

# 16. P L A N T A E

BY

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## INTRODUCTION.

The following enumeration contains the fossil plants, found not only in the Dutch territory, but also in the adjacent countries, the Malay Peninsula, British Borneo, Portuguese Timor and the Eastern part of New Guinea. The Philippine islands have not been considered.

The classification used, is from ENGLER and PRANTL, as given in the „Die Natürlichen Pflanzenfamilien” and the „Syllabus” of the former author. The species of flowering plants are placed in alphabetical order in the families; the species in the other classes have been arranged in larger groups. Only in some cases, still living plants were mentioned in the literature under obsolete names; in this case the fossils have been given their present names. Of the recent plants the present distribution is indicated. If a fossil was at first placed in another group, the oldest name is also given in its own place.

If the remains consist of wood, fruits or flowers, this is indicated behind the quotations; if nothing is mentioned, only leaves have been found.

Details of the localities have not been given; only the island, sometimes the residency, has been mentioned. The age of the strata is mentioned as indicated by the author. For the localities of the plants, collected by the Selenka-expedition, Trinil, the locality of Pithecanthropus, and Lasem, only the indication „Trinil strata” is given.

For these fossil plants, only the literature on their occurrence in the Archipelago has been mentioned. In the rather few cases where the fossil were found outside these regions too, their further distribution is indicated.

## LIST OF SPECIES.

## SCHIZOPHYCEAE.

*Sphaerocodium* cf. *Bornemanni* Rothpletz. — Triassic Timor, Bibl. 44, p. 76.

## CHLOROPHYCEAE.

*Macroporella sondaica* Pia. — Upper Triassic Ceram, Bibl. 32, p. 141, pl. 1, fig. 1—7.  
 „ *irregularis* Pia. — Upper Triassic Ceram, Bibl. 32, p. 145, pl. 1, fig. 9—11.  
*Sestrosphaera* species. — Upper Triassic Ceram, Bibl. 32, p. 143, pl. 1, fig. 8.

## PHAEOPHYCEAE.

*Parachaetetes triasina* Vinassa de Regny. — Triassic Timor, Bibl. 44, p. 76, pl. 63, fig. 1—6; Bibl. 30b.

## EUMYCETES.

*Hyphomycetes* species. — Trinil strata Java, Bibl. 39, p. 10, pl. 24, fig. 1, 2. *Polyporaceae* species, Bibl. 36, p. 7; Bibl. 38, p. 236, fig. 8.  
*Hysteriopsis subpegrahoides* Geyler. — Tertiary Labuan, Bibl. 14, p. 487, pl. 32, fig. 1; Bibl. 25, p. 335.  
*Leptothyriomyces radiatus* Kräusel. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 339, pl. 1, fig. 4—8.  
 „ *zonatus* Kräusel. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 338, pl. 1, fig. 1—3.  
*Phacidopsis* species. — Tertiary Labuan, Bibl. 14, p. 487, pl. 32, fig. 2; Bibl. 25, p. 335.  
*Polyporaceae* species Schuster see *Hyphomycetes* species.  
*Polyporus* cf. *grammocephalus* Berkeley. — Pleistocene Singkep, Bibl. 30c, p. 101, fig. 23, 24.  
*Rhytismopsis* species. — Tertiary Labuan, Bibl. 14, p. 488, pl. 32, fig. 4; Bibl. 25, p. 335.  
*Sirothecium antiquum* Kräusel. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 337, pl. 1, fig. 9—11.  
 „ *minimum* Kräusel. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 338, pl. 1, fig. 12.  
*Sphaeropsis* species. — Tertiary Labuan, Bibl. 14, p. 488, pl. 32, fig. 3; Bibl. 25, p. 335.  
*Xylomites stigmariaeformis* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 34, pl. 4, fig. 27; Bibl. 16, p. 180; Tertiary Mid. Sumatra, Bibl. 18, p. 10, pl. 3, fig. 11; Bibl. 19, p. 9; Bibl. 9, p. 374; Bibl. 25, p. 331, 337.

Fungi imperfecti. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 336.

