably caused by a gall-mite.

The same gall as the foregoing. Gall no. 21866.

Sumatra, Batjolinggi above Tebingtinggi, alt. 100 m, J. A. LÖRZING coll. X, 1920.

Meliosma nitida BL.

1711. A leaf-gall caused by a gall-midge.

This gall resembles the one described on *Meliosma sumatrana* JACK., (see our book p. 339, no. 846, fig. 612). The gall is situated on the underside of the leaf-blade, it consists of an ovoid swelling, about 3 mm across, ending in a horn-like, curved spikelet. The galls are light-green. The base of the gall is surrounded by a circular wall. The gall proper falls off and there remains a circular depression covered with a corky layer. The larva-chamber is small and spherical,

surrounded by a hard wall. The same gall occurs also on the surface of the still green twigs. Gall no. 21867.

Java, Tjipoetih near Poerasèda, Buitenzorg, alt. 500 m, II, 1929.

1712. A stem-gall caused by a gall-midge.

Perhaps the same gall as the foregoing, but much larger. The cup-like outgrowth of the bark is strongly developed, about 5 mm across and $1\frac{1}{2}$ mm high, also covered with a corky layer. The gall proper is attached in this depression. It consists of a short, rounded basal part, gradually narrowing into a curved, horn-like spikelet, see figure 50. The galls are often situated close together, partly even coalescing. Gall no. 21868.

Sumatra, Karo, Dolok, alt. 1600 m, forester coll., VI, 1926.

FAMILY OF THE BALSAMINACEAE.

Impatiens javensis STEUD.

1713. A leaf-gall caused by a gall-midge.

The same gall as the one described on *Impatiens platypetala* LINDL. and caused by *Thorodiplosis impatientis* FELT. (see our book p. 339, no. 848). A part of the leaf-margin is rolled upwards and thickened. Gall no. 21869.

Java, Mt. Gedé, hot springs above Tjibodas, alt. 2200 m, VII, 1928.



Fig. 50.
Meliosma nitida BL.,
no. 1712.

FAMILY OF THE RHAMNACEAE.

Ventilago oblongifolia BL.

1714. A leaf-gall caused by a thysanopteron.

A kind of procecidium. The thrips live on the underside of the leaves and cause irregular, yellow spots on the upperside, accompanied by wrinkling of the surface. Gall no. 21671.

Java, Mt. Tjibodas, Tjampea near Buitenzorg, alt. 350 m, V, 1925.

Zizyphus Horsfieldii MIQ.

1715. A leaf-gall caused by a gall-midge.

These galls are wedged between the mid-rib and the strong secondary nerves that connect the base with the top of the leaf. The galls are disc-like swellings, about 5 mm long and 4 mm broad and 1 mm thick. They are visible on both sides of the leaf-blade. Both the upper- and the underside are covered with red-brown hairs. The flat larva-chamber is circular and surrounded by a hard wall. Gall no. 21729.

Java, Mt. Tjibodas, Tjampea near Buitenzorg, alt. 200 m, III, 1926.

FAMILY OF THE VITACEAE.

Cayratia japonica GAGNEP.

1716. A stem-gall caused by a gall-midge.

This gall resembles the one on *Vitis trifolia* L. (now *Columella trifolia* MERR.) caused by *Asphondylia viticola* KIEFF. et D. v. L.R. (see our book p. 353, no. 892, fig. 637). The thin stem carries several swellings which are situated in a row. The infected part is about 100 mm long and consists of at least six galls of different sizes, the biggest is about 40 mm long, the smallest only about 5 mm, and they are from 4 to 15 mm across. The galls consist of a juicy tissue and the surface is glossy and of a red-brown colour. There are a number of small larva-chambers inside the galls. Gall no. 21870.

Java, Tjipanas near Tjisolok, alt. 50 m, XI, 1927.

Cissus vitiginea L.

1717. A leaf-gall caused by a gall-mite.

Small, rounded bladders both on the upper- and on the undersurface of the leaves, covered with a ferruginous erineum. The infected leaves are often completely covered with the galls, and they remain small and are rolled downwards. Gall no. 21871.

Ambon, Selahoetoe, A. RANT coll., XI, 1931.

Leea indica MERR.

868. A leaf-gall caused by a gall-midge.

1932a, DOCTERS VAN LEEUWEN, p. 2, no. 7.

This gall formerly described from Sumatra is also collected on the isle of Berhala. Gall no. 21033.

Berhala, alt. 10 m, J. C. VAN DER MEER MOHR coll., VIII, 1927.

Tetrastigma pergamaceum PLANCH.

887. A leaf-gall caused by a gall-midge.

1927, FELT, p. 285.

The gall-causer was described by FELT as *Dasyneura tetrastigma*. Gall no. 21524.

FAMILY OF THE ELAEOCARPACEAE.

Elaeocarpus acronodia MAST.

1718. A leaf-gall caused by a gall-mite.

This gall consists of ferruginous erinea on the underside of the leaf. The infected parts are irregular in shape and size, they are mostly situated near the mid-rib or its strong offsprings. They are from 1 to 12 mm in diameter. On the upperside of the leaf-blade only a yellowish discoloration is visible. Gall no. 21872.

Java, Mt. Gedé, Tjibodas, alt. 1800 m, XI, 1929.

***Elaeocarpus edulis* T. et B.**

1719. A leaf-gall caused by a gall-mite.

On the upperside of the leaf are developed rounded bladders, from 1 to 2 mm in diameter and about 1 mm high. The reverse side is covered with a thick erineum. Gall no. 21873.

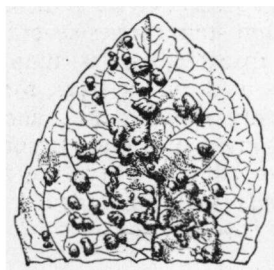


Fig. 51. *Elaeocarpus littoralis* T. et B., no. 1720.

Ambon, Soja di Atas, alt. 100 m, A. RANT coll., XI, 1931.

***Elaeocarpus littoralis* T. et B.**

1720. A leaf-gall caused by a gall-mite.

The upperside of the leaf is strewn with small, irregularly rounded bladders, from 1 to 4 mm across, and about 1½ mm high, see figure 51. The reverse side is covered with a white erineum. Gall no. 21784.

Sumatra, Bengkoeloe, C. SCHRÖTER coll., 1927.

***Elaeocarpus obtusa* BL.**

1721. A leaf-gall caused by a psyllid.

Part of the leaf-border is rolled downwards, see figure 52. The rolled part is dark-green, often with a reddish hue, and the wall of the rolling is thickened. Gall no. 21875.

Java, Mt. Gedé, Tjibodas, alt. 1400 m, I, 1926.

***Elaeocarpus oxyphyrena* K. et V.**

1722. A leaf-gall caused by a gall-midge.

This gall is situated on the mid-rib, the strong secondary nerves, and on the young twigs. The gall is fusiform, 4 to 6 mm long, and 3 to 5 mm across, see figure 53. They are almost identical on both sides of the leaf. The gall-chamber is oval, surrounded by a thick wall. The stem-galls are longer, up to 8 mm, and lopsidedly developed, when old they are covered with a gray corky layer. Gall no. 21876.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, VIII, 1925.

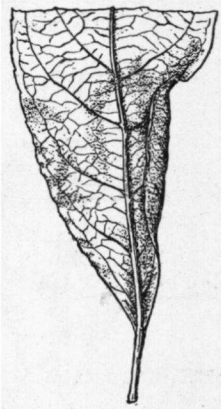


Fig. 52. *Elaeocarpus obtusa* BL., no. 1721.

***Elaeocarpus stipularis* BL.**

1723. A leaf-gall caused by a gall-midge.

This gall is only developed on the underside of the leaf-blade. They are pear-like bodies, 5 to 8 mm long, and 2 to 3 mm broad,

more or less pointed at the top. The surface is sparsely covered with white hairlets and coloured green or pink. On the upperside of the leaf there is only a light-green, shallow depression. The gall-chamber is longitudinal and narrow and surrounded by 1. a parenchyma with many intercellulares, 2. a parenchyma without these intercellulares, 3. a tissue consisting of stone-cells, and 4. a parenchyma covered with a hairy epidermis, see figure 54. Gall no. 21672.

Java, Mt. Salak, alt. 900 m, III, 1925; Mt. Gedé, Tjibodas, alt. 1400 m, VII, 1925.

1724. A leaf-gall caused by a thrips.

Both halves of the leaf-blade are rolled upwards; the rolls reach each other above the mid-rib, see figure 55. The gall-chamber is spacious and tenanted by hundreds of thrips in all stages of development. Gall no. 21664.

Java, Buitenzorg, botanic gardens, alt. 250 m, X, 1918; I, 1922; V, 1925.

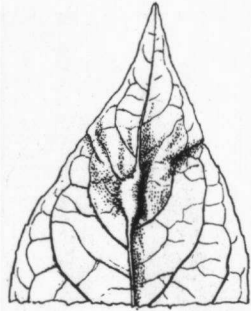


Fig. 53. *Elaecarpus oxypyrena* K. et V., no. 1722.

Elaecarpus species.

1725. A leaf-gall caused by a psyllid.

Part of the border of the leaf is rolled downwards, the rolls are from 10 to 25 mm long and 4 to 8 mm broad. The galls are situated in rows from 3 to 12 along the border. The gall-chamber is very spacious with a thin, but brittle wall. Gall no. 21878.

Borneo, British North, Mt. Kinabalu, J. and M. S. CLEMENS coll., 1931.

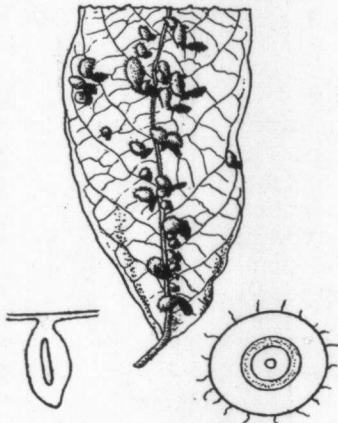


Fig. 54. *Elaecarpus stipularis* BL., no. 1723.

FAMILY OF THE TILIACEAE.

***Colona scabra* BURR.**

1726. A fruit-gall caused by a gall-mite.

On the surface of the fruit, especially on the wings are developed irregular, rounded cushions, covered with

a thick, rough erineum of a dark red-brown colour. Gall no. 21879.

Talud-group, Island of Salibaba, Mt. Ajambana, alt. 150 m, H. J. LAM coll., V, 1926.

Grewia excelsa WALL.

1727. A leaf-gall caused by a gall-mite.

The underside of the leaf is strewn with hundreds of minute galls, see figure 56. The galls are $\frac{1}{4}$ mm to 1 mm across, almost spherical or more conical out-growths, with a rough, knobby surface. The gall-chamber is subdivided into several irregular holes by excrescences growing from the inner-wall. On the reverse side there is a narrow opening surrounded by a low wall, and covered with white hairlets. This opening is connected with the gall-cavity by a narrow duct. Gall no. 21880.

Java, Besoeki, Poeger, S. H. KOORDERS coll., 1898.

Grewia laevigata VAHL.

1728. A leaf-gall caused by a gall-mite.

Irregular, rounded erineae are developed on the underside of the leaf, see figure 57. The erineum consists of multicellular, wavy hairlets, which, in the dried material at our disposal, were of a brown colour. Small patches of erineae may also develop on the upperside of the leaf-blade, especially along the strong nerves. On the reverse side the gall is invisible. Gall no. 21881.

Celebes, South West, Lombasang, alt. 950 m, E. BÜNNEMEIJER coll., IV, 1921.

Fig. 55. *Elaeocarpus stipularis* BL., no. 1724.

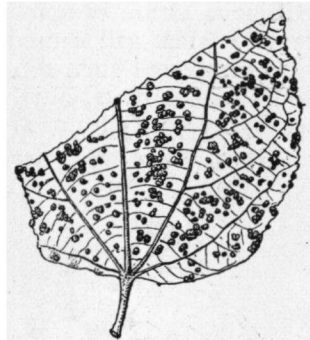
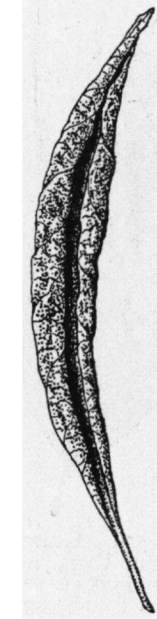


Fig. 56. *Grewia excelsa* WALL., no. 1727.

Microcos stylocarpa BURR.

1729. A leaf-gall caused by a gall-mite.

Longitudinal or more rounded bladders on the upperside of the leaves, from 2 to 8 mm long and 2 to 5 mm broad. They are about 2 mm high. The underside of the bladders is covered with a thick erineum. Gall no. 21882.

Borneo, Soengai Kerepai, H. HALLIER coll., 1893.

Pentace triptera MAST.

1730. A leaf-gall caused by a gall-midge.

This gall is spherical, about 1 mm across, and attached to the leaf-

blade by a tiny base. The surface is covered with straight, white bristles. The larva-cavity is small, spherical, and about $\frac{1}{4}$ mm across, surrounded by a thick, hard wall. The galls are situated in rows along the mid-rib and the secondary nerves. See figure 58. Gall no. 21883.

Sumatra, Palembang, Banjoecasin, alt. 15 m, forester coll., X, 1921.

Triumphetta tomentosa BOJER.

1731. A flower-gall caused by a gall-mite.

The same gall as the one described on *Triumphetta indica* BACK., see our book p. 367, no. 935, fig. 673. The ovary is swollen and the surface covered with grooves and ridges. On the top of the gall is a small opening giving access to the gall-chamber. The other organs of the flower are highly viridescent. Gall no. 21884.

Java, Poedjon near Malang, alt. 800 m, A. J. ULTÉE coll., V, 1931.

FAMILY OF THE MALVACEAE.

Hibiscus cannabinus L.

1732. A stem-gall caused by a coccid.

The infected stem-top is swollen, the internodes remain short, and the leaves form bunches, see figure 59. Gall no. 21714.

Java, Buitenzorg, botanic gardens, alt. 250 m, XI, 1925.

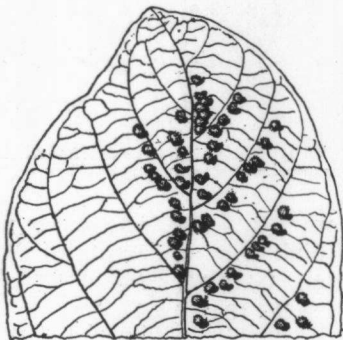


Fig. 58. *Pentace triptera* MAST., no. 1730.

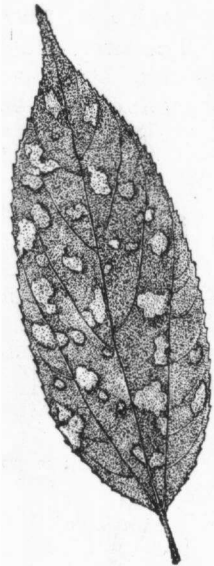


Fig. 57. *Grewia laevigata* VAHL., no. 1728.

Hibiscus Rosa sinensis L.

942. A stem-gall caused by a coccid. 1926a, J. C. VAN DER MEER MOHR, p. 2.

This gall, common in Java and collected in Celebes, has also been found in Sumatra. Gall no. 20537.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

Hibiscus Sabdariffa L.

943. A stem-gall caused by a coccid. 1926b. VAN DER MEER MOHR, p. 2.

This gall was described from Java, but is now also collected in Sumatra. Gall no. 20534.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., II, 1926.

Hibiscus schizopetalus HOOK.

1733. A stem-gall caused by a coccid.

1926b. VAN DER MEER MOHR, p. 3.

The internodes at the end of the infected stems are shortened and swollen, the leaves form bunches.

Sumatra, East Coast,
Medan, J. C. VAN DER
MEER MOHR coll., 1926.

FAMILY OF THE
STERCULIACEAE.

Corchorus capsularis
L.

1734. A root-gall caused
by a nematode.

1929. VAN DER MEER
MOHR, p. 1.

The rootlets are swollen.

Sumatra, East Coast,
Bindjey, Timbang Lang-
kat, J. C. VAN DER MEER
MOHR coll., XI, 1928.

Heritiera littoralis

DRYAND.

958. A leaf-gall caused by
a gall-midge.

1940. DOCTERS VAN LEEUWEN, p. 406, no. 4.

This gall was described from Java, but was also collected in the island of Enggano. Gall no. 20512.

Enggano, Teloek Kiowa, W. J. LÜTJEHARMS coll., VII, 1936.

Heritiera species.

1735. A leaf-gall caused by a psyllid.

These galls are situated along the border of the leaf. They are spherical or pear-shaped, about 6 mm across, sometimes attached to the margin by a broad base, sometimes placed on a shorter or longer pedicel. The surface is yellow, covered with red or red-brown, thick hairs. At the free end is a small opening giving access to a spacious larva-chamber. The wall is thin. Gall no. 21885.

Sumatra, East Coast, Sibolangi, alt. 500 m, II, 1924.

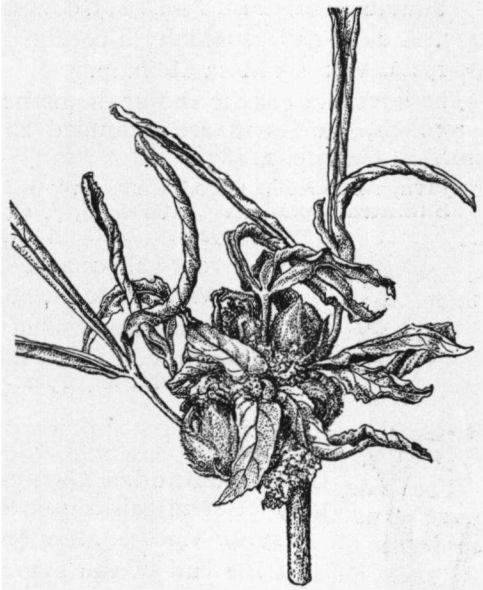


Fig. 59. *Hibiscus cannabinus* L., no. 1732.

Kleinhovia hospita L.

1736. A leaf-gall caused by a thysanopteron.

1926c. VAN DER MEER MOHR, p. 2.

The leaves show small, flatt bladders on the uppersurface, covered with wrinkles and grooves. On the reverse side the bladders are yellow. Gall no. 21886.

Sumatra, East Coast, Terdjoen, J. C. VAN DER MEER MOHR coll., VI, 1926-1737. A stem-gall caused by a coccid.

1926a. VAN DER MEER MOHR, p. 3.

The internodes at the end of the branches remain short, the stem is swollen, the leaves are crumbled and wrinkled, thus forming bunches. Gall no. 21887.

Java, Mt. Gedé, Tjibodas, alt. 1350 m, I, 1926.

Sumatra, South East, Maryland, J. C. VAN DER MEER MOHR coll., II, 1926.



1738. A root-gall caused by a nematode.

1929. VAN DER MEER MOHR, p. 1.

The rootlets are swollen.

Sumatra, East Coast, Bindjey, Tandem Hilir, S. C. J. JOCHEMS coll., XI, 1928.

FAMILY OF THE BOMBACACEAE.

Ceiba pentandra GAERTN.

1739. A stem-gall caused by a coccid.

1926a. VAN DER MEER MOHR, p. 2.

At the end of the branches are formed bunches of leaves, the internodes of the infected parts remain short, and the stem is thickened.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., 1926.

Durio zibethinus L

1740. A stem-gall caused by a lepidopteron.

Fig. 60. *Durio zibethinus* L., no. 1740. The infected stem is distended into a long, more or less fusiform, or rather more cylindrical gall, see figure 60. The larva-chamber is a long canal, the walls of which are covered with clumps of a callus-like tissue, on which the caterpillar feeds. Gall no. 21716.

Java, Buitenzorg, botanic gardens, alt. 250 m, IX, 1924.

Neesia altissima BL.

1741. A leaf-gall caused by a thysanopteron.

Both halves of the leaf-blade are folded upwards. The infected

leaves remain shorter and the main-nerve is curved. The secondary nerves protrude strongly and the outer surface of the gall is rough. The gall-cavity is spacious and the wall is very brittle. Gall no. 21888.

Java, Buitenzorg, botanic gardens, alt. 250 m, IV, 1929.

Ochroma lagopus Sw.

1742. A stem-gall caused by a coccid.

1929. VAN DER MEER MOHR, p. 2.

The internodes of the stem-top remain short, the stem is swollen, and the leaves are wrinkled and form bunches.

Sumatra, East Coast, Medan, S. C. J. JOCHEMS coll., X, 1927.

FAMILY OF THE DILLENACEAE.

Actinidia callosa LINDL.

1743. A leaf-gall caused by a gall-mite.

Cushion-like spots of bright-red erineae are developed on the upper- or on the undersurface of the leaf-blade. In case of a weak infection the erineae are situated near the mid-rib. Is the infection a stronger one then the whole leaf-surface may be covered. The erineum consists of peculiar hairs, they are club-shaped and multicellular. A picture, see figure 61, gives a better idea of their structure than a long description. Gall no. 21733.

Java, Mt. Gedé, Tjibodas, alt. 1600 m, miss C. C. REIJNVAAN coll., IX, 1918.

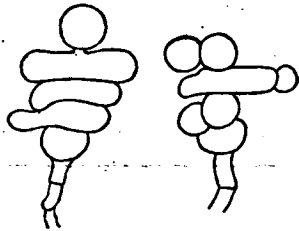


Fig. 61. *Actinidia callosa* LINDL., no. 1743.

Saurauja cauliflora DC.

1744. A leaf-gall caused by a gall-mite.

Irregular, round or oblong, glistening, white patches of hair, 2 to 8 mm large may arise anywhere on the upperside of the leaf. The erineum consists of short, club-shaped hairs. On the reverse side of the leaf there is only a very shallow depression. The same gall occurs also on *Saurauja nudiflora* DC., see our book p. 380, no. 971. Gall no. 21807.

Sumatra, East Coast, Sibolangit, alt. 500 m, IX, 1929.

Saurauja nudiflora DC.

971. A leaf-gall caused by a gall-mite.

1936. DOCTERS VAN LEEUWEN, p. 300, no. 47.

This gall, the same as the foregoing, was described from Java and

Sumatra, it was also collected on the isle of Krakatau. Gall no. 21090.
Krakatau, summit of Mt. Rakata, alt. 830 m, VII, 1929.

Saurauja species.

1745. A leaf-gall caused by a gall-midge.

Almost the same gall as the one described on *Saurauja Reinwardtiana* BL., see our book p. 381, no. 973, fig. 692. The underside of the leaf is strewn with many spherical galls. The gall proper is about 1½ mm in diameter, but looks bigger, because the surface is covered with long, white bristles. On the upperside of the leaf there exists only a slight swelling. The gall-chamber is spherical, surrounded by a soft wall. Gall no. 21889.

Sumatra, West, Rimbo Pingadan, E. BÜNNEMEIJER coll., VI, 1916.

Tetracera scandens MERR.