## PTERIDOPHYTA.

### FILICALES.

- Adiantum Labuanum* Geyler. — Tertiary Labuan, Bibl. 14, p. 488, pl. 32, fig. 5; Bibl. 25, p. 335.
- Drynaria quercifolia* (Linn.) J. Smith; *Polypodium quercifolium* Linn. — Upper Tertiary Palembang, S. Sumatra, Bibl. 25, p. 341; Bibl. 27, p. 339, textfig. 1, 2; pl. 3, fig. 1, 2; recent, S. China, tropical Asia, Australia, Polynesia.
- Dryopteris prolifera* (Retzius) C. Christensen; *Meniscium proliferum* Sw. — Upper Tertiary Palembang, S. Sumatra, Bibl. 43, p. 314; Bibl. 25, p. 341; Bibl. 27, p. 342, textfig. 3, pl. 1, fig. 13, pl. 2, fig. 1—5; recent, S. China, N. Br. India, East-Java, Borneo, Celebes, N. Guinea, the Philippines, Indo-China, trop. Australia and Africa.
- Meniscium proliferum* Swartz see *Dryopteris prolifera*.
- Polypodium quercifolium* Linn. see *Drynaria quercifolia*.

### SPENOPHYLLALES.

- Sphenophyllum oblongifolium* (Germar) Unger. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 293, pl. 1, fig. 6; Bibl. 33, p. 629; Upper Carboniferous and Permian, W. Europe, China.

### EQUISETALES.

- Calamites Suckowi* Brongniart. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 293, pl. 1, fig. 5; Bibl. 33, p. 629; Carboniferous and Lower Permian Europe, N. America, East Asia.

### LYCOPODIALES.

#### LEPIDODENDRACEAE.

- Lepidodendron* cf. *Gaudreyi* Renault. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 33, p. 629.
- „ *oculis felis* (Abbadò) Zeiller. — Permo-carboniferous S. Sumatra, Bibl. 33, p. 629; Permo-carboniferous East Asia.
- „ species. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 292, pl. 4, fig. 3—5.

#### SIGILLARIACEAE.

- Sigillaria Brardi* Brongniart. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 33, p. 629; Upper Carboniferous, Permian, Europe.
- Stigmaria* cf. *ficoides* Brongniart. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 292, pl. 2, fig. 7, pl. 5, fig. 4—6; Bibl. 33, p. 629.

## GYMNOSPERMAE.

- Araucarioxylon Martensii* Felix. — Horizont unknown Timor, Bibl. 12, p. 519.
- Cordaites borassifolius* (Sternberg) Unger. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 294, pl. 4, fig. 2, 2a, pl. 5, fig. 2; Bibl. 33, p. 629; Carboniferous, Permian, Europe, N. America.
- „ species. — Permo-carboniferous Malay peninsula, Bibl. 5, p. 172, pl. 1, fig. 2.
- Dadoxylon* species. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 33, p. 629.
- Podozamites* cf. *lanceolatus* (Lindley et Hutton) Schimper. — Jurassic Singapore, Bibl. 30, p. 494, pl. 25, fig. 16, 17; Cretaceous Jurassic, Europe, Siberia, Persia, India, China, Japan, Korea.
- Glossopteris* species. — S.E. New Guinea, Bibl. 32, p. 485 (doubtful).
- Vertebraria* species. — Sarawak Borneo, Bibl. 42, p. 583.

PERMO-CARBONIFEROUS LEAVES AND FRUCTIFICATIONS,  
PROBABLY BELONGING TO GYMNOSPERMAE.

- Callipteridium* cf. *gigas* (Gutbier) Weiss. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 33, p. 629. Permo-carboniferous Europe.
- Cyclopteris* species. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 291, pl. 2, fig. 9; Bibl. 33, p. 629.
- Gigantopteris americana* White. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 33, p. 629; Permian N. America.
- Pecopteris arborescens* Brongniart. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 288, pl. 1, fig. 1—4; Upper Carboniferous Permian, Europe, N. America.
- „ cf. *cyathea* (Schlotheim). — Permo-carboniferous Malay Peninsula, Bibl. 5, p. 171, pl. 1, fig. 1; Permian, Carboniferous, Europe, N. America.
- „ *hemitelioides* Brongniart. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 288, pl. 2, fig. 1—3; Bibl. 33, p. 629; Carboniferous, Europe.
- „ cf. *Miltoni* Brongniart. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 33, p. 629; Carboniferous, Europe.
- „ ? *polymorpha* Brongniart. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 291, pl. 2, fig. 4; Bibl. 33, p. 629; Carboniferous, Permian, Europe, N. America.
- „ (*Scolecopteris*) *Verbeeki* Gothan et Jongmans. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 289, pl. 3, fig. 1—5; pl. 4, fig. 1, 1a; pl. 5, fig. 1; Bibl. 33, p. 629.
- „ species. — Permo-carboniferous Djambi, S. Sumatra, Bibl. 21, p. 289, pl. 2, fig. 5, 5a; pl. 5, fig. 3.