1746. A leaf-gall caused by a gall-midge.

This gall is a soft swelling of the secondary nerves, it is oval, about 7 mm long and 4 mm broad. The gall is equally developed on the upper-, as on the undersurface of the leaf-blade. The swelling is green with, on both sides, a thin, brown line running from one end to the other. The larva-chamber is longitudinal, surrounded by a thick and soft wall. Gall no. 21890.

Java, West, Dépok, alt. 100 m, X, 1925.

FAMILY OF THE THEACEAE.

Adinandra species.

1747. A leaf-gall caused by a psyllid.

This gall is almost identical with the one described on *Adinandra lamponga* MIQ., see our book p. 383, no. 980, fig. 698. The gall is semi-spherical, the largest part of the gall develops on the upper-surface of the leaf-blade, it is about 5 mm across. On the underside there is only a slight swelling with a split, which gives access to the gall-chamber. This chamber is surrounded by a hard wall. The surface is glossy and light-brown. On the underside the central part with the split is surrounded by a reddish-brown circle. Gall no. 21891.

Borneo, British North, Mt. Kinabalu, alt. 1600 m, J. and S. M. CLEMENS coll., II, 1933.

Eurya japonica THUNB.

1748. A stem-gall caused by a lepidopteron.

Spindle-shaped swellings of the stem. The single galls are about 12 mm long and 5 mm across. They are situated mostly in rows, forming 100 to 150 mm long swellings which, however, show the

demarcations of the separate galls. The bark is unaltered, the woody part of the stem is distended. The very long and narrow gall-chambers are situated in the wood. Gall no. 21892.

Sumatra, East Coast, Mt. Sibajak, alt. 1800 m, X, 1929.

983. A leaf-gall caused by *Eothrips atavus* KARNY.

This gall described from Java, was also found in Sumatra. Gall no. 20426.

Sumatra, East Coast, Mt. Sibajak, alt. 1800 m, X, 1929.

1749. A leaf-gall caused by a psyllid.

The infected, young leaves develop badly; especially near the top they are contorted spirally and of a purple-brown colour, see figure 62. Gall no. 21681.

Java, Mt. Boender near Buitenzorg, alt. 800 m, VIII, 1925.

Pyrenaria serrata BL.

1750. A leaf-gall caused by a psyllid.

On the underside of the leaf-blade are almost semi-spherical excrescences, about 5 mm across and 2 mm high. On the reverse side there is a very slight, circular depression, 4 mm across, and in the centre a tiny opening with a slightly raised rim. This opening gives access to a spacious gall-chamber which is surrounded by a rather hard wall. The surface is glossy. Gall no. 21893.

Java, East, Mt. Ardjoeno above Poenten, alt. 1200 m, A. J. ULTÉE coll.



Fig. 62. *Eurya japonica* THUNB., no. 1749.

Schima Noronhae REINW.

1751. A bud-gall probably caused by a gall-midge.

The buds are swollen into spherical or more oval galls which are attached with a broad base to the base of the petiole and to the stem. The galls are 5 to 7 mm across. The surface is glabrous. The gall-chamber is spherical, about 1½ mm across, surrounded by a thick, hard wall. The bigger galls contain two larva-chambers. Gall no. 21894.

Sumatra, West, Solok Loeboek Soelasih, alt. 1150 m, forester coll., I, 1924.

FAMILY OF THE GUTTIFERAE.

Calophyllum Inophyllum L.

990. A leaf-gall caused by *Leptynoptera sulfurea* CRAW.

This psyllid-gall was described from Java, but has also been found in the island of Karimon Djawa. Gall no. 21607.

Karimon Djawa, P. FRANCK coll., V, 1926.

Calophyllum Soulattri BURM. F.

1752. A leaf-gall caused by a gall-midge.

The galls are situated along the margin of the leaf, or along the mid-rib, occasionally also along the thin stems. This gall is only developed on the underside of the leaf, it is semi-spherical, often irregular, and the galls may coalesce, forming small clumps, see figure 63. The single gall is about $2\frac{1}{2}$ mm across, with a flat top; the gall-cavity is cylindrical, the wall thick and hard. Gall no. 21895.

Soemba, Lai Rondja, alt. 1000 m,
K. W. DAMMERMAN coll., V, 1925.

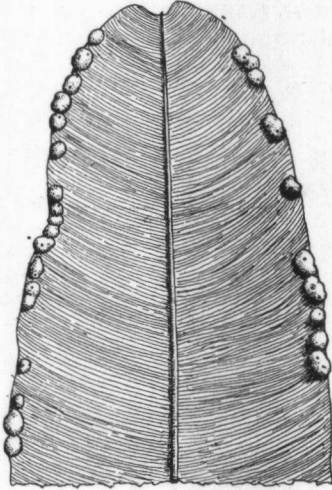


Fig. 63. *Calophyllum Soulattri*
BURM. F., no. 1752.

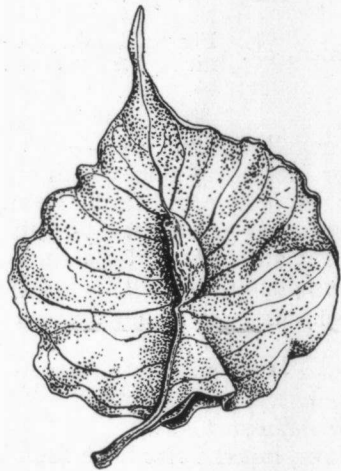


Fig. 64. *Garcinia laterifolia* BL.,
no. 1753.

Garcinia dioica BL.

993. A leaf-gall caused by a gall-midge.

1927c. FELT, p. 388.

The gall-causer was described by FELT as *Gnesiodiplosis garcinia*. Gall no. 20452.

Garcinia laterifolia BL.

1753. A leaf-gall caused by a thysanopteron.

This gall is a bursi-form swelling of the underside of the mid-rib, 10 to 15 mm long and 5 to 6 mm broad, see figure 64. The gall-chamber is spacious and longitudinal, opening with a long slit at the upperside of the leaf. The wall is thick and hard, the outer surface glabrous, lightgreen, often with a reddish hue. Gall no. 21896.

Java, Rantjabadak near Buitenzorg,
alt. 450 m, R. C. BAKHUIZEN VAN
DEN BRINK coll., XII, 1930.

Garcinia species diversae.

1754. A leaf-gall caused by a gall-mite.

1940. DOCTERS VAN LEEUWEN, p.
406, no. 3.

The underside of the leaf-blade is strewn with minute knobs, not $\frac{1}{8}$ mm high and broad. They are situated in wavy, double rows as if the gall-causer walked over the leaf, and punctured it at regular distances; the rows run in all directions and often intersect. Where the rows are very close together the galls coalesce and form a very low and flat elevation, otherwise the excrescences are apart. Each knob has a tiny opening at its top which gives access to a small gall-chamber. Though more rarely the rows of galls also occur on the upper surface of the leaf. The material is kept in the Herbarium at Leiden.

Enggano, Meok, W. J. LÜTJHARMS coll., VII, 1936.

1755. A witches' broom caused by a gall-mite.

The axil-buds change into bundles of short, repeatedly branched twigs. The leaves are reduced into scales. Sometimes they form compact bunches of about 20 mm in diameter, sometimes they are longer and more loosely arranged. Gall no. 21897.

Java, Mt. Paroengpoeng near Tjampea, alt. 750 m, R. C. BAKHUIZEN VAN DEN BRINK coll., IX, 1920.

1756. A stem-gall caused by a lepidopteron.

A swelling of one or two internodes at the top of the twigs, more or less spindle-shaped, from 20 to 40 mm long, and 3 to 5 mm broad. The spacious larva-chamber is longitudinal. The surface of the gall is glabrous. Gall no. 21898.

Borneo, British North, Mt. Kinabalu, Panimbukan, alt. 1500 m, J. and M. CLEMENS coll., II, 1931.

FAMILY OF THE DIPTEROCARPACEAE.

Anisoptera Curtisii DYER.

1757. A leaf-gall caused by a gall-mite.

This gall protrudes for the greater part on the underside of the leaf-blade where it forms small, spherical excrescences; on the upperside it forms a small cone. The upperside of the gall is glabrous, the underside is covered with rather long hairs. The galls are from 3 to 5 mm across, see figure 65. The cone on the upperside has a small opening surrounded by tufts of short hairlets. The gall-cavity is subdivided in several parts by excrescences of the wall. Gall no. 21899.

Borneo, West, Sambas Patch, alt. 20 m, forester coll., II, 1924.

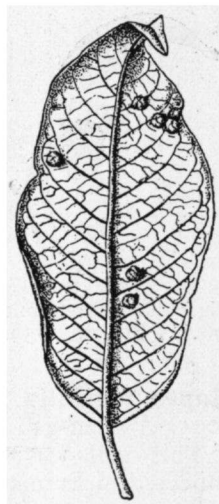


Fig. 65. *Anisoptera Curtisii* DYER., no: 1757.

Dipterocarpus appendiculata SCHEFF.

1758. A bud-gall caused by an insect.

The end-bud is changed into a very peculiar gall. The vegetation point and the young leaves are changed into the wall of a spherical chamber, about 3 mm across. This is covered by the strongly thickened stipule which forms the covering of the bud, see figure 66. This stipule is hard and woody, about 2 mm thick at its base and forms a kind of bag in which the rest of the gall is enclosed. The gall-causer is probably a gall-midge, but in the dried material at our disposal nothing was left of the inhabitants. Gall no. 21900.



Fig. 66. *Dipterocarpus appendiculata* SCHEFF., no. 1758.

Lingga — Archipelago, island of Singkep, Maroh, forester coll., I, 1921.

Dipterocarpus gracilis BL.

1759. A bud-gall caused by an insect.

The buds are changed into spherical galls, about 10 mm across, see figure 67. The gall-chamber is spacious and surrounded by a hard wall, about $\frac{1}{2}$ mm thick. This wall is covered with peculiar cylindrical outgrowths which are about 1 mm high and $\frac{1}{5}$ mm thick. They are closely pressed against each other, so that on cross-section the outline is not circular but angular. They form a compact layer. The outside is thickly covered with brown, wavy hairlets. Gall no. 21901.

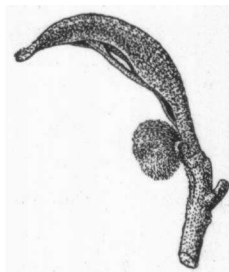


Fig. 67. *Dipterocarpus gracilis* BL., no. 1759.

Sumatra, Lampong Districts, Toeloeng Bawang, alt. 90 m, forester coll., VII, 1923.

Hopea fagifolia MIQ.

1005. A stem-gall caused by a gall-midge.

This gall was described from Java and Borneo, it was also collected in Sumatra. Gall no. 21531.

Sumatra, Palembang, C. N. A. DE VOGD coll., I, 1929.

Isoptera borneensis SCHEFF.

1760. A bud-gall caused by an insect.

The end or the axil-buds are swollen into oval or spherical galls, from 12 to 20 mm across. The basal part of the gall is glabrous, the top flat and covered with peculiar outgrowths, see fig. 68. These

outgrowths may be simply linear or they are swollen at their tops and curved. Moreover, they are covered with adpressed, short, fawn hairlets. The gall is very hard and contains one or two irregular larva-chambers. Gall no. 21624.

Borneo, Kapoeas, J. E. TEIJSMANN coll.;
Soengai Sambas, H. HALLIER coll., 1893.

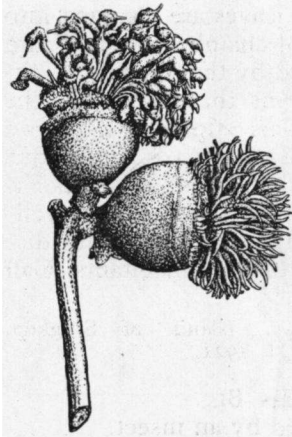


Fig. 68. *Isoptera borneensis*
SCHEFF., no. 1760.

Sumatra, Rawas, alt. 100 m, W. GRAS-
HOFF coll., III, 1916; idem alt. 200 m, J. DUMAS coll., VII, 1917.

***Parashorea aptera* v. SL.**

1761. A leaf-gall caused by a gall-midge. This gall is only developed on the underside of the leaf-blade. It is mostly attached to the mid-rib and the strong secondary nerves. The gall has the shape of a small button, circular and with a rounded border. They are from 2 to 3 mm across and $1\frac{1}{2}$ mm high, attached to the leaf with a very short and thin pedicel. The gall-chamber is spherical, the wall thick and hard, the surface glabrous. Gall no. 21902.

Sumatra, Rawas, alt. 100 m, W. GRAS-
HOFF coll., III, 1916; idem alt. 200 m, J. DUMAS coll., VII, 1917.

***Parashorea lucida* KURZ.**

1762. A leaf-gall caused by a gall-midge.

The upperside of the leaf-blade is strewn with minute, spherical galls, about 1 mm across, see figure 69. On the reverse side nothing of the gall is visible. The top of the gall is somewhat flattened, it shows a circular depression with a very tiny protuberance in the centre. The surface is glossy. The larva-chamber is spherical, the wall thin but hard. Gall no. 21903.

Sumatra, Priaman, V Kotta's, P. DIEPENHORST coll.

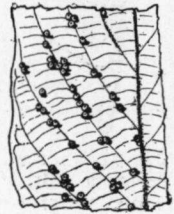


Fig. 69. *Parashorea lucida*
KURZ., no. 1762.

1763. A twig-gall caused by a hymenopteron.

The infected twigs remain short and are irregularly swollen; moreover, the bark under the infected twig is lopsidedly swollen, see figure 70. The surface of the gall is covered with the same brown corky layer as the normal parts of the twigs. The wood is distended and in the centre tiny, spherical gall-chambers, about $\frac{1}{2}$ mm across, are situated in a row. Gall no. 21904.

Sumatra, Priaman, V Kotta's, P. DIEPENHORST coll.

Shorea Gijbertiana BURCK.

1764. A leaf-gall caused by a gall-midge.

These galls are only developed on the underside of the leaves. They are tiny, spherical excrescences, about 1 to 2 mm across. The gall proper is even smaller, no more than $\frac{3}{4}$ mm with a flattened top, but the surface is thickly covered with wavy, red-brown hairlets. The larva-chamber is circular and flat and surrounded by a hard wall. Gall no. 21905.

Borneo, South East, Poeroek Tjahoe, alt. 100 m, forester coll.

Shorea lepidota BL.

1765. A bud-gall caused by an insect.

The bud develops into a peculiar gall. The stem remains short and the scales are enlarged and form a longitudinal bunch, see figure 71. In general this gall resembles the gall caused by *Rhabdophaga rosaria* L. on species of *Salix*, but the form is different. The gall-causer which was absent in the dried material at our disposal, lives in a small hole above the vegetation point and it is enclosed between small, scale-like outgrowths. Gall no. 21690.



Fig. 71. *Shorea lepidota* BL., no. 1765.

Sumatra, Simpang Kiri, J. EMONDT coll.

Shorea leprosula MIQ.

BRANDIS (1895) says in his "Enumeration of the *Dipterocarpaceae*": "This species is much infected with galls of various shapes, resembling wingless fruits or cones with pointed scales. On the leaves are round, hairy galls, and along mid-rib and base of secondary nerves are curious swellings which probably are galls, and which it

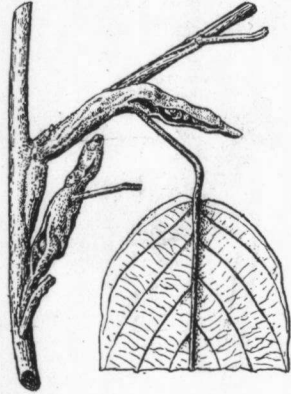


Fig. 70. *Parashorea lucida* SCHEFF., no. 1763.

1766. A bud-gall caused by an insect.

The buds change into spherical galls, about 6 mm across. The top is crowned with a small spikelet, see figure 72. The surface is rough and covered with a corky layer. The gall-cavity is spacious, surrounded by a hard wall. Gall no. 21688.



Fig. 72. *Shorea lepidota* BL., no. 1766.

would be interesting to examine on the spot. These swellings are hollow, consisting of several longitudinal compartments, and the walls of these compartments are clothed with long, slender, stellate hairs”.

1767. A leaf-gall caused by a gall-midge.

These galls are spherical, covered with long, wavy, red-brown hairs. They are situated near each other and form together hairy patches on the upperside of the leaf-blade, see figure 73. On the reverse side there is no trace of the galls. The gall proper is about 1 mm in diameter, the hairs also about 1 mm long. The larva-chamber is spherical, $\frac{1}{2}$ mm across, with a thin, but hard wall. Gall no. 21692.

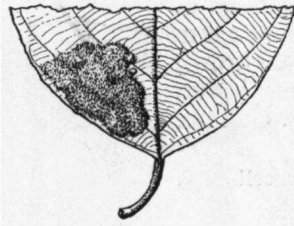


Fig. 73. *Shorea leprosula*
Miq., no. 1767.

Sumatra, Palembang, Banjoeasin, F. H.
ENDERT coll.

1768. A leaf-gall caused by a gall-midge.

Tiny, hairy galls are situated in rows along the strong nerves. They are attached to the upperside of the leaf-blade, no trace showing on the reverse side. The gall proper is about $\frac{1}{4}$ mm long and still less high. The surface is covered with stiff, white or brownish hairlets. The gall-cavity is circular and low, with a thin wall. Gall no. 21906.

Sumatra, Palembang, Banjoeasin, F. H. ENDERT coll.

1769. A leaf-gall caused by a gall-midge.

These galls are attached to the underside of the leaf-blade; only a tiny swelling is visible on the reverse side. They are chiefly cylindrical, but narrowing down into a flat top, and attached to the leaf with a broad base, see figure 74. The surface is sparsely covered with short hairlets. The larva-chamber is cylindrical, surrounded by a thin, but hard wall. Gall no. 21693.

Sumatra, Lampong Districts, Telok Betong,
Redjosari, alt. 50 m, F. H. ENDERT coll., IX, 1920.

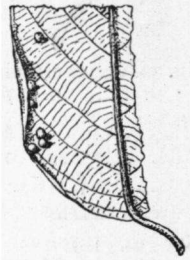


Fig. 74. *Shorea leprosula* Miq., no.
1769.

1770. A leaf-gall caused by a gall-midge.

These galls are attached to the underside of the leaf-blade. They are situated along the midrib, in the corners between the strong secondary nerves and the main nerve, see figure 75. The galls are flat and oval, about 1 mm long and $\frac{1}{4}$ mm broad, and $\frac{1}{2}$ mm high. The

larva-chamber is also flat, surrounded by a hard wall. Gall no. 21694.

Sumatra, Lampong Districts, Telok Betong, Redjosari, alt. 50 m,
F. H. ENDERT coll., IX, 1920.

Vatica Curtisii KING.

1771. A leaf-gall caused by a gall-midge.

These galls are attached to the upper- or to the underside of the leaf-blade, on the reverse side there is no trace of the galls. They are more or less spherical, about 2 mm across. The surface is thickly covered with brown hairs. The larva-chamber is spherical, about $\frac{1}{2}$ mm across, surrounded by a thick and hard wall. Gall no. 21907.

Borneo, South East, Asem-Asem, forester coll., IX,
1919.



Fig. 75. *Shorea leprosula*
MIQ., no. 1770.

Vatica simalurensis v. SL.

1772. A leaf-gall caused by a gall-midge.

Part of the gall is developed on the upper- and part of it on the underside of the leaf-blade. They are discoid on the upperside, the centre shows a depression, surrounded by a slightly elevated rim. The centre is brown, the rim of a lighter colour, see figure 76. On the underside the galls are irregularly conical, 2 mm across and about $\frac{1}{2}$ mm high. The larva-chamber is flat, about $\frac{1}{2}$ mm across, surrounded by a hard wall. Gall no. 21908.

Simaloer-island, Achmad coll., III, 1919.

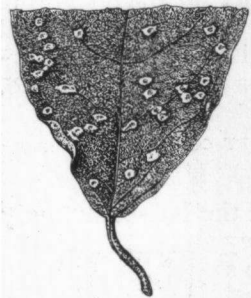


Fig. 76. *Vatica simalurensis*
v. SL., no. 1772.

Vatica Teijsmanniana BURCK.

1773. A leaf-gall caused by a gall-midge.

The galls are developed either on the upperside or on the underside of the leaves, on the reverse side there is no trace of the galls. They are discoid about 4 mm across and $1\frac{1}{2}$ mm high, attached to the leaf with a tiny point. The surface is thickly covered with brown hairlets which form a velvety covering. In the centre is a tiny depression in the hair-covering as small as a pin's point, see figure 77. The larva-cavity is spherical, about $\frac{1}{2}$ mm across, the wall is thin but hard. The greater part of the gall is formed by the hair-covering. Gall no. 21909.

Bangka, Soengeiliat, J. BERKHOUT coll., VIII, 1886.

FAMILY OF THE FLACOURTIACEAE.

Casearia grewiaefolia VENT.

1774. A leaf-gall caused by a gall-mite.

Low, irregular, but chiefly circular bladders, about 1 mm across or less, are developed on the upperside of the leaf-blade. On the reverse side the wall of the bladders is covered with a thick, white erineum which forms a kind of rounded cushion. The galls may coalesce so as to form larger hairy patches. Gall no. 21910.

Borneo, South East, Martapoera, alt. 350 m, forester coll., IX, 1926.

Flacourtia Rukam Z. et M.

1017. A leaf-gall caused by a gall-midge.

1940. DOCTERS VAN LEEUWEN, p. 406, no. 2.

This gall described from Java and Sumatra was also collected on the island of Enggano. Gall no. 20177.

Enggano, Malakoni, W. J. LÜTJEHARMS coll., VI, 1936.

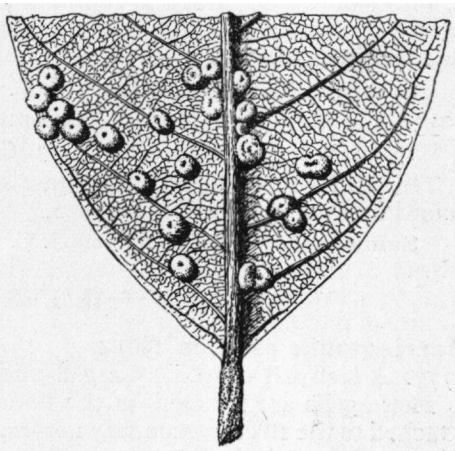


Fig. 77. *Vatica Teijsmanniana* BURCK, no. 1773.

FAMILY OF THE PASSIFLORACEAE.

Passiflora foetida L.

1775. A root-gall caused by a nematod.

1926a. VAN DER MEER MOHR, p. 3.

Nodosities on the rootlets.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

1776. A leaf-gall caused by a thysanopteron.

1926b. VAN DER MEER MOHR, p. 4.

The leaves remain smaller, they are wrinkled and covered with yellow-green, yellow, or yellowish-red spots. Gall no. 21911.

Sumatra, East Coast, Poentjei Mantjirim, L. FULMEK coll.; Bandar Klappa, J. C. VAN DER MEER MOHR coll., IV, 1926.

FAMILY OF THE SONNERATIACEAE.