## ANGIOSPERMAE.

## PANDANACEAE.

- Pandanus helicopus* Kurz. — Upper Tertiary, S. Sumatra, Bibl. 27, p. 343, pl. 3, fig. 3—8; *Pandanus* species, Bibl. 31, p. 240; cf. *helicopus* Kurz, Bibl. 25, p. 341; recent Malacca, Sumatra, Bangka.
- „ *Nordenskiöldii* Geyler. — Tertiary Labuan, Bibl. 14, p. 489, pl. 32, fig. 7—9; pl. 30, fig. 1—2; Bibl. 25, p. 335.
- „ species. — Bibl. 31, p. 240; see *P. helicopus* Kurz.

## SPARGANIACEAE.

- Sparganolithes gemmatus* Woodward. — Eocene Mid. Sumatra, Bibl. 46, p. 209, pl. 1, fig. 4 (fruit).

## POTAMOGETONACEAE.

- Cymodocea Micheloti* (Watelet) Laurent. — Miocene S. Celebes, Bibl. 28, p. 185, 171—174, fig. 1, 2, 3, 5, 6; Eocene Europe.

## NAJADACEAE.

- Caulinites indicus* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 10, pl. 1, fig. 1; Bibl. 9, p. 374 (dubious); Bibl. 25, p. 337.

## GRAMINEAE.

- Bambusium longifolium* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 9, pl. 1, fig. 3, 4; Bibl. 9, p. 374; Bibl. 25, p. 337.
- Poacites arundinaceus* Crié. — Pliocene W. Java, Bibl. 4, p. 65, pl. 1, fig. 1b; Bibl. 25, p. 333.
- „ *cyperoides* Crié. — Pliocene W. Java, Bibl. 4, p. 65, pl. 1, fig. 1a; Bibl. 25, p. 333.

## CYPERACEAE.

- Cyperus* species. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 29, pl. 21, fig. 177—179.

## PALMAE.

- Amesoneuron anceps* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 37, pl. 5, fig. 40—41; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.
- „ *calyptrocalyx* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 37, pl. 5, fig. 31—33; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.
- „ *dracophyllum* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 37, pl. 5, fig. 35—36; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.
- „ *sagifolium* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 37, pl. 5, fig. 38; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.

- Flabellaria licualaefolia* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 36, pl. 4, fig. 29; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.
- Nipadites borneensis* Kräusel. — Tertiary Central Borneo, Bibl. 24, p. 79, pl. 2 (fruit).
- Palmacites flabellata* Crié. — Pliocene W. Java, Bibl. 4, p. 7, pl. 2, fig. 1; Bibl. 25, p. 331.
- Palmoxylon tandjungense* Kräusel. — Miocene Palembang, S. Sumatra, Bibl. 22, p. 241, textfig. 1—20, pl. 1, fig. 1, 2, 3; Bibl. 25, p. 338 (wood).
- „ species. — Mio-Pliocene Djambi, S. Sumatra, Bibl. 22, p. 246; Bibl. 25, p. 338 (wood).
- Palmae*. — Upper Tertiary S. Sumatra, Bibl. 27, p. 345, pl. 4, fig. 1, 2.

## ARACEAE.

- Araceophyllum Engleri* Kräusel. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 346, textfig. 4, pl. 4, fig. 3, 4.
- „ *Tobleri* Kräusel. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 347, textfig. 5, 6; pl. 4, fig. 5, 6.

## MUSACEAE.

- Musophyllum truncatum* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 39, pl. 7, fig. 47; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.
- „ species. — Tertiary Labuan, Bibl. 14, p. 489, pl. 32, fig. 6; Bibl. 25, p. 335.

## ZINGIBERACEAE.

- Cannophyllites Vrieseanus* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 38, pl. 6, fig. 42, 43, 45, 46; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.
- „ species. — Upper Tertiary S. Sumatra, Bibl. 25, p. 341; Bibl. 27, p. 348, pl. 3, fig. 9, 10. (Of unknown affinities).

## CASUARINACEAE.

- Casuarina Padangiana* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 10, pl. 1, fig. 1, 2, 3; Bibl. 19, p. 12; Bibl. 9, p. 374; Bibl. 25, p. 337.
- „ species. — Tertiary Central Borneo, Bibl. 34, p. 377 (wood).