Sonneratia acida L.f.

1032. A leaf-gall caused by a gall-midge.

1926a. VAN DER MEER MOHR, p. 4.

This gall was described as an insect-gall from Java. VAN DER MEER MOHR has found that the causer is a gall-midge. He found the gall in Sumatra. Gall no. 21111.

Sumatra, East Coast, Laboean, J. C. VAN DER MEER MOHR coll.

1033. A leaf-gall caused by a lepidopteron.

1926c. VAN DER MEER MOHR, p. 3, fig. 1, 2.

This gall was described from Java and Siam, but has also been found in Sumatra. Gall no. 21112.

Sumatra, East Coast, Laboean, J. C. VAN DER MEER MOHR coll.

FAMILY OF THE LECYTHIDACEAE.

Barringtonia asiatica KURZ.

1777. A leaf-gall caused by a gall-midge.

These galls are situated on the underside of the leaves, they are attached to the strong secondary nerves, often 3, 5, or even 9 in a row. They are spherical, from 4 to 6 mm across, and attached to the nerves with a small part of the underside. On the upperside of the leaf only small, discoloured spots are visible, often with an aperture in the centre, through which the inhabitants hatch. The larva-chamber is spherical, surrounded by a thick wall, which consists of soft, parenchymatous tissues. The surface of the gall is glabrous. Gall no. 21912.

Ambon, A. RANT coll., VI, 1929.

FAMILY OF THE COMBRETACEAE.

Terminalia Catappa L.

1778. A leaf-gall caused by a gall-midge.

1940. DOCTERS VAN LEEUWEN, p. 410, no. 14.

Flat, lenticular swellings developed partly on the upperside, partly on the underside of the leaf. On the upperside there is a low, circular, glossy swelling, about 2 mm across. On the underside the excrescence is also circular and very flat, in the centre is a tuft of short, greyish hairlets. The larva-chamber is very small. The midges leave the galls through an opening in the underside. The material is kept in the Herbarium at Leiden.

Enggano, Malakoni-Meok, W. J. LÜTJEHARMS coll., VI, 1936.

1048. A leaf-gall caused by a gall-midge.

1932a. DOCTERS VAN LEEUWEN, p. 3, no. 9.

This gall described from Java, Sumatra, Sebesi, and Krakatau, was also collected in the island of Berhala. Gall no. 21122.

Berhala-island, J. C. VAN DER MEER MOHR coll., VIII, 1926.

1049. A leaf-gall caused by a gall-mite.

1932a. DOCTERS VAN LEEUWEN, p. 3, no. 10.

This gall described from Sumatra, Krakatau, and Salajar was also found in the island of Berhala. Gall no. 21123.

Berhala-island, J. C. VAN DER MEER MOHR coll., VII, 1926.

FAMILY OF THE MYRTACEAE.

Aphanomyrtus tetraquetra VAL.

1779. A leaf-gall probably caused by a thysanopteron.

Small, horn-like galls are attached to the underside of the leaves. They are from 3 to 4 mm high, the base is broad, the top very slender. On the upperside there is rather a wide opening which leads into the gall-cavity which has the same form as the gall itself. The surface of the gall is glabrous. Gall no. 21913.

Mentawai-islands, Siberoet, IBOET coll., IX, 1924.

Eucalyptus alba REINW.

1780. A gall on the stem and on the leaves caused by a gall-midge.

Large galls develop on the stem, they are irregular spindle-shaped, from 3 to 60 mm long and from 3 to 20 mm across. The wood is changed into a rather soft tissue in which hundreds of spherical larva-chambers, each about $\frac{1}{2}$ mm across, are imbedded. The leaf-galls are visible on both sides, they form saucage-like outgrowths up to 30 mm long and 10 mm across. Often both halves of the leaf are changed into galls. The larva-chambers are exactly like the ones of the stem-galls. Gall no. 21914.

Timor, West, Atamboea, TH. RAHM coll., VIII, 1925.

Eugenia acuminatissima KURZ.

1781. A petiole-gall caused by a gall-midge.

The short petioles are distended into more or less cylindrical but irregular galls. They are about 5 mm long and 3 mm broad, see figure 78. There are one to three tiny larva-chambers in the centre of the gall. Gall no. 21723.

Java, Dépok, alt. 100 m, J. G. B. BEUMÉE coll., II, 1924.

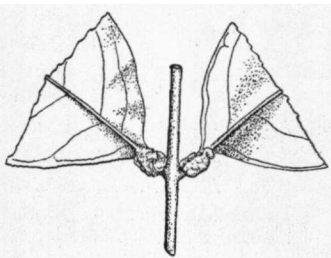


Fig. 78. *Eugenia acuminatissima* KURZ, no. 1781.

***Eugenia cuprea* K. et V.**

1782. A leaf-gall caused by a psyllid.

On the upperside small excrescences, often in great numbers near each other. They are about $1\frac{1}{2}$ mm across. On the reverse side there exists only an oval, shallow depression in which the larva of a psyllid snugly fits. Gall no. 21915.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, XI, 1925.

***Eugenia jamboloides* K. et V.**

1783. A stem-gall caused by a gall-midge.

Spindle-shaped or more cylindrical swellings of the thin branches, often lopsidedly developed. The galls are from 5 to 15 mm across and they consist of the distended wood. The larva-chambers are oval, about $1\frac{1}{2}$ mm long and 1 mm broad. The surface is glabrous, but covered with a gray corky layer. Gall no. 21916.

Java, Mt. Gedé, Kandang Badak, alt. 2300 m, VI, 1931.

1784. A leaf-gall caused by a psyllid.

On the underside of the leaf-blade oval, shallow depressions with the larva of a psyllid-fly snugly fitting in them. On the upperside there are only yellow spots, see figure 79. Gall no. 21706.

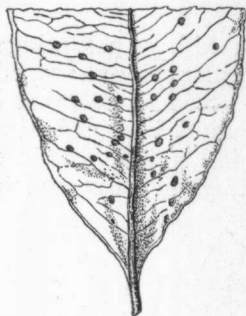


Fig. 79. *Eugenia jamboloides* K. et V., no. 1784.

Java, Buitenzorg, botanic gardens, alt. 250 m, III, 1925.

1785. A leaf-gall caused by a psyllid.

These galls are chiefly developed on the upperside of the leaf-blade. They are spherical excrescences, often coalescing, from 4 to 6 mm across. On the underside of the leaf there exists a conical swelling with an opening in the top giving access to the spacious gall-chamber. At maturity the galls open by irregular rents in the upperside which curl backwards. Gall no. 21917.

Java, Mt. Gedé, Tjibodas, alt. 1800 m, III, 1928.

Soemba, Mao Marroe, alt. 450 m, K. W. DAMMERMAN coll., V, 1925.

***Eugenia javanica* LAM.**

1786. A leaf-gall caused by a psyllid.

On the upperside of the leaf low, oval bladders, $1\frac{1}{2}$ mm long and about 1 mm broad. On the underside shallow depressions in which the larvae of a psyllid-fly fit snugly. Gall no. 21918.

Java, Banten, Tjarita, K. B. BOEDIJN coll., V, 1931.

***Eugenia laxiflora* K. et V.**

1787. A flower-gall caused by a psyllid.

The flowers change into irregular, but mainly spherical galls, from 5 to 10 mm long and from 4 to 6 mm across. The surface of the gall is glabrous, but covered with a greyish corky layer. There are one or two larva-chambers surrounded by a thick and rather soft wall. Gall no. 21919.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, SAPIIN coll., 1915.

***Eugenia macromyrta* K. et V.**

1788. A leaf-gall caused by a psyllid.

On the upperside of the leaf-blade are developed hundreds of oval excrescences, about $1\frac{1}{2}$ mm long and 1 mm broad. On the reverse side there is a corresponding depression in each of which lives one psyllid-larva. Gall no. 21920.

Borneo, Soengai Rikai, H. HALLIER coll., 1893.

***Eugenia operculata* ROXB.**

1789. A leaf-gall caused by a psyllid.

On the upperside of the leaf-blade are developed circular, very shallow depressions, about 2 mm across, and of a lightgreen or red colour. On the reverse side the gall is flattened semi-spherical with 8 to 10 thick, short filaments on the top. When the gall matures the wall splits and the filaments spread star-like. See figure 80. Gall no. 21921.

Java, Mt. Oengaran, alt. 1200 m, XI, 1919;
Mt. Gedé, Tjibodas, alt 1500 m, VII, 1925.

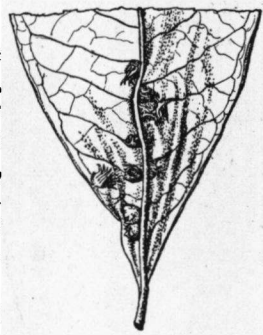


Fig. 80. *Eugenia operculata* ROXB., no. 1789.

***Eugenia polyantha* WIGHT.**

1790. A stem-gall caused by a lepidopteron.

The stems are distended into short fusiform or almost spherical galls, 10 to 15 mm long and 7 to 10 mm across. The wood is swollen and in this part an irregular canal is tenanted by a caterpillar. Gall no. 21922.

Borneo, Sambas, Mt. Bawang. J. P. SCHUTTEMAKER coll., V, 1932.

***Eugenia rufotomentosa* MERR.**

1791. A leaf-gall caused by a psyllid.

On the upperside of the leaf-blade almost spherical galls, about 4 mm across, on the underside a rounded conical outgrowth, about

2 mm high. On this side an opening in the top gives access to the spacious gall-chamber. A gall common on many species of *Eugenia*. Gall no. 21923.

Borneo, British North, Mt. Kinabalu, Dallas, alt. 1000 m, J. et M. S. CLEMENS coll., XI, 1931.

Eugenia species diversae.

1792. A bud-gall caused by a gall-mite.

The buds have changed into cauliflower-like bunches of short, thick branches which are compact and from 20 to 50 mm across. Leaves are absent and even scales have hardly developed. Gall no. 21924.

Java, Mt. Papandajan, crater, alt. 2400 m, L. VAN DER PIJL coll., III, 1932; idem, alt. 2200 m, I, 1930.

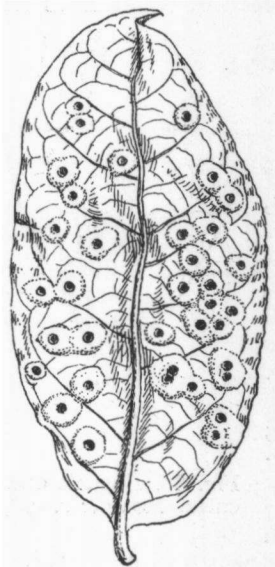


Fig. 81. *Eugenia* species, no. 1794.

1793. A leaf-gall caused by a psyllid.

1932a. DOCTERS VAN LEEUWEN, p. 1, no. 2.

These galls are identical with the galls on the leaves of *Eugenia malaccensis* LAM., caused by *Megatrioza vitiensis* KIRK., see our book p. 411, no. 1074. On the upper-side of the leaf-blade are developed semi-spherical excrescences, 4 to 5 mm across. On the reverse side more conical outgrowths occur with an opening in the centre which communicates with the gall-chamber. This opening widens when the gall-inhabitants leave the gall. Gall no. 21925.

Sumatra, East Coast, Island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1927.

1794. A leaf-gall caused by a psyllid.

On the upperside of the leaf-blade flat, rounded excrescences, about 4 mm across, on the underside there are flat, circular swellings with a circular hole in the centre of the gall, about 1 mm across, see figure 81. In this opening lives the larva of a psyllid. Gall no. 21926.

Salajar-island, Mt. Bantanoë Haroe, alt. 500 m, V, 1913.

Leptospermum javanicum BL.

1795. A witches' broom caused by a gall-mite.

Accumulations of thin branches with small leaves form bunches, which have a reddish colour. Gall no. 21927.

Java, Mt. Pangrango, summit, alt. 3000 m, X, 1927.

Melaleuca Leucodendron L.

1796. A leaf-gall caused by a gall-mite.

These galls are situated on the under- or on the uppersurface of the leaf-blade, on the reverse side nothing of the gall is visible. They form irregular, more or less oval patches, 1 to 2 mm long, $\frac{1}{2}$ to 1 mm broad, and $\frac{1}{2}$ mm high. They consist of an accumulation of granular outgrowths of the epidermis, see figure 82. Gall no. 21928.

Java, Buitenzorg, botanic gardens, alt. 250 m, V, 1926.
Ceram, Wai Oewang near Piroe, A. RANT coll., VII, 1929.

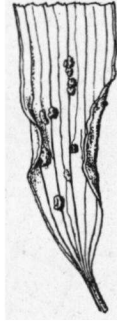


Fig. 82.

Melaleuca
Leucodendron
L., no. 1796.

Rhodamnia cinerea JACK.

1797. A leaf-gall caused by a gall-mite.

Each gall develops simultaneously on both sides of the leaf-blade. They form oval, hairy patches, about 3 mm long and 2 mm broad. The hairs form a velvety erineum and are wavy and red-brown. Gall no. 21929.

Ambon, alt. 30 m, IV, 1926; idem, Soja di Atas, alt. 100 m, A. RANT coll., VI, 1929.

FAMILY OF THE MELASTOMATACEAE.

Anisophyllea species.

1798. A leaf-gall caused by a gall-mite.

On the upperside of the leaf-blade are developed large bladders of an irregular form and size, up to 30 mm long. The surface is glabrous and covered with wrinkles and knobs. On the reverse side the wall of the bladders is covered with a dense, rust-coloured erineum. Gall no. 21930.

Sumatra, West Coast, Tandjong Gadang, E. JACOBSON coll., IV, 1926.

Dissochaete gracilis BL.

1799. A leaf-gall caused by a gall-midge.

Very flat, discoid galls, visible on both sides of the leaf-blade. They are about 2 mm across and not even $\frac{1}{2}$ mm thick. The centre of the gall is light coloured and the gall is surrounded by a narrow, red ring. This gall resembles the well-known „Fenstergalle (window-

gall) on *Acer Pseudo-platanus* L. in Europe. Gall no. 21931.
Java, Mt. Pantjar near Buitenzorg, alt. 300 m, K. B. BOEDIJN coll.,
 XII, 1931.

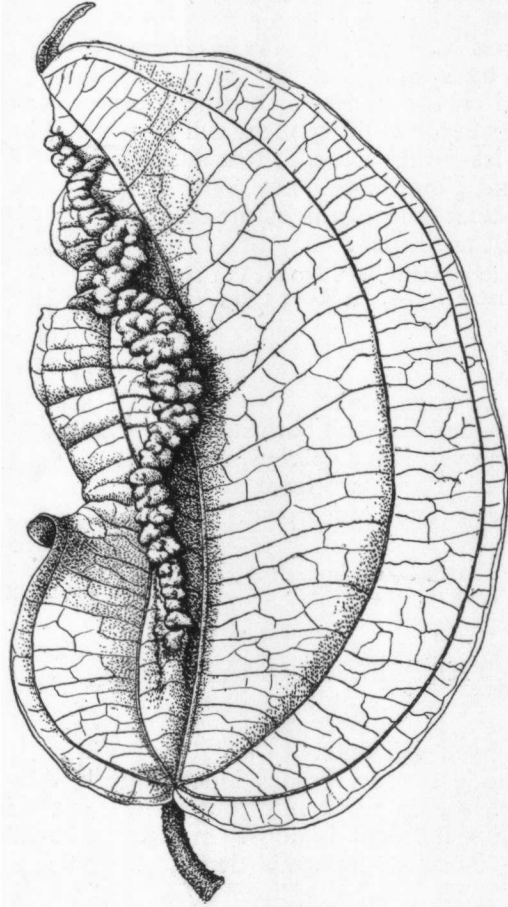


Fig. 83. *Marrumia muscosa* BL., no. 1802.

ved and of a peculiar blue colour as the young leaves always are.
 Gall no. 21684.

Java, Mt. Boender near Buitenzorg, alt. 600 m, VII, 1925.

***Marrumia muscosa* BL.**

1802. A leaf-gall caused by a thysanopteron.

On the upperside of the leaves arise irregular bladders which are

***Dissochaete* species.**
 1800. A leaf-gall caused by a thysanopteron.

The border of the leaf and in case of a strong infection both halves of the leaf-blade are rolled downwards. The surface is covered with low, red bladders, about 2 mm across.
 Gall no. 21932.

Java, Pateunteung near Garoet, alt. 1400 m, IV, 1930.

Sumatra, East Coast, Bandarbaroe, alt. 800 m, IX, 1920.

***Kibessia azurea* BL.**
 1801. A leaf-gall caused by an aleurodid.

The numerous larvae are situated on the underside of the young leaves. They occupy a small, shallow depression of the undersurface which corresponds with an inconspicuous swelling on the upperside of the leaf. Moreover, the infected leaves are somewhat curved

contracted at their bases, see figure 83. These bladders are situated in rows, chiefly along the main-nerve, but also along the border of the leaves. In the beginning these bladders are dark-red, afterwards they become purple-black. On the underside there is an opening which gives access to a spacious gall-chamber. Gall no. 21728.

Java, Bolang near Buitenzorg, alt. 600 m, V, 1925; Mt. Tjipoetih near Poerasèda, Buitenzorg, alt. 500 m, II, 1929; Mt. Paroengpoeng, Leuwiliang, Buitenzorg, alt. 750 m, R. C. BAKHUIZEN VAN DEN BRINK coll., XII, 1930.

Medinilla javanensis BL.

1803. A leaf-gall caused by a thysanopteron.

Both halves of the leaf-blade are folded and more or less rolled upwards. Gall no. 21934.

Java, Mt. Tangkoeban Prahoe near Bandoeng, alt. 1800 m, IV, 1928.

Medinilla verrucosa BL.

1804. A leaf-gall caused by a gall-midge.

Both halves of the young leaves are slightly rolled upwards, enclosing a spacious gall-chamber. The maggots of a gall-midge live in great numbers in this chamber. The infected leaves remain small and they have a red colour. Gall no. 21639.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, II, 1925.

Medinilla species.

1805. A leaf-gall caused by a gall-midge.

Almost spherical galls protrude partly on the upper- and partly on the undersurface of the leaf-blade, see figure 84. They are from 2 to 5 mm across, often coalescing. The larva-chamber is spherical, about 1 mm across, and surrounded by a thick, soft wall. In case of a strong infection the whole leaf may change into a compound gall, the single galls remaining visible on the outside. Sometimes the galls are developed on the stems. Gall no. 21936.

Bangka, Koba, Mt. Pading, alt. 450 m, E. BÜNNEMEIJER coll., XII, 1917.

Melastoma malabathricum L.

1116. A stem-gall caused by a lepidopteron.

1926b. VAN DER MEER MOHR, p. 3.

This gall was described from Java, it was also collected in Sumatra. Gall no. 21155.

Sumatra, East Coast, Rimboen, J. C. VAN DER MEER MOHR coll., 1926.

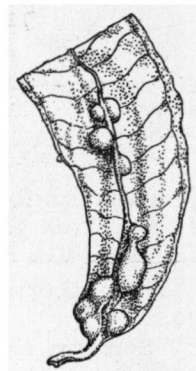


Fig. 84. *Medinilla* species, no. 1805.

1118. A leaf-gall caused by *Liothrips longirostris* KARNY.

1926a. VAN DER MEER MOHR, p. 3.

This gall was described from Java, Riau, and Celebes, it was also collected in Sumatra. Gall no. 20616.

Sumatra, East Coast, Soengei Robe, J. C. VAN DER MEER MOHR coll. 1926.

Omphalopus fallax NAND.

1806. A leaf-gall caused by a thysanopteron.

Dark-brown or purple-coloured bladders are developed on the uppersurface of the leaf, along the main-nerve, see figure 85. Moreover, the infected parts are slightly rolled downwards, so that a spacious gall-chamber is formed. Gall no. 21644.

Sumatra, East Coast, Bandarbaroe, alt. 800 m, IX, 1920.

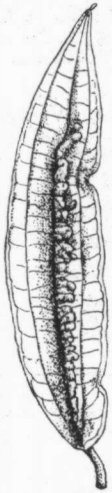


Fig. 85. *Omphalopus fallax* NAND., no. 1806.

FAMILY OF THE OENOTHERACEAE.

Jussiaea angustifolia LAM.

1807. A leaf-gall caused by an aphid.

1926a. VAN DER MEER MOHR, p. 2.

The leaves are wrinkled and form bunches at the end of the branches.

Sumatra, East Coast, Maryland, J. C. VAN DER MEER MOHR coll.

1127. A fruit-gall caused by a coleopteron.

1926c. VAN DER MEER MOHR, p. 2.

This gall described from Java, was also found in Sumatra. Gall no. 21163.

Sumatra, East Coast, Medan and Maryland, J. C. VAN DER MEER MOHR coll.

Jussiaea linifolia VAHL.

1128. A fruit-gall caused by a coleopteron.

1926c. VAN DER MEER MOHR, p. 3.

This gall described from Java, was also found in Sumatra. Gall no. 21537.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

FAMILY OF THE HALORRAGHIDACEAE.

Laurembergia coccinea KANITZ.

1808. A gall on the stem and the inflorescence caused by a gall-mite.

1933. DOCTERS VAN LEEUWEN, p. 193, fig. 39.

The end of the stem and the inflorescence change into short, manifold branched twigs with scale-like leaves, see figure 86. They form cabbage-like bunches of a red colour.
Gall no. 21931.

Java, Mt. Gedé, crater, alt. 2700 m, III, 1930.

FAMILY OF THE ARALIACEAE.

Nothopanax cochleatum MIQ.

1809. A leaf-gall caused by a coccid.

1926a. VAN DER MEER MOHR, p. 3.

The infected leaves remain small and are badly developed, they are curved and wrinkled. Gall no. 21758.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., II, 1926.

Schefflera elliptica HARMS.

1134. A gall on the stem and petiole caused by a gall-midge.

This gall was described from Salajar, but it was also collected in Celebes. Gall no. 21168.

Celebes, Malino near Makassar, A. RANT coll., X, 1931.

1135. A leaf-gall caused by *Gynaikothrips heptapleuri* KARNY.

1940. DOCTERS VAN LEEUWEN, p. 409, no. 12.

This gall was described from Java, Sumatra, Salajar, and Soemba, it was also collected in Celebes. An identical gall was discovered on the island of Enggano. Gall no. 21169.

Celebes, Makale, alt. 1200 m, G. KJELLBERG coll., 1929.

Schefflera rugosa HARMS.

1810. A leaf-gall caused by a psyllid.

On the uppersurface of the leaf are developed circular or oval bladders, 2 to 4 mm across, and 1 to 2 mm high. The surface is dark-green and rough, wrinkled and grooved. On the reverse side is a shallow depression tenanted by the larva of a psyllid. Gall no. 21759.

Java, Mt. Papandajan, alt. 2200 m, I, 1930.



Fig. 86. *Laurembergia coccinea* KANITZ., no. 1808, $\times 3$.

Schefflera species diversae.

1811. A leaf-gall caused by a thysanopteron.

This gall resembles the gall developed on the leaves of *Schefflera scandens* VIGUIER, see our book p. 436, no. 1151, but this gall is longer and narrower. Both halves of the leaf-blade are rolled upwards, forming an irregular, often curved body, 70 to 80 mm long and 2 to 3 mm across, see figure 87. The surface is glabrous, often covered with red spots. Gall no. 21760.

Sumatra, East Coast, Bandarbaroe, alt. 1200 m, VII, 1921; Berastagi, alt. 1500 m, II, 1924.

1812. A leaf-gall caused by a thysanopteron.

Short horn-like, often curved galls are developed on the upper- or on the undersurface of the leaf, see figure 88. On the reverse side there exists a wide opening giving access to the gall-chamber. The surface is glabrous. Gall no. 21937.

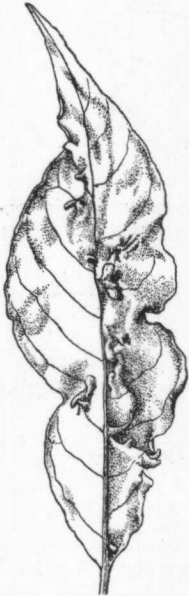


Fig. 88. *Schefflera* species, no. 1812.

These galls are only developed on the upper-surface of the leaf-blade. The galls are situated on a hollow elevation of the leaf, about 3 mm high. The gall itself is oval or pear-shaped, about 4 mm high and 4 mm across, it ends in an often curved, horn-like outgrowth. The larva-chamber is oval, surrounded by a thick, hard wall. Gall no. 21939.

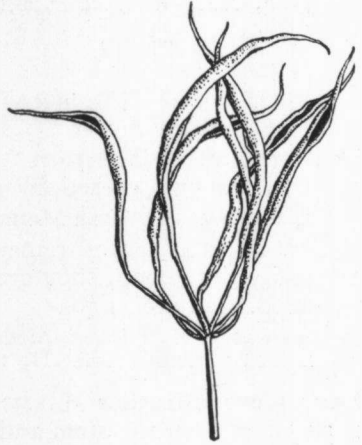


Fig. 87. *Schefflera* species, no. 1811.

Java, Mt. Salak, crater, alt. 1400 m, VIII, 1925.

1813. A leaf-gall caused by a thysanopteron.

Both halves of the leaf-blade are rolled upwards, resembling the gall no. 1811, described above, but the rolling is not so narrow, about 60 mm long, and 5 to 6 mm thick. The surface is glabrous, the wall rather thick. Gall no. 21938.

Java, Tjisokan near Tjibèber, alt. 700 m, XII, 1917.

1814. A leaf-gall caused by a gall-midge.

These galls are only developed on the upper-surface of the leaf-blade. The galls are situated on a hollow elevation of the leaf, about 3 mm high. The gall itself is oval or pear-shaped, about 4 mm high and 4 mm across, it ends in an often curved, horn-like outgrowth. The larva-chamber is oval, surrounded by a thick, hard wall. Gall no. 21939.

Sumatra, East Coast, Bandarbaroe, alt. 800 m, J. A. LOERZING coll., IV, 1919; idem, Sibolangit, alt. 500 m, II, 1924.

1815. A leaf-gall caused by an insect.

These galls are developed on the mid-rib and on the petioles of the leaves. They are semi-oval, about 6 mm long and 4 mm across, attached lopsidedly to the petiole. They often coalesce and then they form irregular swellings, the separate gall still visible from outside. The larva-chamber is oval, surrounded by a hard and thick wall. Gall no. 21940.

Borneo, British North, Mt. Kinabalu, alt. 1000 m, J. et M. S. CLEMENS coll., I, 1932.

FAMILY OF THE CORNACEAE.

Alangium villosum WANG.

1816. A leaf-gall caused by a gall-mite.

The leaves are strewn with minute galls, about 1 mm in diameter. They are partly developed on the upper- and partly on the undersurface of the leaf-blade. They are oval or semi-spherical on the upperside, on the other side more conical. The gall-cavity is spacious without outgrowths or hairs on the inner wall. The outside is covered with stiff, white hairlets, see figure 89. Gall no. 21629.

Java, Besoekie, Tjoeramanis, S. H. KOORDERS coll., 1899.

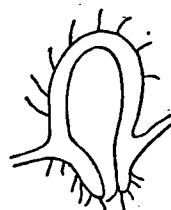


Fig. 89. *Alangium villosum* WANG., no. 1816, $\times 12$.

Mastixia rostrata BL.

1817. A stem-gall caused by an insect.

Peculiar horn-like galls are attached to the end of the twigs or to the bark. These galls are varied in size and shape, often curved, see figure 90. They contain a spacious larva-chamber, surrounded by a thick, hard wall. The inhabitants had left the galls, but this gall has the appearance of an aphid-gall. Gall no. 21628.

Java, Mt. Gedé, Tjibodas, alt 1500 m, S. H. KOORDERS coll., III, 1893 and XI, 1896.

Mastixia trichotoma BL.

1818. A stem-gall probably caused by an aphid.

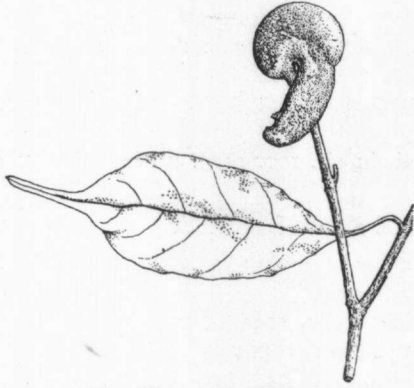
Spherical or more oval galls, often two or three together, from 12 to 20 mm across. The gall-chamber is spacious, surrounded by a thick wall. In the materials from Mt. Gedé the surface of the galls is dark and glabrous, in that from Mt. Tangkoeban Prahoe more rough and more greyish. Gall no. 21941.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, SAPIIN coll., 1915; Mt. Tangkoeban Prahoe near Bandoeng, alt. 1700 m, IV, 1928.

Nyssa javanica WANG.

1819. A flower-gall probably caused by an aphid.

The flowers are changed into horn-like galls. Their base is oval or more cylindrical, from 8 to 15 mm long and about 5 mm across, gradually narrowing to the top. This top is often very thin and curved. The larva-chamber is spacious, surrounded by a hard wall. Gall no. 21942.



Sumatra, Pajacombo, Moeara Padang, alt. 1550 m, forester coll., II, 1924.

FAMILY OF THE
ERICACEAE.

Fig. 90. *Mastixia rostrata* BL., no. 1817. **Rhododendron Loerzingii** J. J.S.

1820. A fruit-gall caused by a lepidopteron.

The fruits are slightly swollen, the seeds do not develop normally, they are often absent. The gall-chamber is irregular. Gall no. 21943.

Java, Mt. Soembing, alt. 2000 m, V, 1927.

Rhododendron malayanum JACK.

1821. A stem-gall caused by a lepidopteron.

The stem is distended into a short, fusiform gall, about 15 mm long, and 10 mm across. The surface is very rough, covered with a thick, corky layer. The larva-chamber is spacious and surrounded by a thick, woody wall. Gall no. 21944.

Java, Mt. Salak, crater, alt. 1500 m, VIII, 1928.

Vaccinium varingifolium MIQ.

1822. A stem-gall caused by a lepidopteron.

The same gall as the foregoing, only shorter and relatively broader, about 12 mm long and 10 mm across. Gall no. 21945.

Java, Mt. Tangkoeban Prahoe near Bandoeng, alt. 1800 m, A. RANT coll., XI, 1928.

FAMILY OF THE MYRSINACEAE.

Ardisia colorata ROXB.

1167. A leaf-gall caused by a gall-midge.

This gall was described from Java; we found it also on materials

from Borneo. Though the leaf resembles that of the above mentioned species we are not quite sure of the determination of the sterile materials. Therefore, we place this gall provisionally under this name. Gall no. 20062.

Borneo, British North, Mt. Kinabaloë, Tenompok, alt. 1600 m, J. et M. S. CLEMENS coll., (herbar no. 27934a), III, 1932.

***Ardisia Copelandi* MEZ.**

1823. A stem-gall caused by a lepidopteron.

The stem is swollen into a short, fusiform gall, about 20 mm long and 15 mm broad. The surface is rough and covered with a grayish-brown corky layer. The larva-canal is in the centre of the distended wood. Gall no. 21946.

Borneo, British North, Mt. Kinabaloë, Peniboëkan, alt. 1500 m, J. et M. S. CLEMENS coll., II, 1933.

***Ardisia lanceolata* ROXB.**

1824. A bud-gall caused by a thysanopteron.

1929a. DOCTERS VAN LEEUWEN, p. 1, fig. 1, 2.

The end-buds and the inflorescence-buds develop into a large bunch of short, manifold branched twigs and small, contorted and wrinkled leaves. These galls resemble small cabbages. The branches are thickened and soft, they are white and form with the small leaves a labyrinth of holes and canals in which the thrips live in great numbers. The outside is formed by thickly packed, small-leaves, which are light-green, rose or purple coloured. The largest gall is 90 mm in diameter, the smallest about 20 mm. Gall no. 21947.

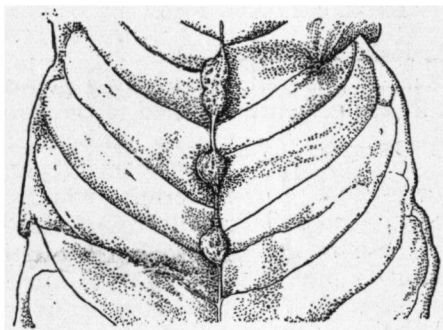
Java, Mt. Sodong, Leuwiliang, Buitenzorg, alt. 400 m, R. C. BAKHUIZEN VAN DEN BRINK coll., I, 1929; Mt. Tjibodas, Tjampea, Buitenzorg, alt. 300 m, R. C. BAKHUIZEN VAN DEN BRINK coll., X, 1931.

Ardisia macrophylla

Reinw.

1825. A leaf-gall caused by a gall-midge. Fig. 91. *Ardisia macrophylla* REINW., no. 1825.

These galls are developed on the mid-rib, they are spherical or more fusiform swellings, visible on both sides of the leaf-blade. They are from 4 to 6 mm in diameter and coalesce sometimes, see figure 91. The surface is dark-brown



and covered with a corky layer. The larva-chamber is surrounded by a thick wall. Gall no. 21731.

Java, Briangan, Tjipatoedja, alt. 500 m, C. A. BACKER coll., VIII, 1915.

1826. A leaf-gall caused by a gall-midge.

These galls are situated on the underside of the leaf and they are attached to the mid-rib or to the strong secondary nerves, occasionally on the surface of the leaf-blade, between the nerves. They are spherical and contracted at their base, from 4 to 5 mm across. On the upperside there exists a circular depression, in the centre of which is situated a low, rounded elevation, about $\frac{1}{2}$ mm across. The larva-chamber is spherical, surrounded by a thick, juicy wall. Gall no. 21848.

Borneo, Martapoera, Dajak Moerai, forester coll., VIII, 1921; British North, Mt. Kinabaloë, Tenompok, alt. 1600 m, J. et M. S. CLEMENS coll., III, 1932.

Ardisia Nageli MEZ.

1827. A leaf-gall caused by a gall-midge.

Spherical swellings are attached to the leaf-blade, one half is developed on the upper-, the other half on the underside. These galls are about 2 mm across, the surface is glabrous, but covered with a greyish, corky layer. The larva-chamber is spacious, it is more or less conical, surrounded by a thick wall. Gall no. 21949.

Java, Mt. Masigit, Nangèla, Buitenzorg, alt. 600 m, II, 1929; Mt. Wiroë, Leuwiliang, Buitenzorg, alt. 550 m, R. C. BAKHUIZEN VAN DEN BRINK coll., XII, 1930.

Ardisia Zollingeri DC.

1828. A leaf-gall caused by a gall-midge.

These galls are attached to the strong secondary nerves, they are visible on both sides and covered with a gray-brown corky layer. The gall bursts through the epidermis which remains, forming a kind of cupule round the base of the gall. On both sides of the leaf-blade the galls are more or less rounded, $1\frac{1}{2}$ to $2\frac{1}{2}$ mm in diameter, see figure 92. The larva-chamber is spherical, surrounded by a hard wall. Gall no. 21698.

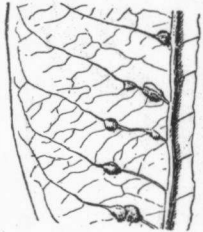


Fig. 92. *Ardisia Zollingeri* DC., no. 1828.

Java, Bolang near Buitenzorg, alt. 600 m, P. DAKKUS coll., VI, 1924.

Ardisia species diversae.

1829. A leaf-gall caused by a thysanopteron.

The leaf-blade is infected along the mid-rib and the two parts

beside it are folded upwards, while the whole leaf is spirally contorted, see figure 93. The infected parts form the wall of a spacious larva-chamber. The wall is thickened. The surface is rough and of a bright purple colour. Gall no. 21950.

Java, Tjisaroewa near Buitenzorg, alt. 1000 m, VII, 1927.

1830. A leaf-gall caused by a thysanopteron.

Both halves of the leaf are rolled upwards. The lamina is not thickened, the outside of the gall is green with red spots. Gall no. 21951.

Sumatra, East Coast, Petimoes near Bandarbaroe, alt. 1000 m, VII, 1921.

Rapanea affinis Mez.

1831. A bud-gall caused by a gall-midge.

The leaves at the end of a twig remain small and are adpressed. The lower ones form a kind of cupule round the base of the gall, see figure 94. The inside of the bud is swollen and hardened and in it lies a small gall-chamber. Gall no. 21953.

Java, Mt. Tangkoeban Prahoe near Bandoeng, alt. 1900 m, IV, 1928.

1832. A leaf-gall caused by a gall-mite.

On the uppersurface of the leaves are developed very low, irregular oval bladders, from 2 to 3 mm across. On the underside the wall of the bladder is covered with rough patches of a callus-like tissue, which have grown out of the epidermis. These patches are of a dark-red colour. Gall no. 21952.

Java, Mt. Soembing, summit, alt. 3330 m, V, 1927.

1833. A flower-gall caused by a gall-mite.

The petals and sepals are swollen and covered with green or reddish emergences, with gland-hairs in between. They form an

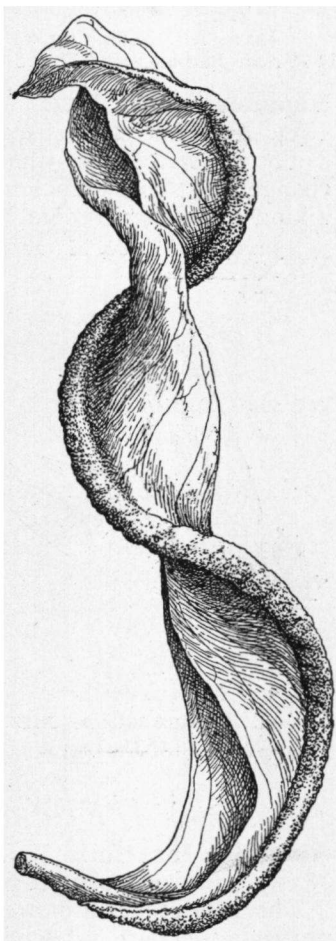


Fig. 93. *Ardisia* species, no. 1829.

irregular outgrowth of a granular appearance. The normal or smaller fruits are often enclosed in the gall as an acorn in its cupule. Gall no. 21954.

Java, Mt. Soembing, alt. 3330 m, V, 1927; Mt. Tangkoeban Prahoe near Bandoeng, alt. 1900 m, IV, 1928.

Rapanea avenis MEZ.

1834. A flower-gall caused by a gall-mite.

The infected flowers show a high degree of viridescence, and may change into short branches with small scale-like leaves, resembling a kind of witches' broom, see figure 95. Gall no. 21665.

Java, Mt. Gedé, alt. 2200 m, IV, 1925; Mt. Pangrango, alt. 3000 m, XII, 1929.

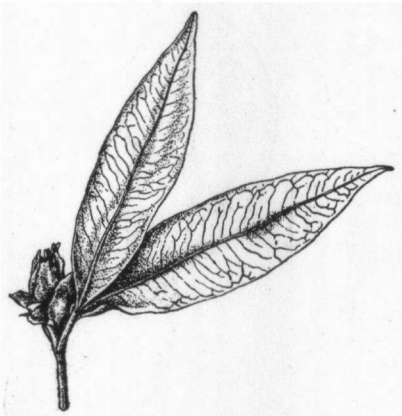


Fig. 94. *Rapanea affinis* MEZ., no. 1831.



Fig. 95. *Rapanea avenis* MEZ., no. 1834.

FAMILY OF THE SAPOTACEAE.

Aulandra longifolia H.J.L.

1835. A leaf-gall caused by a gall-midge.

The long leaves are strewn with glabrous, rounded galls which protrude on both sides of the leaf-blade, see figure 96. They are mainly situated along the mid-rib and the strong secondary nerves. They are from 4 to 5 mm across, and are 3 mm thick. These galls contain one to three small larva-chambers which are surrounded by a hard wall. This wall contains layers of thick-walled stone-cells. The midges hatch through an opening in the underside. Gall no. 21955.

Borneo, West, L. Petak, alt. 550 m, F. H. ENDERT coll., IX, 1925.

Ganua Motleyana PIERRE var. **latifolia** H.J.L.

1836. A leaf-gall caused by a gall-midge.

These galls are only developed on the underside of the leaf, they are cylindrical with a rounded top, about 2 mm high, and $1\frac{1}{2}$ mm across, see figure 97. The base of the gall is surrounded by the rests of the epidermis which it has pierced during its development. This rest of the epidermis forms a kind of collar round the base of the gall. The larva-chamber is cylindrical and the wall strongly lignified. Gall no. 21663.

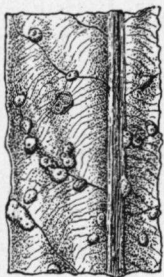


Fig. 96. *Aulandra longifolia*
H. J. L., no.
1835.

Sumatra, West Coast, Painan, Loeboek Ganggo, alt. 600 m, forester coll., III, 1923.

1837. A leaf-gall caused by a psyllid.

Near the mid-rib are spherical or more oval swellings which are partly developed on the upper-, partly on the undersurface of the leaf-blade. The border of the leaf is curved inwards, see figure 98. The galls are about 6 mm across, the outside is glabrous. The spacious larva-chamber is surrounded by a hard wall. Gall no. 21662.

Sumatra, West Coast, Painan, Loeboek Ganggo, alt. 600 m, forester coll., III, 1923.

Madhuca cuneata MACBR.

1838. A leaf-gall caused by a gall-midge.

These galls are visible on both sides of the leaf-blade. On the

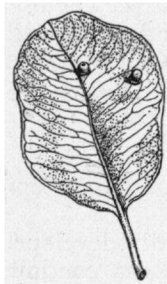


Fig. 97. *Ganua Motleyana*
PIERRE, no. 1836.

upperside there are low, rounded excrescences, about $1\frac{1}{2}$ mm across, on the underside low, conical growths, about 1 mm across. The larva-chamber is spherical, surrounded by a hard wall. The midges hatch through an opening in the upperside. Gall no. 21956.

Borneo, South East, W. Koetai, Saka, alt 10 m, forester coll., IV, 1926.

Madhuca Endertii H.J.L.

1839. A leaf-gall caused by a psyllid.

These galls are visible on both sides of the leaf-blade, they are flat swellings, about 2 mm

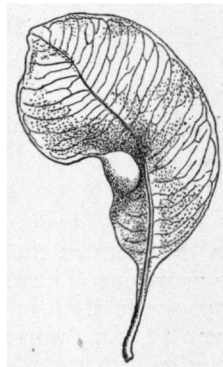


Fig. 98. *Ganua Motleyana* PIERRE, no. 1837.

across and about $1\frac{1}{2}$ mm thick. On the underside they are rounded and more or less conical, on the upperside flat. At maturity the gall opens by a split in the upperside. The gall-cavity is spacious, surrounded by a thin, but hard wall. Gall no. 21957.

Borneo, South East, W. Koetai, Mt. Kemoel, alt. 1800 m, F. H. ENDERT coll., X, 1925; British North, Mt. Kinabaloë, Tenompok, alt. 1600 m, J. et M. S. CLEMENS coll., III, 1932.

Madhuca mindanaensis MERR.

1840. A flower-gall caused by a gall-mite.

The flowers change into small branches and at their top a great many scale-like leaves are bunched, see figure 99. The inside of the gall is strongly pubescent, the hairs are red-brown. Gall no. 21958.

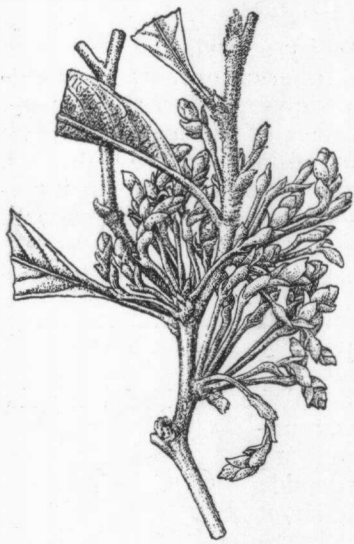


Fig. 99. *Madhuca mindanaensis* MERR., no. 1840.

Borneo, South East, W. Koetai, L. Pehoes, alt. 80 m, F. H. ENDERT coll., IX, 1925.

Palaquium hexandrum ENGL.

1841. A gall on the petiole caused by a gall-midge.

Reniform, lateral outgrowths on the base of the petiole, see figure 100. These galls are about 100 mm long, 8 mm broad, and 3 mm thick, they are attached with their narrow side to the petioles. The surface is glossy and the tissue surrounding the gall-chambers is very hard. Gall no. 21660.

Sumatra, West Coast, Padang Loeboek, Perahoe, alt. 600 m, forester coll., XI, 1923.

1842. A stem-gall caused by a lepidopteron.

This gall occurs in two forms. I. These are lopsidedly developed on the stem in the neighbourhood of the apex which can continue to grow out. They are 10 mm long and about 8 mm across. II. The top of the stem is incorporated in the gall, it is more slender and from 12 to 15 mm long and from 6 to 7 mm across. See figure 101. The gall-chamber is longitudinal, it is surrounded by a hard wall. Gall no. 21661.

Sumatra, West Coast, Padang Loeboek, Perahoe, alt. 600 m, forester coll., XI, 1923.

***Palaquium macrocarpum* BURCK.**

1843. A leaf-gall caused by a gall-midge.

Flat, lenticular swellings, about 2 mm across and 1 mm thick, chiefly developed on the upperside of the leaf-blade. On the reverse side there exists only an almost imperceptible swelling. The surface is glossy, the larva-chamber is circular and low, surrounded by a hard wall. Gall no. 21959.

Sumatra, Palembang, Lematang Ilir, alt. 130 m, forester coll., VI, 1925.

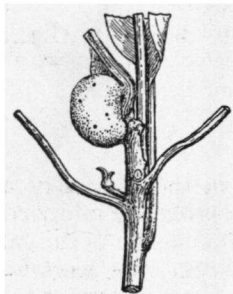


Fig. 100. *Palaquium hexandrum* ENGL., no. 1841.