## PIPERACEAE.

- Phyllites bullatus* Ettinghausen see *Piperites bullatus* Göppert.
- Piper antiquum* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 11, pl. 1, fig. 2; Bibl. 9, p. 374; Bibl. 25, p. 337.

- Piperites bullatus* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 41, pl. 7, fig. 51; Bibl. 16, p. 180; Bibl. 25, p. 331. *Phyllites bullatus* Ettinghausen, Bibl. 7, p. 191; Bibl. 9, p. 376.
- „ *Hasskarlianus* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 40, pl. 3, fig. 20—23; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 20, p. 17; Bibl. 25, p. 331 (wood).
- „ *Miquelianus* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 41, pl. 7, fig. 48, 49; Bibl. 16, p. 180; Bibl. 9, p. 374; Bibl. 25, p. 331.

## BETULACEAE.

- Alnus praecursor* Ettinghausen see *Phyllites* (Hopea) *praecursor* Geyler.

## FAGACEAE.

- Castanopsis Curtisii* King. — Trinil strata Java, Bibl. 36, p. 7; Bibl. 37, p. 779; Bibl. 38, p. 236, pl. 31, fig. 27—32; Bibl. 39, p. 10, pl. 1, fig. 1—8; pl. 26, fig. 1—5; cf. pl. 22, fig. 1—2; recent Malacca, Borneo.
- „ *Göppertii* Ettinghausen. — Tertiary W. Java, Bibl. 7, p. 187; Bibl. 9, p. 374. *Quercus castaneoides* Göppert, Bibl. 15, p. 42, pl. 7, fig. 56; Bibl. 16, p. 180; Bibl. 25, p. 331.
- „ *Heerii* Ettinghausen. — Tertiary Mid. Sumatra, Bibl. 9, p. 374. *Daphnophyllum* (*Tetranthera*?) *concinnum* Heer, Bibl. 19, p. 16, pl. 4, fig. 1; Bibl. 25, p. 337.
- „ *lanceolata* Ettinghausen. — Tertiary Mid. Sumatra, Bibl. 9, p. 374. *Daphnophyllum lanceolatum* Heer, Bibl. 19, p. 16, pl. 5, fig. 1; Bibl. 25, p. 337.
- „ *mephitidioides* Ettinghausen — Tertiary S. E. Borneo, Bibl. 9, p. 374. *Phyllites* (*Grumilea*) *mephitidioides* Geyler, Bibl. 13, p. 75, pl. 2, fig. 1; Bibl. 25, p. 334.
- „ *Schefferi* Ettinghausen. — Tertiary Mid. Sumatra, Bibl. 9, p. 374. *Daphnophyllum* (*Cyclodaphne*?) *Schefferi* Heer, Bibl. 19, p. 14, pl. 2, fig. 1; pl. 3, fig. 1, 2; Bibl. 25, p. 337. *Daphnophyllum elongatum* Heer, Bibl. 19, p. 15, pl. 4, fig. 2; Bibl. 25, p. 337.
- Quercus bidens* Ettinghausen. — Upper Tertiary Mid. Sumatra, Bibl. 8, p. 397; Bibl. 9, p. 374; Bibl. 25, p. 337. *Rhus bidens* Heer, Bibl. 18, p. 17, pl. 1, fig. 6; Bibl. 19, p. 21.
- „ *castaneoides* Göppert see *Castanopsis Göppertii* Ettinghausen.
- „ *lamellosa* Sm. — Trinil strata Java, Bibl. 37, p. 779; recent, Tropical Asia.
- „ *laurophylla* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 42, pl. 8, fig. 54; Bibl. 16, p. 180; Bibl. 7, p. 187; Bibl. 9, p. 374; Bibl. 25, p. 331.
- „ *subsINUATA* Göppert see *Quercus tephrodes* Unger.

*Quercus tephrodes* Unger. — Tertiary W. Java, Bibl. 7, p. 178, pl. 1, fig. 1, 2; pl. 2, fig. 1; Bibl. 9, p. 374. *Quercus subsinuata* Göppert, Bibl. 15, p. 42, pl. 8, fig. 53; Bibl. 16, p. 180; Bibl. 25, p. 321. Tertiary Europe.