***Palaquium quercifolium* BURCK.**

1844. A leaf-gall caused by a psyllid.

Flat, oval swellings, developed chiefly on the upperside of the leafblade, on the reverse side the swelling is much lower. The galls are about 4 mm long and 3 mm broad, and $1\frac{1}{2}$ to 2 mm high. The surface is glabrous. The larva-chamber is spacious, in connection with the outside by an excentric opening. The galls are often closely packed and then coalescent. Gall no. 21960.

Borneo, West, Pluchari, Kintap, alt. 50 m, forester coll., XII, 1924; idem, South East, Boelongan, Kibarai, alt. 100 m, forester coll., VIII, 1927.

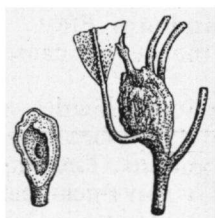


Fig. 101. *Palaquium hexandrum* ENGL., no. 1842.

1845. A leaf-gall probably caused by a gall-midge.

Horn-like, glabrous excrescences on the upperside of the leaf, see figure 102. On the undersurface there exists only a very flat, rounded swelling. The galls are about 4 mm at their base, gradually narrowing to the often curved top, they are from 4 to 5 mm high. The gall-chamber has the same form as the gall itself, it is surrounded by a thin, but hard wall. Gall no. 21961.

Borneo, East, W. Koetai, Kemal, alt. 1100 m, F. H. ENDERT coll., X, 1925.

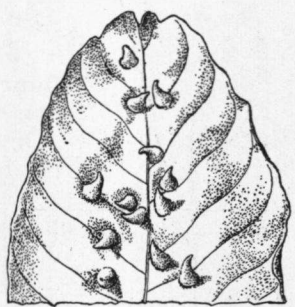


Fig. 102. *Palaquium quercifolium* BURCK., no. 1845.

***Palaquium rioense* H.J.L.**

1846. A leaf-gall caused by a psyllid.

These galls are spherical, about 6 mm across, see figure 103. They are attached by a small base to the underside of the leaf, on the reverse side there exists only a small, flat, circular swelling. The surface is glossy. The same gall is also found on the end of the young branches. The wall is thin and brittle. Gall no. 21962.

Borneo, East, Koetai, Mt. Kemoel, alt. 1200 m, F. H. ENDERT coll., IX, 1925.

1847. A leaf-gall caused by a psyllid.

Very low, flat, and circular swellings of the leaf-blade. They are about 2 mm across and 1 to 1½ mm thick. They are low-conical on the upperside, on the reverse side there exists a very low, rounded swelling. The surface is glabrous. The larva-chamber is flat, it is connected with the outside by a circular opening in the underside. Gall no. 21963.

Borneo, East, Koetai, Mt. Kemoel, alt. 1200 m, F. H. ENDERT coll., IX, 1925.



Fig. 103. Palaquium rioense H. J. L., no. 1846.

Palaquium xanthochrynum PIERRE.

1848. A leaf-gall caused by a psyllid.

Lenticular galls protruding on both sides of the leaf-blade. They are from 4 to 6 mm long, about 4 mm broad, and 3 mm thick. The surface is glossy, see figure 104. The larva-chamber is spacious and surrounded by a hard wall. Gall no. 21964.

Borneo, South East, Moeara Tewe, Montalat, alt. 10 m, forester coll., VII, 1926.



Fig. 104. Palaquium xanthochrynum PIERRE, no. 1848.

Planchonella ferruginea PIERRE.

1849. A leaf-gall caused by a gall-mite.

On the upperside of the leaf-blade irregular, flat bladders are developed, they are from 2 to 10 mm across. On the reverse side the wall of the bladder is covered with an erineum, consisting of dark-purple hairlets. In case of a strong and early infection the whole underside of the leaf may be covered with the purple hairgrowth without the occurrence of bladders. Gall no. 21717.

Java, Buitenzorg, botanic gardens, alt. 250 m, IX, 1925.

FAMILY OF THE STYRACACEAE.

Bruinsmia styracoides BOERL. et KOORD.

1850. A leaf-gall probably caused by an aphid.

1931-32. VAN STEENIS, p. 219.

These galls are situated on the underside of the leaf-blade, they are attached to the mid-rib or to the secondary nerves. They are spherical, from 5 to 10 mm across. They are densely tomentose in the beginning, afterwards the hairs disappear for the greater part. The larva-chamber is spacious and the wall very hard and brittle, about 1 mm thick. On the upperside of the leaf there is only an irregular, swollen, and red-brown spot. There are from 1 to 8 galls on one leaf. Gall no. 21965.

Borneo, East, Koetai, Mt. Kemoel, alt. 1600 m, F. H. ENDERT coll., X, 1925.

Styrax agrestis G. DON.

1851. A stem-gall caused by an aphid.

1931-32. VAN STEENIS, p. 228, fig. 5f.

1932. DOCTERS VAN LEEUWEN, p. 97, fig. 1.

Coralliform excrescences on the bark of the twigs, the part of the twig above the gall is mostly atrophied, and the part under it swollen. The pedicel of the gall is short and the gall itself consists of many short, manifold branched tubes, with shorter side-tubes. The tubes are closed at their ends, but in the top of short side-tubes are small, rounded openings which give access to the gall-chamber. The diameter of this gall is from 30 to 70 mm. Gall no. 21966.

Borneo, East, Koetai, Sabentoelang, alt. 10 m, F. H. ENDERT coll., VI, 1925.

Celebes, alt. 500 m, G. KJELLBERG coll., X, 1929.

Styrax Benzoin DRYAND.

1201. A bud-gall caused by an aphid.

1933. HILLE RIS LAMBERS, p. 2.

1935a. VAN DER MEER MOHR, p. 5, no. 37.

The aphid causing this gall was described by HILLE RIS LAMBERS as *Astegopteryx fransseni*. Gall no. 21199.

1852. A bud-gall caused by *Astegopteryx lambersi* TAKAH.

1935b. VAN DER MEER MOHR, p. 3.

1936. TAKAHASHI, p. 96, fig. 1.

This gall is not in our possession. TAKAHASHI describes it as a bud-gall, but it is possible that it is an outgrowth of the bark of the twigs. His figure shows a pear-shaped outgrowth, about 40 mm long, and

20 mm broad. It is curved downwards and the surface is rough, covered with knobs and grooves.

Sumatra, East Coast, Berastagi, alt. 1400 m, J. C. VAN DER MEER MOHR coll., II, 1925.

1207. A stem-gall caused by an aphid.

This gall was described from *Styrax sumatranus* J.J.S., but VAN STEENIS studied the material and named it *St. Benzoin* DRYAND. Gall no. 21205.

Styrax sumatranus J.J.S. must be *St. paralelloneurus* PERK.

Styrax paralelloneurus PERK.

1853. A stem-gall caused by an aphid.

A number of peculiar, sack-like galls are situated at the end of the stem. The galls are connected with the twig by a slender pedicel, about 10 mm long. The galls are oval, broader at their base, gradually narrowing down towards the end. In this end is a slit-like opening with two thickened borders, see figure 105. The gall-chamber is spacious, the inner wall is purple coloured. Gall no. 21643.

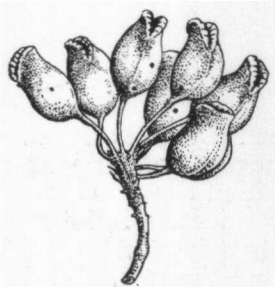


Fig. 105. *Styrax paralelloneurus* PERK., no. 1853.

Sumatra, Bengkoeloe, Redjang, alt. 575 m, forester coll., III, 1922.

1206. A stem-gall caused by an aphid.

1932. HILLE RIS LAMBERS, p. 1, pl. I.
1935a. VAN DER MEER MOHR, p. 5, no. 38.

The aphid causing this gall was named by HILLE RIS LAMBERS: *Astegopteryx roepkei*. Gall no. 21204.

New locality: Sumatra, Tapianoeli, Adian Koting, J. C. VAN DER MEER MOHR coll., IX, 1931.

Styrax species is *St. serrulatus* ROXB. var. *mollissimus* v. ST.

Styrax serrulatus ROXB. var. *mollissimus* v. ST.

1209. A stem-gall caused by an aphid.

1853. MIQUEL, p. 285, pl. III.

1931. HILLE RIS LAMBERS, p. 1.

1931. VAN DER MEER MOHR, p. 158.

1935a. VAN DER MEER MOHR, p. 5, no. 41.

This gall was described for the first time by MIQUEL (1853) on an unknown tree. The gall-causer was named by HILLE RIS LAMBERS: *Astegopteryx vandermeermohri*. Gall no. 21207.

1211. A stem-gall caused by an aphid.

1931. HILLE RIS LAMBERS, p. 4.

1931. VAN DER MEER MOHR, p. 158.

1935a. VAN DER MEER MOHR, p. 5, no. 39.

The gall-causer was named by HILLE RIS LAMBERS: *Astegopteryx sumatranus*. Gall no. 21209.

1213. A flower-gall caused by an aphid.

1935b. VAN DER MEER MOHR, p. 3.

1936. TAKAHASHI, p. 99.

The gall-causer was named by TAKAHASHI: *Astegopteryx leeuweni*. Gall no. 21211.

New Locality: Sumatra, Lau Deboek Deboek, J. C. VAN DER MEER MOHR coll., VI, 1935.

FAMILY OF THE SYMPLOCACEAE.

Symplocos Brandisii K. et V.

1854. A bud-gall caused by a gall-midge.

The end- and axil-buds are swollen into oval galls, the base is about 4 mm across and this base gradually tapers into a point. This point is formed by the tips of the leaves that are incorporated into the gall, see figure 106. The larva-chamber is spacious and oval. Gall no. 21646.

Java, Dépok, alt. 100 m, J. G. B. BEUMÉE coll., XII, 1924.

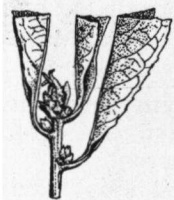


Fig. 106. *Symplocos Brandisii* K. et V., no. 1854.

1855. A leaf-gall caused by a thysanopteron.

The border of the leaf is folded upwards, mostly along its whole length. The gall-chamber is flat, see figure 107. Gall no. 21673.

Java, Buitenzorg, botanic gardens, alt. 250 m, X, 1924; Mt. Tjibodas near Tjampea, Buitenzorg, alt. 150 m, VI, 1925.

1856. A leaf-gall caused by a gall-mite.

Very flat bladders arise on the upperside of the leaf. On the reverse side the wall of these bladders is covered with a yellow-green erineum consisting of club-shaped, unicellular hairlets. Gall no. 21727.

Java, Buitenzorg, botanic gardens, alt. 250 m, X, 1925.

Symplocos costata CHOISY.

1857. A leaf-gall caused by a psyllid.

The same gall as the one described on *Symplocos javanica* KURZ. and on *S. sessiliflora* GUERCKE, see our book p. 460 and 461, no. 1217

and 1218, fig. 878. The leaves are rolled upwards forming a loose roll which is white or lilac. Gall no. 21704.

Java, Mt. Gedé, Tjibodas, alt. 1700 m, VII, 1925.

Symplocos fasciculata ZOLL.

1216. A stem-gall caused by a gall-midge.

1927c. FELT, p. 287.

1928b. DOCTERS VAN LEEUWEN, p. 416.

1929a. DOCTERS VAN LEEUWEN, p. 27.

The gall-causer was named by E. P. FELT: *Asphondylia bursaria*. Gall no. 21213.

1858. A bud-gall caused by a gall-midge.

These galls develop out of the end- and axil-buds, they have the shape of a small bottle. The basal part is oval, about 5 mm long, and 2 mm across, ending gradually in a long, blunt apex, see figure 108. The whole gall is up to 12 mm long and covered with adpressed hairlets. The oval larva-chamber is situated in the basal part of the gall, it is surrounded by a thick wall. Gall no. 21638.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, II, 1924.

Symplocos javanica KURZ.

1859. A leaf-gall caused by a thysanopteron.

The infected leaves remain much smaller

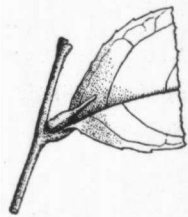


Fig. 108. *Symplocos fasciculata* ZOLL., no. 1858.

than the normal ones. Both parts of the leaf-blade are rolled upwards and the rolls reach each other above the mid-rib, see figure 109. Gall no. 21677.

Java, Tjisaroewa near Buitenzorg, alt. 1000 m, VII, 1925.

Symplocos odoratissima CHOISY.

1860. A leaf-gall probably caused by a gall-mite.

On the upperside of the leaf arise tiny excrescences, about $\frac{1}{5}$ mm across or even less. These outgrowths are irregular and look like granular accumulations. The material at hand was too scanty and the state of conservation too bad to render a thorough examination possible. Gall-mites were not found, but the gall can hardly be caused by any other animal. The material is kept in the Herbarium at Leiden.

Enggano, near Boea-Boea, alt. 400 m, W. J. LÜTJEHARMS coll., VI, 1936.

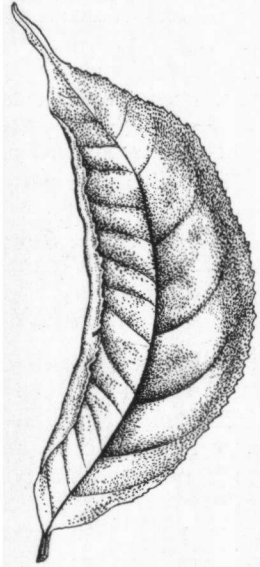


Fig. 107. *Symplocos Brandisii* K. et V., no. 1855.

FAMILY OF THE OLEACEAE.

Jasminum glabriusculum BL.

1861. A leaf-gall caused by a thysanopteron.

Both halves of the leaf-blade are rolled upwards. The gall so formed is more or less spirally twisted. The surface is covered with irregular folds and fissures. Gall no. 21967.

Java, Mt. Sodeng, Leuwiliang near Buitenzorg, alt. 400 m, R. C. BAKHUIZEN VAN DEN BRINK coll., I, 1929.

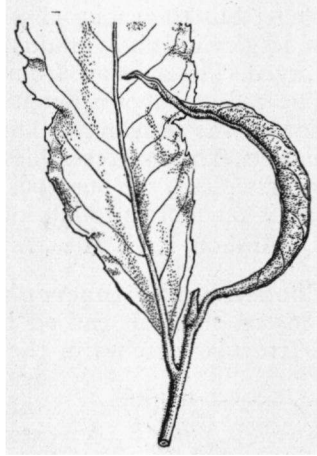


Fig. 109. *Symplocos javanica* KURZ., no. 1859.

FAMILY OF THE APOCYNACEAE.

Alstonia pneumatophora BACK.

1862. A fruit-gall caused by a lepidopteron.

The fruit of this tree is a long and slender follicle, about 200 mm long and 2 to 3 mm across. The infected fruit remains very short and its wall is swollen so that the gall is about 10 mm long and as much across. The young galls have a regular shape, they are spherical with a pointed apex. The old ones are more irregular, the wall shows deep fissures running from the base to the apex. The fruit-cavity serves as larva-chamber. Gall no. 21751.

Sumatra, Palembang, Banjoecasin, alt. 15 m, F. H. ENDERT coll., XII, 1919, and XI, 1921.

Alstonia scholaris R.BR.

1236. A leaf-gall caused by *Pauropsylla tuberculata* CRAWF.

This gall was described from Java, Sumatra, Sebesi, Tanimber, and Salajar, it has now also been collected in the Moluccas. Gall no. 20029.

Ambon, IV, 1926.

Alstonia villosa BL.

1863. A leaf-gall caused by a gall-mite.

The upperside of the leaf is strewn with small excrescences; they vary considerably in size, some of them are hardly visible, others 1,2, or even 4 mm across. On the reverse side of the leaf there are corresponding depressions which are very closely covered with white hairlets. Gall no. 21752.

Soemba, Maomarroe, IBOET coll., V, 1925.

Cerbera manghas L.

1864. A leaf-gall caused by a gall-mite.

The leaves are strewn with hundreds of slender, horn-like excrescences, they are chiefly developed on the upper side of the leaf-blade, but they may also occur on the underside. They are more or less cylindrical, gradually tapering into the apex which is often curved. The galls are from 2 to 5 mm high and about $\frac{1}{2}$ mm across. The gall-chamber is longitudinal with a small opening on the underside of the leaf-blade. This opening is closely covered with white hairlets. This gall resembles the gall previously described as occurring on this plant, see our book, p. 467, no. 1238, fig. 891, but this new one is far more strongly developed. Gall no. 21753.

Ambon, Batoe Mera, A. RANT coll., VI, 1929.

Chonemorpha macrophylla BL.

1865. A leaf-gall caused by a gall-mite.

Irregular patches of the underside of the leaf-blade are covered with dense, white erineum, see figure 110. The infected leaves remain flat, but in case of a strong infection the margin may be contracted and the surface wrinkled. The erineum consists of unbranched, curled hairs. Gall no. 21754.

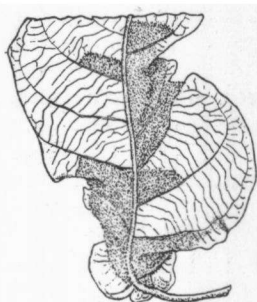


Fig. 110. *Chonemorpha macrophylla* BL., no. 1865.

Java, Tjisolok near Palaboean Ratoe, alt. 30 m, XI, 1927.

Parameria barbata K. SCHUM.

1866. A bud-gall caused by a gall-mite.

The infected buds form a kind of witches' broom, mostly no more than 5 mm in diameter, but sometimes much larger, see figure 111. The branches remain short and are swollen, while the leaves remain rudimentary, forming irregular, scale-like formations. The surface is glabrous and yellowish-white. Gall no. 21705.

Java, Buitenzorg, botanic gardens, alt. 250 m, VI, 1925.

Willoughbeyia species.

1867. A stem-gall caused by a gall-midge.

The galls are gregariously situated on the bark of the thin twigs, they form together irregular, cylindrical outgrowths. These compound galls may reach a length of 150 mm, and they are from 5 to 8 mm across. The surface is rough and covered with a red-brown, corky layer. The single galls are lopsidedly developed,

rounded excrescences of the bark. There are hundreds of small larva-chambers in the compound galls, they are cylindrical and arranged perpendicularly to the axis. Gall no. 21755.

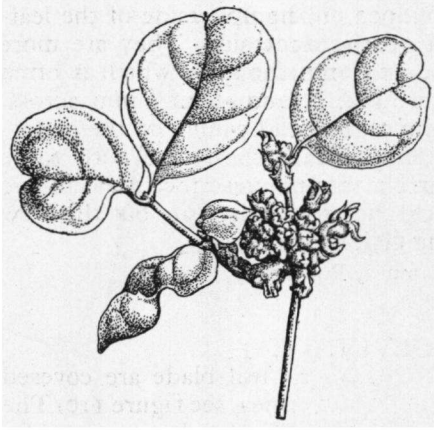


Fig. 111. *Parameria barbata* K. SCHUM., no. 1866.

rudiments of the leaves are situated at the apical end of the gall. The larva-chamber is oval and surrounded by a soft wall. The larva is orange. Gall no. 21682.

Java, Mt. Salak, Mt. Boender near Buitenzorg, alt. 900 m, VIII, 1925.

***Hoya lacunosa* BL.**

1869. A flower-gall caused by a gall-midge.

The flowers are swollen into a balloon-shaped gall, only the end of the floral-tube remains narrow. The surface is glabrous and its colour pink. Gall no. 21968.

Java, Tapos, Legok Djenang, alt. 600 m, IX, 1927.

1870. A stem-gall caused by a lepidopteron.

The stem is distended into a fusiform gall, from 80 to 100 mm long and 3 to 6 mm across, see figure 113. The surface is rough and covered with a brown corky-layer, often showing longitudinal, more or less spirally running fissures. The larva-chamber is longitudinal and the wall is thick. Gall no. 21711.

Java, Goenoeng Halang near Buitenzorg, alt. 250 m, XI, 1925.

Boeroe, Wa' Ena, alt. 900 m, L. J. TOKOPEUS coll., III, 1921.

FAMILY OF THE ASCLEPIADACEAE.

***Dischidia rhombifolia* BL.** 1868. A bud-gall caused by a gall-midge.

The axil-buds or the end-buds are distended into a juicy, oval gall, from 4 to 6 mm long, and from 2 to 4 mm across, see figure 112. The surface is glabrous and glossy and whitish-green. Only tiny, almost invisible

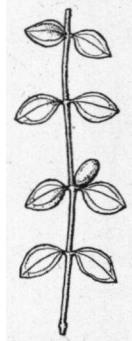


Fig. 112. *Dischidia rhombifolia* BL., no. 1868.

Hoya macrophylla BL.

1871. A leaf-gall caused by a gall-midge.

This gall resembles the one described on *Hoya coriacea* BL., see our book p. 471, no. 1255, fig. 902. The galls are oval, more or less curved excrescences on the underside of the leaf-blade, 5 to 7 mm long, and about 3 mm across, see figure 114. The surface is glabrous, but covered with a gray corky-layer. The larva-chamber is longitudinal, the wall is thick. The midges hatch through an opening at one end of the gall. On the upper surface there is only a slight swelling Gall no. 21712.

Java, Mt. Tjibodas near Tjampea, Buitenzorg, alt. 250 m, XI, 1925.

FAMILY OF THE CONVULVULACEAE.

Lepistemon flavescens BL.

1872. A petiole-gall caused by a dipteran.

The apical part of the petiole is swollen into a fusiform or rather more cylindrical gall, about 12 mm long and 4 mm across. The surface is darkgreen, often more or less brownish. The larva-chamber is longitudinal. Gall no. 21969.

Java, Buitenzorg, botanic gardens, alt. 250 m, VI, 1924.

Merremia umbellata HALL. F.

1873. A leaf-gall caused by a gall-mite.

The underside of the leaf is covered with patches of white erineum. In case of a strong infection the whole surface of the leaf may be covered with the hairgrowth otherwise the erineum mostly follow the strong secondary nerves. Gall no. 21970.

Java, Mt. Panisian near Buitenzorg, alt. 450 m, C. G. G. J. VAN STEENIS, coll., X, 1928.

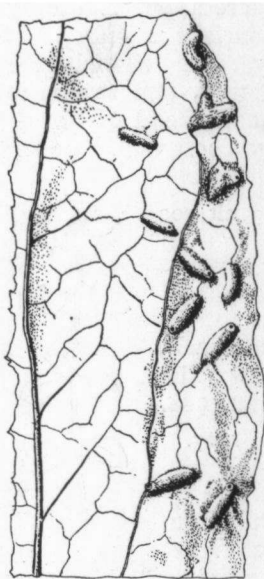


Fig. 114. *Hoya macrophylla* BL., no. 1871.

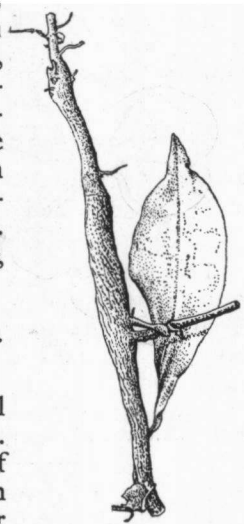


Fig. 113. *Hoya lacunosa* BL., no. 1869.

FAMILY OF THE BORAGINACEAE.

***Cordia bantamensis* Bl.**

1874. A leaf-gall caused by a gall-mite.

The upperside of the leaf is strewn with small, rounded bladders, 2 to 4 mm across. They are of a yellowish colour. On the reverse side the galls form shallow depressions which are covered with a velvet-like erineum. Gall no. 21971.

Java, Karang Hawoe near Palabocan Ratoe, XI, 1927.

***Cordia Myxa* L.**

1875. A stem-gall caused by a gall-midge.

1926b. VAN DER MEER MOHR, p. 2.

This gall is a lopsidedly developed swelling of the bark, from 5 to 12 mm long and in the middle about 3 mm broad. The surface is covered with the same gray corky-layer as the normal stem. There are one or more rounded larva-chambers inside the gall. Gall no. 21972.

Sumatra, East Coast, Labocan, J. C. VAN DER MEER MOHR coll., I, 1926.

FAMILY OF THE VERBENACEAE.

***Avicennia marina* VIERH. var. *alba* BAKH.**

1876. A leaf-gall caused by a gall-mite.

This gall is developed on the underside of the leaf-blade, on the reverse side is a relatively deep depression, 1 to 3 mm across. The glabrous swellings on the underside are 1 to 3 mm across, they are irregular and rounded. In the centre of the depression is a tiny, chimney-like elevation with an opening in the top. This opening is connected with the gall-chamber by a narrow duct. Gall no. 21973.

Riouw-Archipelago, Karimon, Alai, forester coll., II, 1927.

1877. A leaf-gall caused by a gall-midge.

Small, glabrous excrescences protrude towards both sides of the leaf-blade. They are lentiform, 2 to 3 mm across, and 1 to 1½ mm thick. In some old galls the centre is depressed, which may be caused by the drying of the material. Each gall contains a rather spacious larva-chamber, surrounded by a relatively thick wall. Gall no. 21974.

Timor, Koepang, Taroes, forester coll., VIII, 1927.

***Avicennia marina* VIERH. var. *intermedia* BAKH.**

1283. A leaf-gall caused by *Stefaniella falcaria* FELT.

1926c. VAN DER MEER MOHR, p. 1.

This gall was described from Java and the island of Sebesi, it was also collected in Sumatra. Gall no. 20074.

Sumatra, East Coast, Perbaengan, J. C. VAN DER MEER MOHR coll.

Callicarpa longifolia LAM.

1878. A leaf-gall caused by a gall-mite.

Flat, disc-like galls are developed on the underside of the leaf-blade, on the reverse side the galls being invisible. They are about $\frac{1}{3}$ mm across. The gall consists of a central, swollen pedicel with at the top a circular umbrella-like valve, the border of which is curved towards the surface of the leaf. The gall-chamber is circular, see figure 115. The surface is covered with the same branched hairs as the normal leaf. Gall no. 21720.

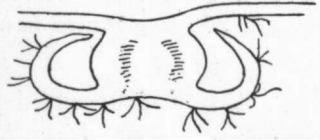


Fig. 115. *Callicarpa longifolia* LAM., no. 1878.

Java, Dépok, alt. 100 m, X, 1913; Poerasèda near Buitenzorg, alt 400 m, II, 1929.

Callicarpa pedunculata R.B R.

1879. A leaf-gall caused by a gall-mite.

Small excrescences, 1 to 3 mm across, are developed on the underside of the leaf-blade, see figure 116. They are thickly covered with white or yellow, branched hairlets. The inner-wall of the gall shows excrescences which form holes in which the gall-mites live. These outgrowths of the wall are also covered with hairlets. Gall no. 21976.

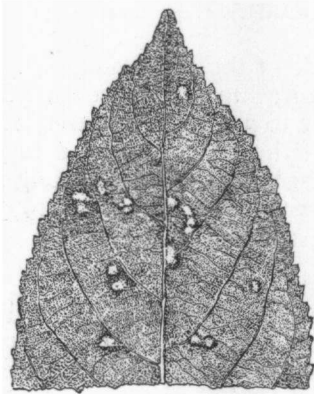


Fig. 116. *Callicarpa pedunculata* R.B.R., no. 1879.

Ambon, alt. 20 m, IV, 1926.

Callicarpa pentandra ROXB. var typica H.J.L.

1880. A leaf-gall caused by a gall-mite.

1926b. VAN DER MEER MOHR, p. 2.

Spots of a white erineum on the underside of the leaf-blade.

Sumatra, East Coast, Rimboen, J. C. VAN DER MEER MOHR coll.

Clerodendron Buchanania WALP. var. typica BAKH.

1881. A leaf-gall caused by an aphid.

The leaves are wrinkled and remain smaller than the normal ones. Especially the parts near the top of the leaf are badly deformed. In case of a strong infection the leaves are rolled up and spirally twisted. Gall no. 21977.

Ambon, alt. 30 m, IV, 1926.

Clerodendron fragrans VENT.

1882. A stem- and leaf-gall caused by a coccid.

1929. VAN DER MEER MOHR, p. 2.

The internodes remain shorter and are slightly swollen, the leaves are irregularly folded and deformed, the nerves curved.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., X, 1928.

Premna integrifolia L.

1306. A leaf-gall caused by *Phyllocoptes angustus premnae* NAL.

1934. DOCTERS VAN LEEUWEN, p. 149.

This gall was described from Java, Krakatau, Sebesi, and Salajar, it was also collected on the island of Toppers Hoedje and in Ceram. Gall no. 21262.

Sumatra, Strait Sunda, Toppers Hoedje, II, 1928.

Ceram, West, Lokki, A. RANT coll., VI, 1929.

Vitex pubescens VAHL.

1317. A leaf-gall caused by *Phytoptus cryptotrichus* NAL.

1932a. DOCTERS VAN LEEUWEN, p. 3, no. 12.

1934. DOCTERS VAN LEEUWEN, p. 150.

This gall was described from Java, Sumatra, and Sebesi, it was also collected on the islands of Berhala and of Toppers Hoedje. Gall no. 20603.

Sumatra, Sunda Strait, Toppers Hoedje, II, 1928; Island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1927.

Vitex quinata F. N. WILL.

1883. A leaf-gall caused by a gall-mite.

Circular, or more oval, granular patches are developed on the underside of the leaf-blade, on the reverse side the galls are hardly visible. The erineum consists of club-shaped hairlets which are multicellular. Gall no. 21975.

Java, Djasinga, Pasir Madang, alt. 200 m, C. A. BACKER coll.

Vitex vestita WALL.

1884. A leaf-gall caused by a gall-mite.

The same gall as the foregoing on *V. quinata* F. N. WILL., see figure 117. Gall no. 21978.

Sumatra, Palembang, Pesen country, alt. 900 m, forester coll., III, 1925.

FAMILY OF THE LABIATAE.

Leucas zeylanica R. BR.

1885. A leaf-gall caused by an aphid.

1926c. VAN DER MEER MOHR, p. 2.

The leaves form bunches at the top of the branches.

Sumatra, East Coast, Maryland, J. C. VAN DER MEER MOHR coll.

Ocimum Basilicum L.

1886. A stem-gall caused by a coccid.

The internodes at the end of the branches remain short, the leaves are badly developed, wrinkled, and contorted, moreover, accumulated at the end of the branches. Gall no. 21979.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll., V, 1927.

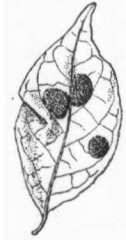


Fig. 117. *Vitex vestita* WALL.,
no. 1884.

FAMILY OF THE SOLANACEAE.

Solanum biflorum NEES.

1887. A flower-gall caused by a gall-midge.

The petals are swollen and remain closed, they form a gall-chamber in which the genital organs form a parenchymatous tissue. This tissue contains canals and holes where the larva live. The calyx remains unaltered, see figure 118. The outside of the deformed petals is pink or purple. A similar gall was described from *Solanum Blumei* NEES, see our book, p. 499, no. 1334. Gall no. 21715.

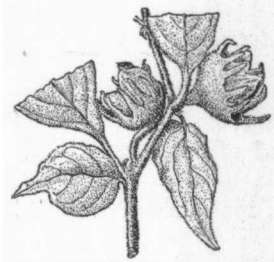


Fig. 118. *Solanum biflorum*
NEES., no. 1887.

Java, East, Mt. Semeroe, Ajak-Ajak, alt. 2500 m, IX, 1925; Nongkodjadjar, alt. 1000 m, A. J. ULTÉE coll., VII, 1925.

FAMILY OF THE SCROPHULARIACEAE.

Lindernia latifolia KDS.

1888. A stem-gall caused by a gall-midge.

The stem is distended under a node into a fusiform gall, it is from 9 to 12 mm long and from 3 to 4 mm across. On cross-section the gall is not circular, but angular as the normal stem. There are one or two rounded larva-chambers inside. The surface is glabrous. Gall no. 21980.

Java, Legok Djènanng near Tapos, Buitenzorg, alt. 600 m, IX, 1927;

idem, alt. 1000 m, XI, 1928; Tjibangkong near Tjitjeurep, Poerasèda, alt. 700 m, II, 1929.

FAMILY OF THE BIGNONIACEAE.

Haplophragma macroloba V. St.

1889. A leaf-gall caused by a gall-mite.

Tiny excrescences on the upperside of the leaf-blade. The galls are situated along the mid-rib and along the strong, secondary nerves. They are semi-spherical, from 2 to 3 mm across, their surface is glabrous, but rough with irregular incisions. There is only a tiny cone-like outgrowth on the underside of the leaf with an opening at the end. This opening gives access to the gall-chamber through a short and narrow duct. The space of the gall-chamber is subdivided in smaller compartments by outgrowths from the inner wall. Gall no. 21981.

Sumatra, Tapianoceli, Angkola and Siporok, forester coll., II, 1924.

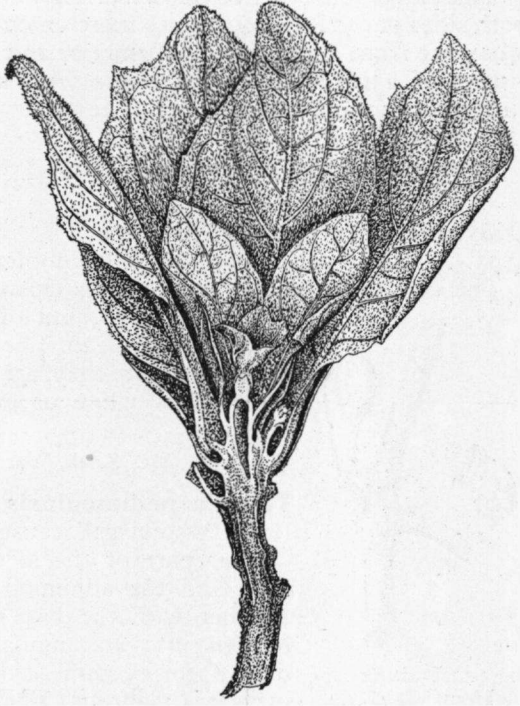


Fig. 119. *Cyrtandra pilosa* Bl., no. 1890.

FAMILY OF THE GESNERIACEAE.

Cyrtandra pilosa Bl.

1890. A stem-gall caused by a gall-midge.

The end of the axis is swollen into a fusiform gall. The larva-chamber is longitudinal, see figure 119. The internodes remain short and the leaves develop abnormally, they are smaller and are bunched together. These leaves are sessile and their top is rounded, they form a kind of rosette. Sometimes the highest leaves change into ascidia. Gall no. 21647.

Java, Mt. Salak, alt. 1000 m, IV, 1925; idem, alt. 600 m, VIII, 1925; Mt. Boender near Buitenzorg, alt. 100 m, II, 1925.

Cyrtandra Sandei DE VRIESE.

1891. A leaf-gall caused by a psyllid.

The leaves do not develop normally, they remain smaller and are wrinkled and contorted, and more or less folded downwards. They form loose bunches at the end of the branches. Gall no. 21626.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, II, 1925.

Cyrtandra species.

1892. A leaf-gall caused by a gall-midge.

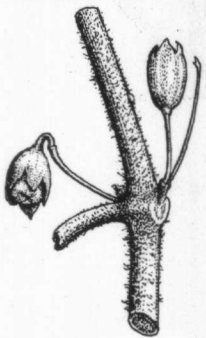
This gall is almost spherical, sometimes protruding equally towards both sides of the leaf, sometimes more on one side than on the other. They are from 2 to 4 mm in diameter, and they are glabrous, consisting of a parenchymatous tissue with a thick nutritious layer surrounding the larva-chamber. The upperside of the gall is green, the underside red. Gall no. 21982.

Sumatra, East Coast, waterfall of the Petani-river, alt. 1100 m, X, 1929.

Didymocarpus Horsfieldii KTZE.

1893. A flower-gall caused by a lepidopteron.

The corolla is swollen and remains closed, sometimes hidden in the deep calyx, but often protruding with its top, see figure 120. The sexual organs are badly developed and they are eaten by a caterpillar. The gall is white or greenish-white. Gall no. 21656.



Java, Mt. Salak, Warongloa, alt. 800 m, I, 1925.

Torenia peduncularis BTH.

1894. A stem-gall caused by a gall-midge.

That part of the stem that is formed by a node and the adjoining parts of the internodes together with the base of the attached leaves is swollen into an angular, but mainly fusiform gall, 8 to 15 mm across, see figure 121. The surface is glabrous. The larva-chamber is spherical. Gall no. 21683.

Fig. 120. *Didymocarpus Horsfieldii* KTZE., no. 1893.

Java, Mt. Salak, crater, alt. 1600 m, VIII, 1925; idem, near Mt. Boender, alt. 800 m, VIII, 1925.

FAMILY OF THE ACANTHACEAE.

The genus *Strobilanthes* has been studied by Prof. Dr. C. E. B. BREMEKAMP. He was so kind to go through and classify our gall-materials. The result was that several names used in our former

publications had to be altered and that some mistakes could be corrected. For his help we tender him our cordial thanks.

Acanthus ilicifolius L.

1359. A leaf-gall caused by a gall-midge.

1926a. VAN DER MEER MOHR, p. I.

This gall was described from Java, it was also collected in Sumatra. Gall no. 20006.

Sumatra, East Coast, tidal forest near Laboean, J. C. VAN DER MEER MOHR coll., I, 1926.

Andrographis paniculata NEES.

1360. A stem- and bud-gall caused by a gall-mite.

This gall was described as probably formed by a gall-midge, in reality it is a mite-gall. Gall no. 20042.

Isochorista javanica MIQ.

1895. A flower-gall caused by a gall-midge.

The petals are changed into irregular, but mainly spherical galls, from 4 to 8 mm across. The surface is glabrous, and on the top the gall is crowned with the remnants of the tips of the petals. The tissues of the gall are succulent and enclose one or two larva-chambers. Gall no. 21735.

Celebes, Tampanoea, NOERKAS coll., III, 1912.

Alor-islands near Timor, Boedjanta, A. BOUMAN-HOUTMAN coll., III, 1929.

Justicia Gendarussa L.

1896. A leaf-gall caused by an aphid.

1932a. DOCTERS VAN LEEUWEN, p. 2, no. 6.

The young leaves are badly developed, they are curled and spirally twisted, and accumulate at the end of the branches. Gall no. 21983.

Sumatra, Island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1926.

Parastrobilanthes parabolica BREM.

1897. A gall on the inflorescences caused by a gall-midge.

The inflorescences are swollen into oval bodies, thickly covered with hairs. In the centre are many small, spherical larva-chambers.

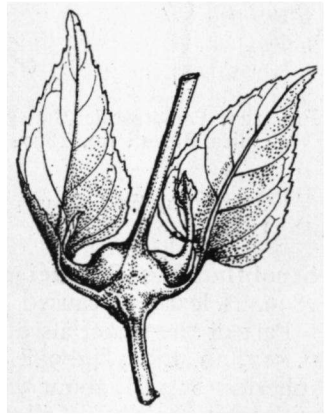


Fig. 121. *Torenia pedunculata* BTH., no. 1894.

The gall is covered with the bracts of the inflorescence which are arranged imbricately. The flowers are absent or display a high degree of viridescence. The bracts are also thickly covered with hairs, see figure 122. Gall no. 21624.

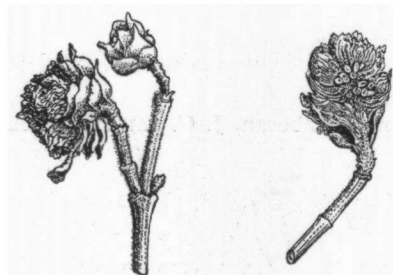


Fig. 122. *Parastrobilanthes parabolica* BREM., no. 1897.

Java, Mt. Tjikorai, summit, alt. 2700 m, V, 1925.

***Pteroptychia Ridleyi* BREM.**

1898. A leaf-gall caused by a gall-mite.

The borders of the leaf, near the apex are rolled upwards, forming a narrow gall-chamber. The outer surface of the gall is rough and slightly discoloured. The inner wall is covered with tiny hairlets. Gall no. 21736.

Sumatra, East Coast, waterfall of the Petani-river, alt. 1100 m, X, 1929.

***Strobilanthes Blumei* BREM.**

1899. A leaf-gall caused by a gall-midge.

Part of the materials of the gall on *S. cernua* BL., see our book, p. 517, no. 1391, fig. 988, belongs to *S. Blumei* BREM. The galls are spherical or oval, about 3 mm across. The surface is densely covered with white hairlets. Gall no. 21984.

Java, Mt. Gedé, Tjibodas, alt. 1700 m, E. JACOBSON coll., II, 1916 and M. J. G. BRUGGEMAN coll., X, 1923; Tjisaroeva near Buitenzorg, alt. 1000 m, X, 1931.

***Strobilanthes Boerlagei* BREM. var. *sparsipila* BREM.**

1900. A leaf-gall caused by a gall-midge.

Part of the material of the gall on *S. cernua* BL, see our book p. 517, no. 1391, fig. 988, belongs to *S. Boerlagei* BREM. The same gall as the foregoing, spherical, covered with many white hairs. Gall no. 21985.

Java, Mt. Papandajan, alt. 2000 m, IX, 1915; Mt. Tjikorai, alt. 1800 m, X, 1925.

1901. A leaf-gall caused by a gall-mite.

Tiny excrescences, about $1\frac{1}{2}$ mm across, are developed on the ramifications of the nerves. They are semi-spherical on the upper-side, on the underside more conical with a small orifice placed eccentrically which gives access to the undivided larva-chamber.

The surface of the gall is covered with white, stiff hairlets. Gall no. 21734.

Java, Mt. Tjikorai, alt. 1800 m, V, 1925.

***Strobilanthes cernua* BL.**

1902. A leaf-gall caused by a gall-midge.

The galls are situated along the mid-rib and they are developed towards both sides of the leaf-blade, see figure 123. They are flat, rounded swellings on the upperside, about 2 mm across, on the underside they are more prominent and covered with stiff, white hairlets. The larva-chamber is spacious. Gall no. 21680.

Java, Mt. Salak, crater, alt. 1000 m, VIII, 1925.

***Strobilanthes crisa* BL.,
now *Sericocalyx crispus* BREM.**

***Strobilanthes filiformis* BL.,
now *Difffluglossa filiformis* BREM.**

***Strobilanthes involucrata*
BL., see no. 1400.**

The material in our Herbarium is, according to Prof. BREMEKAMP, either *S. alata* BL. or a species of the *S. cernua* group.

1401. The material from which this gall is described does not belong to *S. involucrata* BL., nor to any other *Acanthacea*. It is most likely that it belongs to *Blumea sylvatica* DC. In that case the gall has been described in our book, see p. 554, no. 1507, fig. 1067. The gall-number of this gall is 20085.

***Strobilanthes* species in our book, see p. 521, no. 1402, fig. 996, gall no. 21326, is *Tetraglochidion bibracteatum* BREM.**

***Strobilanthes* species.**

1903. A leaf-gall caused by a gall-mite.

The same gall as the one described from *Sericocalyx* (*Strobilanthes*) *crispus* BREM., see our book p. 519, no. 1397, fig. 991. Irregular excrescences on the upperside of the leaf-blade, horn-like or conical,

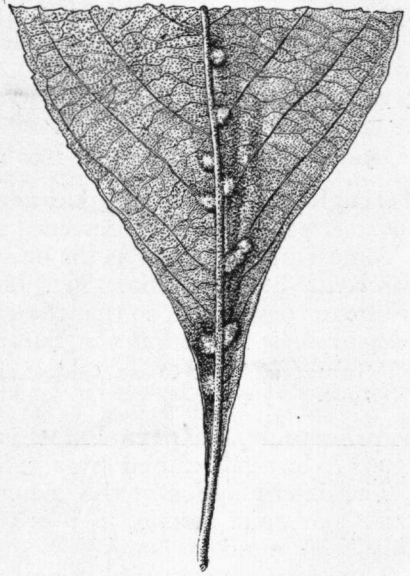


Fig. 123. *Strobilanthes cernua* BL.,
no. 1902.

or club-shaped with a longer or shorter pedicel. They are from 3 to 7 mm high. On the underside of the leaf only a narrow opening exists giving access to the gall-cavity, the wall of which is covered with white hairlets. Gall no. 21738.

Java, Tjibeureum near Bandoeng, alt. 600 m, V, 1915; Taloen near Pengalengan near Bandoeng, alt. 1700 m, IX, 1915.

Strophacantus dichotoma LINDAU.

1904. A stem-gall caused by a lepidopteron.

The stem, chiefly under a node, is swollen into a fusiform gall, from 10 to 15 mm long, and about 6 mm across. Sometimes the gall develops on a petiole. The larva-chamber is longitudinal. Gall no. 21986.

Java, Mt. Papandajan, alt. 1800 m, V, 1930.

Tetraglochidion minangkabuense BREM.

1905. A gall on the inflorescence caused by a gall-midge.

Almost the same gall as the one described from *Parastrobilanthes parabolica* BREM, see no. 1897. This gall is smaller and the bracts are better developed, so that the gall resembles the gall of *Rhabdophaga rosaria* L. on *Salix* in Europe. Gall no. 21737.

Sumatra, West Coast, Gadoet, alt. 1000 m, E. JACOBSON coll., IX, 1924.

Xanthostachya aspera BREM. var. *pubescens* BREM.

1906. A leaf-gall caused by a gall-mite.

The determination of this material is according to Prof. BREMEKAMP not quite certain, as it is sterile and the plant has hitherto only been found in Timor.

The leaves are strewn with tiny excrescences, about $\frac{3}{4}$ mm across. They are developed on the upperside more than on the underside of the leaf. They are conical with a narrow opening in the top of the part on the underside of the leaf-blade. On the upperside of the leaf the gall forms a rounded swelling. Gall no. 21739.

Soemba, Mao Marroc, alt. 450 m, K. W. DAMMERMAN coll., V, 1925.