## MORACEAE.

- Artocarpidium* (*Ficus*) *Martinianum* Crié. — Pliocene W. Java, Bibl. 4, p. 9, pl. 3, fig. 1; Bibl. 25, p. 333.
- Artocarpus* cf. *altissima* J. J. Sm. — Trinil strata Java, Bibl. 36, p. 7; Bibl. 38, p. 236; Bibl. 39, p. 13, pl. 1, fig. 9 (flower); recent Sumatra.
- „ *rigida* Bl. — Trinil strata Java, Bibl. 36, p. 7; Bibl. 38, p. 236; Bibl. 39, p. 13, pl. 2, fig. 13—18; recent Malacca, Sumatra, Borneo, Java.
- Bredaea moroides* Göppert see *Shoreoxylon moroides* den Berger.
- Ficus callosa* Willd. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 236, pl. 31, fig. 1—4, p. 246; Bibl. 39, p. 15, pl. 6, fig. 41—44; pl. 25, fig. 3—4; pl. 36, fig. 14 (wood); recent S. E. Asia, Malay islands.
- „ *dubia* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 43, pl. 7, fig. 59; Bibl. 16, p. 180; Bibl. 25, p. 331; *Phyllites Göppertiana* Ettinghausen, Bibl. 7, p. 192; Bibl. 9, p. 376.
- „ *flexuosa* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 43, pl. 8, fig. 57; Bibl. 16, p. 180; Bibl. 7, p. 189; Bibl. 9, p. 375, Bibl. 25, p. 331.
- „ *Horneri* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 12, pl. 2, fig. 2; Bibl. 9, p. 375; Bibl. 25, p. 337.
- „ *indica* L. — Trinil strata Java, Bibl. 36, p. 7; Bibl. 38, p. 236, pl. 31, fig. 7—8; Bibl. 39, p. 13, pl. 3, fig. 21—22; pl. 5, fig. 35—36; recent tropical Asia.
- „ *infectoria* Roxb. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236, pl. 3, fig. 1—10; Bibl. 39, p. 14, pl. 4, fig. 32—34; pl. 5, fig. 37—38; recent tropical Asia.
- „ cf. *Kurzii* King. — Upper Tertiary S. Sumatra, Bibl. 25, p. 341; Bibl. 27, p. 349, textfig. 7—9; pl. 4, fig. 7—9; pl. 5, fig. 1—4; recent Java.
- „ *retusa* L. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 36; Bibl. 39, p. 14, pl. 3, fig. 23—27; pl. 4, fig. 28—31; recent Tropical Asia, Polynesia.
- „ *sub-Bengalensis* Geyler. — Tertiary Labuan, Bibl. 14, p. 491, pl. 39, fig. 1; Bibl. 25, p. 335.
- „ *tremula* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 10, pl. 1, fig. 4; Bibl. 19, p. 12; Bibl. 8, p. 398; Bibl. 9, p. 375; Bibl. 25, p. 337.
- „ *trilobata* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 13, pl. 6, fig. 3; Bibl. 9, p. 375; Bibl. 25, p. 337.
- „ *variegata* Bl. — Trinil strata Java, Bibl. 36, p. 7; Bibl. 38, p. 236, pl. 31, fig. 11—12; Bibl. 39, p. 16, pl. 5, fig. 39—40; recent tropical Asia.



- Ficus Verbeekiana* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 10, pl. 1, fig. 5; Bibl. 19, p. 12; Bibl. 8, p. 399; Bibl. 9, p. 375; Upper Tertiary S. Sumatra, Bibl. 27, p. 352, textfig. 10; Bibl. 25, p. 337.
- „ species. — Upper Tertiary S. Sumatra, Bibl. 27, p. 353, textfig. 11, 12, pl. 5, fig. 6, 7.
- Moreophyllum* species. — Tertiary Labuan, Bibl. 14, p. 492, pl. 34, fig. 4, 5; Bibl. 25, p. 335.
- Phyllites Göppertianum* Ettinghausen see *Ficus dubia* Göppert.
- „ (*Ficus*) *pengaronensis* Geyler. — Tertiary S. E. Borneo, Bibl. 13, p. 70, pl. 1, fig. 2; Bibl. 9, p. 376, 382; Bibl. 25, p. 334.
- „ (*Artocarpus*) *Verbeekianus* Geyler. — Tertiary S. E. Borneo, Bibl. 13, p. 71, pl. 1, fig. 1; Bibl. 9, p. 375, 381; Bibl. 25, p. 334.
- Streblus asper* Lour. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 326; Bibl. 39, p. 12, pl. 2, fig. 12; pl. 3, fig. 19—20; recent tropical Asia.