FAMILY OF THE RUBIACEAE.

Lasianthus purpureus BL.

1907. A leaf-gall caused by a thysanopteron.

Both halves of the leaf-blade are rolled upwards, so that two narrow rolls are formed which encounter each other above the midrib. Gall no. 21325.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, M. J. G. BRUGGEMAN coll., XII, 1925.

Morinda citrifolia L.

1908. A leaf-gall caused by a gall-midge.

These galls develop on the mid-rib, they are spherical, protruding partly on the upperside, partly on the underside of the leaf. They are about 7 mm across. There are 3 or more narrow and irregular larva-chambers imbedded in the probably soft tissues of the gall. Gall no. 21987.

Boeton, G. Kjellberg coll., 1929.

Nauclea pallida REINW.

1909. A leaf-gall caused by a gall-midge.

This gall resembles the one on *N. purpurascens* KORTH., see our book p. 527, no. 1410, fig. 1008, but the gall on *N. pallida* is smaller. This gall develops on the upperside of the leaf and many single galls form together swellings of the mid-rib. Each separate gall is $1\frac{1}{2}$ to 3 mm long and 1 to 2 mm thick. On the underside of the leaf there is only a slight swelling of the infected part of the main-nerve. The surface is covered with a thick, irregularly grooved, brown, corky layer. The larva-chamber is spherical and very small. Gall no. 21988.

Java, Mt. Tjipoetih, Poerasèda near Buitenzorg, alt. 600 m, II, 1929.

Pavetta indica L.

1431. A leaf-gall caused by *Gynaikothrips leeuweni* KARNY.

1926c. VAN DER MEER MOHR, p. 3.

This gall was described from Java and Salajar, it was also collected in Sumatra. Gall no. 21354.

Sumatra, East Coast, Loeboek Dalam, J. C. VAN DER MEER MOHR coll.

Petunga microcarpa DC.

1434. A stem-top-gall caused by a lepidopteron.

1940. DOCTERS VAN LEEUWEN, p. 409, no. 10.

This gall was described from Java and Salajar, it was also collected on the island of Enggano. Gall no. 21357.

Enggano, Malakoni-Meok, W. J. LÜTJHARMS coll., VI, 1936.

Psychotria montana BL.

1910. A leaf-gall caused by a gall-midge.

These galls are spherical and they are partly developed on the upper and partly on the underside of the leaf-blade. They are about 3 mm across. The surface is brown with tiny red-brown spots. The larva-chamber is spherical, surrounded by a thick and soft wall. Gall no. 21687.

Java, Mt. Gedé, Tjibodas, alt. 1900 m, XI, 1924.

***Psychotria rhinocerotis* REINW.**

1911. A flower-gall caused by a gall-mite.

The flowers show a high degree of viridescence, they form thick bunches like a cauliflower. Gall no. 21989.

Sumatra, West Coast, Tandjoeng Gadang, alt. 1000 m, E. JACOBSON coll., II, 1926.

***Tarennia* species.**

1912. A leaf-gall caused by a thysanopteron.

Both halves of the leaf-blade are rolled upwards so that the rolls reach each other above the mid-rib. The infected leaves remain smaller and are often spirally twisted. Gall no. 21990.

Java, Buitenzorg, botanic gardens, alt. 250 m, VIII, 1918.

***Timonius* species.**

1913. A stem-gall caused by a lepidopteron.

The topmost internode of the branches is distended into a fusiform gall, about 10 mm long and 5 mm across. The parts above the gall remain rudimentary with, if any, only small leaves. The surface is covered with a grayish corky layer. The larva-chamber is spacious and surrounded by a thin, but hard wall. Gall no. 21991.

Sumatra, Karo-plateau, alt. 1300 m, V, 1921.

***Uncaria ferrea* DC.**

1914. A leaf-gall caused by a gall-mite.

Perhaps the same gall as the one described from *U. species*, see our book p. 542, no. 1473, plate II, fig. 3. Rounded, or club-chaped, or more horn-like excrescences on the underside of the leaf-blade. They are coloured green or red. They are from 1 to 3 mm high and about 1 mm across. There is a small opening on the upperside of the leaf, surrounded and covered with wavy, red-brown hairlets. The inner wall is densely covered with multicellular hairlets. Gall no. 21992.

Java, Babakanmadang near Buitenzorg, alt. 100 m, C. G. G. J. VAN STEENIS coll., IX, 1928; Mt Tjipoetih near Poerasèda, Buitenzorg, alt. 400 m, II, 1929; Island of Noesakambangan, Gligir, alt. 100 m, M. L. G. BRUGGEMAN coll., II, 1929.

1915. A stem-gall caused by a lepidopteron.

Spindle-shaped swellings of the stem, about 25 mm long and 7 mm thick. The larva-chamber is longitudinal. The cross-section of the gall is angular as that of the normal stem. The gall comprises about two internodes. Gall no. 21993.

Java, Batavia, Mt. Liang, alt. 550 m, C. G. G. J. VAN STEENIS coll., X, 1928.

Uncaria glabrata DC.

1916. A stem-gall caused by a lepidopteron.

The same gall as the foregoing, only thicker, about 20 mm long and 15 mm across. Gall no. 21994.

Java, Mt. Gedé, Tjibodas, alt. 1500 m, I, 1932.

Urophyllum macrophyllum KORTH.

1917. A leaf-gall caused by a gall-midge.

Very flat, circular galls, about 5 mm across, are developed partly on the upper- and partly on the underside of the leaf-blade, see figure 124. The galls are about 1 mm thick with a small, circular larva-chamber inside. The surface is glossy and yellowish-green. Gall no. 21685.

Java, Mt. Boender near Buitenzorg, alt. 600 m, VIII, 1925.

Wendlandia rufescens MIQ.

1475. A leaf-gall caused by *Phytoptus wendlandiae* NAL.

This gall was described from Java, it was also collected in the Moluccas. Gall no. 20203.

Ambon, Benteng, A. RANT coll., X, 1931.

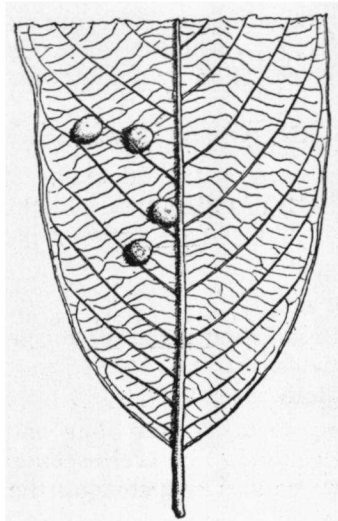


Fig. 124. *Urophyllum macrophyllum* KORTH., no. 1917.



Fig. 125. *Lonicera javanica* DC., no. 1918.

FAMILY OF THE CAPRIFOLIACEAE.

Lonicera javanica DC.

1933. DOCTERS VAN LEEUWEN, p. 237, fig. 61.

1918. A flower-gall probably caused by an aphid.

The flowers are deformed, the most thoroughly misshapen ones remain small, they do not open, and form dense clumps, more or less hidden between the highest leaves, see figure 125. There are other, also infected flowers which open more or less, but not much of the normal structure is left. The stigma and the stamens which still may produce a small quantity of pollen are hidden in the flowers. The normally yellow flowers become often tinged with a reddish hue, and the perianth is sometimes spirally twisted, not only the tube, but also the filaments. In some cases the number of the stamens is reduced to two. In a few cases we found also infected leaves, they remain smaller and are folded and contorted. Gall no. 21995.

Java, Mt. Pangrango, summit, alt. 3060 m, V, 1923; Mt. Soembing, crater, alt. 3300 m, V, 1927; Mt. Papandajan, aloen-aloen, alt. 2500 m, I, 1930.

Viburnum coriaceum BL.

1919. A leaf-gall caused by a gall-mite.

Irregular patches of a glittering, white erineum are developed on the underside of the leaves. In case of a strong infection the whole underside of the leaf may be covered with the erineum. This consists of clubshaped hairlets, forming a granular, low, white cushion. On the reverse side there exists only a slight elevation or a somewhat darker spot. Gall no. 21996.

Java, Mt. Gedé, Lebak Saät, alt. 2400 m, XII, 1929; Mt. Lawoe, above Sarangan, alt. 1900 m, I, 1930.

FAMILY OF THE CUCURBITACEAE.

Coccinea cordifolia COGN.

1485. A stem-gall caused by a gall-midge.

1932a. DOCTERS VAN LEEUWEN, p. 1, no. 1.

This gall was described from Java and Krakatau, it was also collected on the island of Berhala near Sumatra. Gall no. 20255.

Berhala-island, J. C. VAN DER MEER MOHR coll., VIII, 1927.

Gymnopetalum quinquelobatum MIQ.

1491. A stem-gall caused by a gall-midge.

This gall was described from Java, it was also collected on the island of Soemba. Gall no. 20499.

Soemba, North West, Laoro-district, K. W. DAMMERMAN coll., IV, 1925.

Gymnostemma pedata BL.

1920. A fruit-gall caused by a gall-midge.

The fruits are slightly swollen, the galls measure from 4 to 6 mm. The wall of the gall is thin and a few normal seeds may develop inside the fruit, but there is also a cavity in which the larvae live. Gall no. 21997.

Java, Mt. Tjibodas, Tjampea, alt. 300 m, C. G. G. J. VAN STEENIS coll., I, 1929.

Melothria mucronata COGN.

1495. A stem-gall caused by a gall-midge.

1940. DOCTERS VAN LEEUWEN, p. 408, no. 8.

This gall was described from Java, it was also collected on the island of Enggano. Gall no. 21393.

Enggano-island, Koho Ahepea, alt. 200 m, W. J. LÜTJEHARMS coll., VI, 1936.

Trichosanthes palmata ROXB.

1921. A stem-gall caused by a gall-midge.

Irregular, fusiform swellings are mostly situated near the end of the stem. Sometimes the growing apex is incorporated in the gall, but frequently the infection is produced lower down and the stem can continue its growth. The gall is from 15 to 50 mm long and from 3 to 5 mm across. The larva-chambers are long, irregularly running canals in a soft tissue. Gall no. 21998.

Java, Buitenzorg, Tegallèga, alt. 250 m, R. C. BAKHUIZEN VAN DE BRINK coll., IX, 1928.

FAMILY OF THE COMPOSITAE.

Ageratum conyzoides L.

1504. A leaf- and stem-gall caused by an aphid.

1926b. VAN DER MEER MOHR, p. 2.

This gall was described from Java, it was also collected in Sumatra. Gall no. 20017.

Sumatra, East Coast, Toentoengan and Maryland, J. C. VAN DER MEER MOHR coll.

1922. A root-gall caused by a nematode.

1926a. VAN DER MEER MOHR, p. 1.

Nodosities on the rootlets.

Sumatra, East Coast, Medan, J. C. VAN DER MEER MOHR coll.

Ageratum mexicanum SIMS.

1923. A leaf- and stem-gall caused by an aphid.

The same gall as the one on *A. conyzoides* L., see our book p. 553, no. 1504. The leaves remain small and are curved, they form bunches at the end of the stems. Gall no. 21703.

Java, Mt. Gedé, Tjibodas, alt. 1450 m, VII, 1925.

Cosmos bipinnatus CAV.

1924. A flower-gall caused by a gall-mite.

The flowers are highly viridescent and form bunches of slender twigs with rudimentary, scale-like leaves which protrude far out of the involucre, see figure 126. Gall no. 21999.

Java, Buitenzorg, botanic gardens, alt. 250 m, III, 1927.

Erechthites valerianifolia RAFIN.

1925. A stem- and leaf-gall caused by a coccid.

The internodes at the end of the stem remain short, the leaves are badly developed, wrinkled and curved. They form bunches at the end of the stems. Gall no. 22000.

Java, Mt. Gedé, Kandang Badak, alt. 2400 m, X, 1927.

Gynura aurantiaca DC.

1926. A stem-gall caused by a coleopteron.

1932. VAN DER MEER MOHR, p. 2, figure.

The end of the stem is distended into a fusiform gall which consists of a number of shortened internodes, so that the leaves which are almost normally developed sit close together.



Fig. 127. *Lactuca indica* L., no. 1927.



Fig. 126. *Cosmos bipinnatus* CAV., no. 1924.

Sumatra, East Coast, Bandarbaroe, A. PALM and L. FULMEK coll., VI, 1926.

Lactuca indica L.

1927. A flower-gall caused by a gall-mite.

The flowers show a high degree of viridescence. They form bunches of small scales which burst out of the involucre, see figure 127. Gall no. 22001.

Java, Buitenzorg, botanic gardens, alt. 250 m, III, 1927.

Pluchea indica LESS.

1511. A gall on the capitula caused by a trypetine.

1926c. VAN DER MEER MOHR, p. 3.
1927. FULMEK, p. 6.

This gall was described by us as a gall caused by a gall-midge. FULMEK

cultivated the gall-causer and stated that it was a trypetine, i.e. *Trypanea amoena* FRTL.D. This gall was described from Java and Celebes, it was also collected in Sumatra. Gall no. 21404.

Sumatra, Belawan, J. FULMER coll., IX, 1921; Perbaengan, J. C. VAN DER MEER MOHR coll.

Senecio sonchifolius MOENCH.

1514. A flower-gall caused by a gall-mite.

This gall was described from Java, it was also found in the Molucas. Gall no. 20372.

Ambon, Soja-road, A. RANT coll., VI, 1929.

Vernonia arborea HAM.

1928. A leaf-gall caused by a gall-midge.

These galls are developed in great numbers on the underside of the leaf-blade, on the reverse side there is only a small swelling. The galls are semi-spherical, about 3 mm across. The surface is thickly covered with stiff, white hairs, see figure 128. The larva-chamber is almost spherical, it is surrounded by a thick wall. Gall no. 22002.

Java, Mt. Boender near Buitenzorg, alt. 600 m, VIII, 1925; Mt. Pantjar near Buitenzorg, alt. 600 m, XII, 1931.

Vernonia cinerea LESS.

1527. A flower-gall caused by a gall-mite.

This gall was described from Java, it was also collected in Ambon and Ceram. Gall no. 20221.

Ambon, IV, 1926; Karang Pandjang, A. RANT coll., IV, 1929.

Ceram, Lokki, A. RANT coll., VI, 1929.

Vernonia chinensis LESS.

1929. A flower-gall caused by a gall-mite.

The flowers show a high degree of viridescence, the capitula change into thick bunches of thin branches with rudimentary leaves. In case of a strong infection the whole plant is poorly developed. Gall no. 22004.

Java, Pasoeroean, VI, 1927.

Wedelia biflora DC.

1533. A bud-gall caused by a trypetine.

1926a. VAN DER MEER MOHR, p. 4.

1932a. DOCTERS VAN LEEUWEN, p. 3, no. 12.

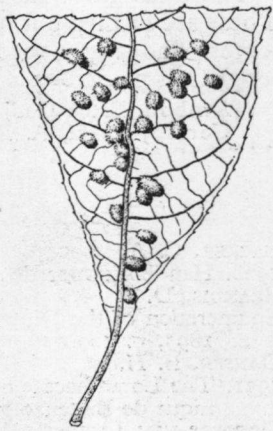


Fig. 128. *Vernonia arborea* HAM., no. 1928.

This gall was described from Java, Krakatau, and Sebesi, it was also collected on the island of Berhala near Sumatra. The gall-causer was formerly mentioned by us as a gall-midge, in reality it is a trypetine as is stated by VAN DER MEER MOHR. Gall no. 20201.

Sumatra, East Coast, Island of Berhala, J. C. VAN DER MEER MOHR coll., VIII, 1927; Perbaoengan, J. C. VAN DER MEER MOHR coll.

1535. A leaf-gall caused by a gall-mite.

1926c. VAN DER MEER MOHR, p. 4.

This gall was described from Java, Krakatau, Sebesi, Salajar, Tanimber, Malacca and Siam. It was also collected in Sumatra. Gall no. 20200.

Sumatra, East Coast, Perbaoengan, J. C. VAN DER MEER MOHR coll.

1930. A bud-gall caused by a gall-mite.

The buds grow out and form smaller or larger witches' brooms. These are formed out of long, thin, but stiff twigs with rudimentary leaves. The largest witches' broom in our material is about 450 mm long. Gall no. 22003.

Ambon, Batoe Gadjah, A. RANT coll., V, 1929.

Ceram, Lokki, A. RANT coll., VI, 1929.

LITERATURE.

BACKER, C. A.

1928. Handboek voor de Flora van Java. Vol. II, Batavia, p. 241.

BRANDIS, D.

Enumeration of the Diptero-carpaceae. Journ. Linnean Society, vol. XXXI, 1895, p. 100.

DANSER, B. H.

1931. The Loranthaceae of the Netherlands Indies. Bulletin du jardin botanique de Buitenzorg. Série III, Vol. XI, p. 235—519.

DOCTERS VAN LEEUWEN-REIJNVAAN, Mrs. J.

DOCTERS VAN LEEUWEN, W. M.

1926a. The Zooecidia of the Netherlands East Indies. Batavia, p. 1—601, no. 1—1536, fig. 1—1088, Pl. I—VII.

1926b. Second Contribution to the knowledge of the zooecidia of Siam. Marcellia. Vol. XXII, p. 25—32, no. 1—14, fig. 1—12.

1928a. Ueber ein von Gynaikothrips devriesii KARNY aus einer Gallmücken-Galle gebildetes Thysanopteroecidium. Recueil d. Travaux botaniques Néerlandais. Vol. XXVI, p. 99—114, fig. 1—9.

1928b. Over een gal van Symplocos fasciculata ZOLL., veroorzaakt door een galmug: Asphondylia bursaria FELT, welke samenleeft met een schimmel. Handelingen van het vijfde Ned. Indische Natuurwetenschappelijke Congres, p. 416—420.

1929a. Ein neuer Typus eines Thysanopteroecidiums. Marcellia. Vol. XXVI, p. 1—3, fig. 1—2.

1929b. Ueber die Gallen auf den Korallen-Inseln in der Bucht von Batavia. Marcell. Vol. XXVI, p. 31—36.

- 1929c. Ueber eine Galle auf *Symplocos fasciculata* ZOLL., verursacht durch eine Gallmücke: *Asphondylia bursaria* FELT, die mit einem Fungus zusammenlebt. *Marcellia*. Vol. XXVI, p. 61—66, fig. 1—2.
- 1932a. Some Galls from the Island of Berhala. *Miscellanea Zoologica Sumatрана*. No. LXX, p. 1—3, no. 1—14, fig. 1.
- 1932b. Ueber eine neue *Styrax*-Galle aus Borneo und Celebes. *Tijdschrift voor Entomologie*. Vol. LXXV, supplement, p. 97—99, fig. 1.
1933. Biology of Plants and Animals occurring in the higher parts of Mount Pangrango-Gedeh in West Java. *Verhandelingen Kon. Akademie van Wetenschappen te Amsterdam, afdeeling Natuurkunde*. Vol. XXXI, p. 1—276, galls see p. 272.
1934. Die Vegetation der Insel Toppers Hoedje in der Soenda-Strasse. *Natuurkundig Tijdschrift voor Ned. Indië*. Vol. XCIV, p. 149—169.
1936. Krakatau, 1883—1933, A Botany. *Annales d. Jardin botanique de Buitenzorg*. Vol. XLVI—XLVII, p. 1—506, galls p. 280—303.
- 1939a. An ambrosia-gall on *Symplocos fasciculata* ZOLL. *Annales d. jardin botanique d. Buitenzorg*. Vol. XLIX, p. 27—42, pl. I—V.
- 1939b. Een mijtgal op de vrouwelijke kegels van *Podocarpus neriifolia* DON. *Natuurwetenschappelijk Tijdschrift*. Vol. XXI, p. 333—338, fig. 1—2.
1940. Some galls from the Island of Enggano. *BLUMEA*. Vol. III, p. 405—410, no. 1—16, fig. 1—3.
- FELT, E. P.
- 1927a. A new seed head midge. *Treubia*. Vol. IX, p. 381.
- 1927b. Two remarkable East Indian gall-midges. *Treubia*, Vol. IX, p. 382—384.
- 1927c. New species of East Indian gall-midges. *Treubia*, Vol. IX, p. 385—389.
- FERRIÈRE, CH.
1929. Chalcidiens gallicoles de Java. *Annales d. l. Soc. Entomologique de France*. Vol. XCVIII, p. 143—161, fig. 1—10.
1932. Un nouveau Chalcidien gallicole de Sumatra. *Miscellanea Zoologica Sumatрана*. No. LXIII, p. 1—4, fig. 1.
- FULMEK, L.
1927. Eine Fliegenausbeute von Deli (Sumatras flacher Ostküste) und anschliessendem Hochland. *Miscellanea Zoologica Sumatрана*. No. XI, p. 1—6.
- HOUARD, C.
1917. Galles de l'Ancien Continent extra-européennes. *Marcellia*. Vol. XVI, p. 79—102, fig. 1—66.
1922. Les Zoocécidies des Plantes d'Afrique, d'Asie et de l'Océanie. Paris. Vol. I.
- KARNY, H. H.
- 1928—29. Ein neuer javanischer Gynaikothrips. *Treubia*, Vol. X, p. 33—44.
- KOERNICKE, M.
1908. Blätter mit unbegrenztem Wachstum in einer Knospenvariation von *Pometia pinnata* FORST. *Ann. d. jard. bot. d. Buitenzorg*. Supplement III, p. 807—813, p. XXXII.
- LAMBERS, D. HILLE RIS.
1931. Two new gallforming species of *Astegopteryx* KARSCH from Sumatra. *Miscellanea Zoologica Sumatрана*. No. LV, p. 1—5, fig. I—IV.
1932. A new species of *Astegopteryx* KARSCH forming galls on *Styrax paralleloneurus* PERK. *Miscellanea Zoologica Sumatрана*. No. LXIV, p. 1—3, pl. I.
1933. On the species of *Astegopteryx* KARSCH from *Styrax Benzoin* DRYAND. *Miscellanea Zoologica Sumatрана*. No. LXXVI, p. 1—4, fig. A, B.

- MIQUEL, F. A. G.
1853. De ramificatione monstrosa in arbore Sumatrana observata. *Linnaea*. Vol. X, p. 285—291, pl. III.
- MOHR, J. C. VAN DER MEER.
1926a. Cecidologische Notizen. Gallen aus der Umgebung Medans. I. *Miscelanea Zoologica Sumatrana*. No. II, p. 1—4.
1926b. Idem II. *M.Z.S.* No. IV, p. 1—4.
1926c. Idem III. *M.Z.S.* No. VI, p. 1—3, fig. 1—2.
1926—27. Ueber zwei Gallen an *Salix tetraspermum* ROXB. *Bulletin d. jardin botanique de Buitenzorg, Série III, Vol. VIII*, p. 114—115, pl. XVIII.
1929. Zoocécidies nouvelles du Nord de Sumatra. *Miscellanea Zoologica Sumatrana*. No. XXXVII, p. 1—3, fig. 1.
1930. Notes on the Fauna of Pulau Berhala. *Treubia*, vol. XII, p. 277—298.
1931. Over twee *Styrax*-gallen en hun bewoners. *De Tropische Natuur*. Vol. XX, p. 158—162.
1932. Some new galls from North Sumatra. *Miscellanea Zoologica Sumatrana*. No. LXI, p. 1—3, fig. 1—2.
1935a. Verzeichnis der bis jetzt von Sumatra bekannten Blattlaus-Arten. *Miscellanea Zoologica Sumatrana*. No. XC, p. 1—7.
1935b. Nachtrag zu meinem Verzeichnis der Sumatranischen Blattlaus-Arten. *Miscellanea Zoologica Sumatrana*. No. XCVI, p. 1—4.
- PRIESNER, H.
1926. Die jugendstadien der Malayischen Thysanopteren. *Treubia*. Vol. VIII, supplement, p. 1—264, pl. I—XVI.
1928—29. Indomalayische Thysanopteren. I. *Treubia*. Vol. X, p. 447—462.
1929—30. Indomalayische Thysanopteren. II. *Treubia*, Vol. XI, p. 357—371.
1931. Ein neuer Blasenfuss, der Gallen an *Euphorbia hirta* verursacht. *Miscellanea Zoologica Sumatrana*. No. LVIII, p. 1—4, fig. 1—3.
1937—38. Materialien zu einer Revision der Taeniothrips-Arten (Thysanoptera) des Indo-Malayischen Faunengebietes. *Treubia*. Vol. XVI, p. 447—526.
- STEENIS, C. G. G. J. VAN,
1931—32. The *Styracaceae* of the Netherlands Indies. *Bull. d. jard. bot. d. Buitenzorg. serie III*, vol. XII, p. 212—272, fig. 1—18.
- TAKAHASHI, RYOICHI,
1936. *Astegopteryx* Karsch, with descriptions of new species from Sumatra and Formosa. *Proceed. Royal Entomological Society of London, B. Taxonomy*. Vol. V, p. 96—102, fig. 1.

INDEX OF THE GALL-PRODUCERS.

	page		page
Asphondylia bursaria FELT	220	GREEN	161
" viticola KIEFF	178	Leeuweniella ficophila FERR	144
Asphoxianomyia smilacis FELT	129	Leptynoptera sulfurea CRAWF	187
Astegopteryx fransseni H.R.L.	217	Liothrips longirostris KARNY	204
" lambersi TAKAH	217	Megatrioza vitiensis KIRK	200
" leeuweni TAKAH	219	Oligoxenomyia radicans FELT	126
" roepkei H.R.L.	218	Pauropsylla depressa CRAWF	141
" sumatranus		" tuberculata CRAWF	221
" H.R.L.	219	" udei RUEBS	144
" vandermeermohri		Perilampella raphidophorae	
" H.R.L.	218	FERR	128
Calopedia polyalthiae FELT	154	Phylloctes angustus premnae	
Contarinia eragrostidis FELT	127	NAL	227
Dasyneura tetrastigma FELT	178	Phytoptus cryptotrichus NAL	227
Decatoma spinifera FERR	141	" rubrierineus NAL	160
Diceromyia orientalis FELT	157	" wendlandiae NAL	237
Eothrips atavus KARNY	187	Prays endocarpa MEYER	164
Gnesiodiplosis garcinia FELT	188	Procontarinia matteiana K. et C.	171
Gynaikothrips chavicae ZIMM	133	Protanaostigma derricola FERR	161
" devriesii KARNY	144	" milletiae FERR	163
" heptapleuri		Rhipiphorothrips pulchellus	
" KARNY	205	MORG	168
" leeuwenii KARNY	235	Stefaniella falcariae FELT	225
" species	132	Tetrastichus casuarinae FERR	132
Gynodiplosis humata FELT	125	Thorodiplosis impatientis FELT	177
Haplothrips euphorbiae PRIESN	170	Trypanea amoena FRFLD	241
Lecanodiaspis azadiractae			

INDEX OF THE HOST-PLANTS.

	page		page
Acalypha boehmerioides MIQ	167	Ageratum conyzoides L.	239
" hispidula BURM	167	" mexicanum SIMS	239
" indica L.	167	Alangium villosum WANG.	207
Acanthaceae	230	Albizzia falcata BACK	160
Acanthus ilicifolius L.	231	Alstonia pneumatophora BACK	221
Aceraceae	175	Alstonia scholaris R.BR.	221
Acer niveum BL	175	" villosa BL.	221
" Pseudo-platanus L.	202	Altingia excelsa NOR.	159
Actinidia callosa LINDL	185	Amomum coccineum BL.	130
Adinandra lamponga MIQ	186	Amyema tristis v. TIEGH.	147
" species L.	186	Anacardiaceae	171

	page		page
<i>Andrographis paniculata</i> NEES	231	<i>Canarium pseudodecumanum</i>	
<i>Anisophyllea</i> species	201	HOCHR.	166
<i>Anisoptera Curtisii</i> DYER.	189	Caprifoliaceae	238
Anonaceae	153	<i>Casearia grewiaefolia</i> VENT.	195
<i>Antiaris toxicaria</i> LESCH.	137	Casuarinaceae	131
<i>Antidesma Bunias</i> SPR.	168	<i>Casuarina equisetifolia</i> FORST.	131
" <i>velutinosum</i> BL.	168	" <i>Junghuhniana</i> MIQ.	132
<i>Apama corymbosa</i> SOLER.	145	<i>Castanea javanica</i> BL.	134
<i>Aphanomyrtus tetraquetra</i> VAL.	197	<i>Cayratia japonica</i> GAGNEP.	178
Apocynaceae	221	<i>Ceiba pentandra</i> GAERTN.	184
<i>Aporosa lunulata</i> KURZ.	168	Celastraceae	174
Aquifoliaceae	174	<i>Celtis tetrandra</i> ROXB.	138
Araceae	127	<i>Ceratostylis capitata</i> Z. et M.	131
Araliaceae	205	" <i>simplex</i> BL.	131
<i>Ardisia colorata</i> ROXB.	208	<i>Cerbera manghas</i> L.	222
" <i>Copelandi</i> MEZ.	209	<i>Chaetocarpus</i> species	169
" <i>lanceolata</i> ROXB.	209	<i>Chonemorpha macrophylla</i> BL.	222
" <i>macrophylla</i> REINW.	209	<i>Cinnamomum Burmanni</i> BL.	155
" <i>Nageli</i> MEZ.	210	" <i>iners</i> BL.	155
" <i>species</i>	210	<i>Cissus vitigena</i> L.	178
" <i>Zollingeri</i> DC.	210	<i>Citrus decumana</i> L.	164
<i>Areca</i> species	127	<i>Clerodendron Buchananiana</i> WALP.	226
Aristolochiaceae	145	" <i>fragrans</i> VENT.	227
<i>Aristolochia Tagala</i> L.	145	<i>Coccinea cordifolia</i> COGN.	238
<i>Artabotrys</i> species	153	<i>Colona scabra</i> BURR.	180
" <i>suaveolens</i> BL.	153	<i>Columella trifolia</i> MERR.	178
<i>Artocarpus communis</i> FORST.	137	Combretaceae	196
<i>Arytera littoralis</i> BL.	175	Compositae	239
Asclepiadaceae	223	<i>Conocephalus naucleiflorus</i>	
<i>Aulandra longifolia</i> H.J.L.	212	ENGL.	128
<i>Avicennia marina</i> VIERH.	225	Convolvulaceae	224
Balsaminaceae	177	<i>Corchorus capsularis</i> L.	183
<i>Barathranthus axanthus</i> MIQ.	148	<i>Cordia bantamensis</i> BL.	225
<i>Barringtonia asiatica</i> KURZ.	196	" <i>Myxa</i> L.	225
<i>Bauhinia leptopus</i> PERL.	160	Cornaceae	207
Bignoniaceae	229	<i>Cosmos bipennatus</i> CAV.	240
<i>Blumea sylvatica</i> DC.	233	<i>Crotalaria anagyroides</i> W.B.	
<i>Blumeodendron Elateriosper-</i>		et K.	160
<i>mum</i> J.J.S.	168	" <i>incana</i> L.	161
Bombacaceae	184	" <i>striata</i> DC.	161
Boraginaceae	225	<i>Croton argyratus</i> BL.	169
<i>Bridelia tomentosa</i> BL.	169	" <i>species</i>	169
<i>Bruinsmia styracoides</i> B. et K.	217	<i>Cryptomeria ferrea</i> BL.	155
<i>Buchanania arborescens</i> BL.	171	Cucurbitaceae	238
Burseraceae	166	<i>Cyclophorus lanceolatus</i> ALSTON	124
Callicarpa longifolia LAM.	226	<i>Cyrtandra pilosa</i> BL.	229
" <i>pedunculata</i> R.Br.	226	" <i>Sandei</i> DE VRIESE	230
" <i>pentandra</i> ROXB.	226	" <i>species</i>	230
<i>Calophyllum Inophyllum</i> L.	187	Dendrobium Endertii J.J.S.	131
" <i>Soulattri</i> BURM.F.	188	" <i>poneroides</i>	
		SCHLTR.	131

	page		page
Dendrophthoe pentandra MIQ.	148	Eugenia malaccensis LAM	200
" praelonga MIQ.	147	" operculata ROXB.	199
Derris elliptica BTH.	161	" polyantha WIGHT.	199
Desmodium umbellatum DC.	161	" rufotomentosa MERR.	199
Didymocarpus Horsfieldii Ktze.	220	" species	200
Diffloglossa filiformis BREM.	233	Euphorbiaceae	167
Dilleniaceae	185	Euphorbia hirta L.	170
Dioscoreaceae	129	Eurya japonica THUNB.	186
Dioscorea oppositifolia L.	129	Evodia species	165
Diplazium cordifolium BL.	124		
" fraxinifolium PRESL.	124	Fagaceae	134
Dipterocarpaceae	189	Ficus alba REINW.	138
Dipterocarpus appendiculata		" annulata BL.	138
SCHEFF.	190	Ficus Benjamina L.	138
" gracilis BL.	190	" crininervia MIQ.	139
Dischidia rhombifolia BL.	223	" diversifolia BL.	140
Dissochaete gracilis BL.	201	" fistulosa REINW.	140
" species	202	" fulva REINW.	140
Distylium stellare O.K.	159	" glabella BL.	140
Drypetes longifolia P. et H.	170	" glomerata ROXB.	141
Dunbaria rubella SPAN.	162	" indica L.	141
Duria zibethinus L.	184	" infectoria ROXB.	141
		" pilosa REINW.	141
Elaeocarpaceae	178	" pisifera WALL.	141
Elaeocarpus acronodia MAST.	178	" procera REINW.	142
" edulis T. et B.	179	" pubinervis BL.	142
" littoralis T. et B.	179	" punctata THUNB.	143
" obtusata BL.	179	" recurva BL.	143
" oxyphyrena K. et V.	179	" variegata BL.	144
" stipularis BL.	179	Flacourtiaceae	195
" species	180	Flacourtia Rukam Z. et M.	195
Elaeodendron glaucum PERS.	174	Flagellariaeae	129
Elatostema sesquifolium HASSK.	144	Flagellaria indica L.	129
" strigosum HASSK.	144	Flemmingia congesta ROXB.	162
Elmerilla celebica DANDY	152	Freycinetia valida RIDL.	126
Elytranthe gemmiflora G. DON.	147		
" globosa ENGL.	147	Ganua Motleyana PIERRE.	213
Endiandra rubescens MIQ.	155	Garcinia dioica BL.	188
Endospermum species	170	" laterifolia BL.	188
Engelhardtia spicata BL.	133	" species	188
Eragrostis unioloides NEES et		Gesneriaceae	229
STEUD.	127	Gironniera subaequalis PLANCH.	136
Erechthites valerianifolia RAFIN.	240	Gleicheniaceae	125
Ericaceae	208	Gleichenia linearis CLARKE	125
Erythrina variegata L.	162	" volubilis JUNGH.	125
Eucalyptus alba REINW.	197	Glochidion philippicum ROB.	170
Eugenia acuminatissima KURZ.	197	" rubrum BL.	170
" cuprea K. et V.	198	" species	171
" jamboloides K. et V.	198	" zeylanicum JUSS.	171
" javanica LAM.	198	Glycine Soja BTH.	162
" laxiflora K. et V.	199	Glycosmis cochinchinensis	
" macromyrra K. et V.	199	PIERRE	165

	page		page
Gnetaceae	126	Labiatae	228
Gnetum leptostachyum BL.	126	Lactuca indica L.	240
neglectum BL.	126	Lasianthus purpureus BL.	234
Graminae	127	Lauraceae	155
Grewia excelsa WALL.	181	Laurembergia coccinea KAN.	294
laevigata VAHL.	181	Lecythidaceae	190
Guttiferae	187	Leea indica MERR.	178
Gymnopetalum quinquelobatum		Leguminosae	160
MIQ.	238	Lepeostegeres gemmiflorus BL.	147
Gymnostemma pedata BL.	239	Lepistemon flavescens BL.	224
Gynura aurantiaca DC.	240	Leptospermum javanicum BL.	200
Halorrhagidaceae	204	Leucas zeylanica R.BR.	228
Hamamelidaceae	159	Liliaceae	139
Haplolobus borneensis H.J.L.	166	Lindernia latifolia KDS.	228
Haplophragma macroloba v.St.	229	Liparis crenulata LINDL.	131
Heckeria umbellata KTH.	132	latifolia LINDL.	131
Hedychium Roxburghii BL.	130	Litsea amara BL.	156
Heritiera littoralis DRYAND.	183	angulata BL.	157
species	183	Cubeba PERS.	157
Hibiscus cannabinus L.	182	diversifolia BL.	158
Rosa sinensis L.	182	odorifera VAL.	158
Sabdariffa L.	182	tomentosa BL.	158
schizopetalus HOOK.	183	Lonicera javanica DC.	238
Hopea fagifolia MIQ.	190	Loranthaceae	146
Hoya coriacea BL.	224	Loranthus axanthus KORTH.	147
lacunosa BL.	223	Korthalsii MOLKENB.	147
macrophylla BL.	224	lepidotus BL.	147
Humata alpina MOORE.	125	Oortianus KORTH.	147
repens DIELS.	125	pentandrus L.	147
Ilacinaeae	175	praelongus BL.	147
Ichnanthus pallens MERR.	127	Schultesii BL.	147
Ilex bogoriensis LOES.	174	Macaranga involucrata BAILL. 171	
Impatiens javensis STEUD.	177	Macrosolen cochinchinensis v.	
platypetala LINDL.	177	TIEGH.	149
Indigofera guatemalensis M. L.		tetragonum MIQ.	150
et C.	162	Madhuca cuneata MACBR.	213
Isochorista javanica MIQ.	231	Endertii H.J.L.	213
Isoptera borneensis SCHEFF.	190	mindanaensis MERR.	214
Iteodaphne confusa BL.	156	Magnoliaceae	152
Jasminum glabriusculum BL. 221		Malvaceae	182
Juglandaceae	133	Mangifera foetida LOUR.	171
Jussiaea angustifolia LAM.	204	indica L.	172
linifolia VAHL.	204	species	172
Justicia Gendarussa L.	231	Maoutia Puya WEDD.	145
Kadsura scandens BL. 152		Marrumia muscosa BL.	202
Kibessia azurea BL.	202	Mastixia rostrata BL.	207
Kleinhovia hospita L.	184	trichotoma BL.	207
Knema glauca WARB.	154	Medinilla javanensis BL.	203
laurina WARB.	154	species	203
		verrucosa BL.	203
		Melaleuca Leucodendron L.	201

	page		page
Melanochyla tomentosa HOOK.F.	174	Passifloraceae	195
Melastomataceae	201	Passiflora foetida L.	195
Melastoma malabathricum L.	203	Pavetta indica L.	235
Meliaceae	166	Pentace triptera MAST.	180
Meliosma nitida BL.	176	Pericampylus glaucus MERR.	152
Melodorum Kentii HOOK. F. et TH.	153	Petunga microcarpa DC.	235
Melothria mucronata COGN.	239	Phaseolus radiatus L.	164
Menispermaceae	152	Phoebe declinata NEES.	157
Merremia umbellata HALL. F.	224	Piperaceae	132
Microcos stylocarpa BURR.	181	Piper caninum BL.	132
Micromelum pubescens BL.	165	" malamiri BL.	132
Milletia sericea W. et A.	163	" mollissimum BL.	132
Mimosa pudica L.	163	" retrofractum VAHL.	133
Moraceae	137	" sarmentosum ROXB.	132
Morinda citrifolia L.	235	Pipturus incanus WEDD.	145
Mucuna Junghuhnii BACK.	163	Pittosporaceae	159
" pruriens DC.	163	Pittosporum species	159
Myristicaceae	154	Plagiogyria pycnophylla METT.	125
Myrsinaceae	208	Planchonella ferruginea PIERRE.	216
Myrtaceae	197	Pluchea indica LESS.	240
Nauclea pallida REINW.	235	Podocarpus neriifolia DON.	126
" purpurascens KORTH.	235	Polyalthia species.	154
Neesia altissima BL.	184	" subcordata BL.	154
Nothopanax cochleatum MIQ.	205	Polygalaceae	166
Nyssa javanica WANG.	208	Polypodiaceae	124
Ochroma lagopus Sw.	185	Pometia pinnata FORST.	176
Ocimum Basilicum L.	228	" tomentosa T. et B.	176
Oenotheraceae	204	Pongamia pinnata MERR.	164
Olceaceae	221	Premna integrifolia L.	227
Omphalopus fallax NAND.	204	Psychotria montana BL.	235
Orchidaceae	131	" rhinocerotis REINW.	236
Oxymitra species	153	Pteroptychia Ridleyi BREM.	237
Palaquium hexandrum ENGL.	214	Pyrenaria serrata BL.	187
" macrocarpum BURCK.	215	Quercus conocarpa OUD.	134
" quercifolium BURCK.	215	" induta BL.	134
" rioense H.J.L.	215	" lineata BL.	135
" xanthochrynum PIERRE.	216	" species	136
Palmae	127	" spicata BL.	135
Pandanaceae	126	" sundaica BL.	135
Panicum trigonum RETZ.	127	Rapanea affinis MEZ.	211
Parameria barbata K. SCHUM.	222	" avenis MEZ.	211
Parashorea aptera V.SL.	191	Rhamnaceae	177
" lucida KURZ.	191	Rhaphidiphora conocephala v. A. v. R.	128
Parastrobilanthes parabolica BREM.	231	Rhaphidophora montana SCHOTT.	127
		Rhodamnia cinerea JACK.	201
		Rhododendron Loerzingii J.J.S.	208
		" malayanum JACK.	208
		Rosaceae	160

	page		page
Rubiaceae	234	Sterculiaceae	183
Rubus alpestris BL.	160	Strobilanthes alata BL.	233
„ rosaeifolius SM.	160	„ Blumei BREM.	231
Rutaceae	164	„ Boerlagei BREM.	232
Ryssopterys tiliifolius Juss.	163	„ cernua BL.	232
		„ crispa BL.	232
		„ filiformis BL.	233
		„ involucrata BL.	233
		„ species	233
Salicaceae	133	Strophacanthus dichotoma	
Salix tetrasperma ROXB.	133	LINDAU	234
Sandoricum borneense MIQ.	166	Styracaceae	217
Santalaceae	151	Styrax agrestis G. DON.	217
Santalum album L.	151	„ Benzoin DRYAND.	217
Sapindaceae	175	„ paralleoneurus PERK.	218
Sapotaceae	212	„ serrulatus ROXB.	218
Saurauja cauliflora DC.	185	„ species	218
„ nudiflora DC.	185	„ sumatranus J.J.S.	218
„ species	186	Symplocaceae	219
Schefflera elliptica HARMS.	205	Symplocos Brandisii K. et V.	219
„ rugosa HARMS.	205	„ costata CHOISY	219
„ scandens VIG.	206	„ fasciculata ZOLL.	220
„ species	206	„ javanica KURZ.	220
Schima Noronhae REINW.	187	„ odoratissima CHOISY	220
Schismatoglottis calyptrata Z.		„ sessiliflora	
„ et M.	128	GUERKE	219
„ latifolia MIQ.	128		
Scindapsus roseus v.A.V.R.	128	Talauma Candollei BL.	152
„ splendens v.A.V.R.	128	„ gigantifolia MIQ.	153
Scrophulariaceae	228	Tarenna species	236
Scurrula atropurpurea DANS.	147	Taxaceae	126
„ ferruginea DANS.	150	Terminalia Catappa L.	196
„ Junghuhnii DANS.	150	Tetracera scandens MERR.	186
„ Korthalsii DANS.	147	Tetraglochidion bibracteatum	
„ lepidota DANS.	151	BREM.	233
„ Oortianus DANS.	147	„ minangkabuense	
„ parasitica L.	151	BREM.	234
Selaginellaceae	125	Tetrastigma pergamaceum	
Selaginella ascendens v.A.V.R.	125	PLANCH.	178
Semecarpus species	174	Theaceae	186
Senecio sonchifolius MOENCH.	241	Tiliaceae	180
Seriocalyx crispus BREM.	233	Timonius species	236
Shorea Gysbertiana BURCK.	192	Torenia peduncularis BTH.	230
„ lepidota BL.	192	Trema orientalis BL.	145
„ leprosula MIQ.	192	Trichosanthes palmata ROXB.	239
Sloetia elongata MIQ.	144	Triumphetta indica BACK.	182
Smilax modesta DC.	129	„ tomentosa BOJ.	182
„ zeylanica L.	129		
Solanaceae	228	Ulmaceae	136
Solanum biflorum NEES.	228	Uncaria ferrea DC.	236
„ Blumei NEES.	228	„ glabrata DC.	237
Sonneratiaceae	196	„ species	236
Sonneratia acida L.F.	196		
Spondias mangifera WILLD.	174		
Stemonurus secundiflorus BL.	175		

	page		page
<i>Urophyllum macrophyllum</i>		<i>Viscum articulatum</i> BURM.	151
KORTH.	237	Vitaceae	178
Urticaceae	144	<i>Vitex pubescens</i> VAHL.	227
Vaccinium varingifolium		" <i>quinata</i> F. N. WILL.	227
MIQ.	208	" <i>vestita</i> WALL.	227
<i>Vatica Curtisii</i> KING.	194	Wedelia biflora DC.	242
" <i>simalurensis</i> v. SL.	194	<i>Wendlandia rufescens</i> MIQ.	237
" <i>Teijsmanniana</i> BURCK.	194	<i>Willoughbeya species</i>	222
<i>Ventilago oblongifolia</i> BL.	177	Xanthophyllum affine KORTH 166	
Verbenaceae	225	" <i>vitellinum</i>	
<i>Vernonia arborea</i> HAM.	241	NEES	167
" <i>chinensis</i> LESS.	241	<i>Xanthostachea aspera</i> BREM.	234
" <i>cinerea</i> LESS.	241	Zingiberaceae	130
<i>Viburnum coriaceum</i> BL.	238	<i>Zizyphus Horsfieldii</i> MIQ.	177
<i>Villebrunea rubescens</i> BL.	145		