## LORANTHACEAE.

- Loranthus elasticus* Desv. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236, pl. 31, fig. 5—6; Bibl. 39, p. 16, pl. 6, fig. 45—46; recent British India, Malacca.
- „ *longiflorus* Desv. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 16, pl. 7, fig. 47—48; recent tropical Asia to Australia.
- „ *pulvulentus* Wallich. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 16, pl. 7, fig. 49—50; recent British India, Malacca.
- Phyllites (Loranthus) delequescens* Geyler. — Tertiary S. E. Borneo, Bibl. 13, p. 76, pl. 2, fig. 6; Bibl. 9, p. 375; Bibl. 25, p. 334.

## MENISPERMACEAE.

- Entoneuron melastomaceum* Geyler. — S. E. Borneo, Bibl. 13, p. 78, pl. 2, fig. 3; Bibl. 25, p. 334; *Phyllites (Entoneuron) melastomaceum* Ettinghausen, Bibl. 9, p. 376.

## MAGNOLIACEAE.

- Magnoliastrum arcinerve* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 51, pl. 13, fig. 82; Bibl. 16, p. 180; Bibl. 9, p. 375; Bibl. 25, p. 331.
- „ *micheloides* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 50, pl. 13, fig. 81; Bibl. 16, p. 180; Bibl. 9, p. 375; Bibl. 25, p. 331.
- „ *taulamoides* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 51, pl. 13, fig. 83; Bibl. 16, p. 180; Bibl. 9, p. 375; Bibl. 25, p. 331.

## ANONACEAE.

- Ellipea cunifolia* Hoek. f. et Thomson. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 23; Bibl. 39, p. 19, pl. 12, fig. 83—86; recent Malacca, Borneo.
- Mayogyne* species. — Bibl. 25, p. 341; see *Mayogynophyllum paucinervium* Kräusel.
- Mayogynophyllum paucinervium* Kräusel. — Upper Tertiary S. Sumatra, Bibl. 27, p. 355, textfig. 13—15; pl. 5, fig. 12; *Mayogyne* species Kräusel, Bibl. 25, p. 341.
- Melodorum manubriatum* (Wall.) Hook. et Thomson. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 19, pl. 10, fig. 73—74; recent Malacca, the Philippines.
- Mitrephora Maingayi* Hook. f. et Thomson. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 20, pl. 11, fig. 81—82; recent Java, Malacca, Borneo.
- Monodorospermum bangkanum* Warburg. — ? Pliocene Bangka, Bibl. 45, p. 232, fig. 1—5; Bibl. 25, p. 336 (fruit).
- Polyalthia lateriflora* King. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 19, pl. 12, fig. 87—89; pl. 22, fig. 1—3 (wood); recent Malacca, Sumatra, Celebes.
- Unona discolor* Vahl. — Trinil strata Java, Bibl. 37, p. 779; Bibl. 38, p. 236; Bibl. 39, p. 19, pl. 11, fig. 77—80; pl. 22, fig. 8; recent tropical Asia.
- Uvaria Lamponga* Scheffer. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; pl. 31, fig. 44, 47; Bibl. 39, p. 18, pl. 10, fig. 69—72; recent Sumatra, Java.
- „ *pupurea* Blume. — Trinil strata Java, Bibl. 36, p. 38; Bibl. 37, p. 779; Bibl. 38, p. 236; Bibl. 39, p. 18, pl. 11, fig. 73—76, cf. pl. 22, fig. 7; recent Malacca, Java, Hongkong, the Philippines.
- „ *zeylanica* L. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 18, pl. 9, fig. 65, 66; recent Br. India, Java.

## MYRISTICACEAE.

- Myristicophyllum majus* Geyler. — Tertiary Labuan, Bibl. 14, p. 499, pl. 33, fig. 3, 4; Bibl. 25, p. 335.
- „ *minus* Geyler. — Tertiary Labuan, Bibl. 14, p. 498, pl. 33, fig. 5, 6; Bibl. 25, p. 335.

## LAURACEAE.

- Actinodaphne Martiniana* Crié. — Pliocene W. Java, Bibl. 4, p. 11, pl. 4, fig. 1, 2, 3; Bibl. 25, p. 331.
- Cinnamomum Göppertii* Ettinghausen. — Tertiary W. Java, Bibl. 7, p. 189; Bibl. 9, p. 375; *Daphnogene javanica* Göppert, Bibl. 15, p. 44, pl. 9, fig. 60; Bibl. 16, p. 180; Bibl. 25, p. 331.
- „ *gracile* Ettinghausen. — Tertiary S. E. Borneo, Bibl. 9, p. 375, 380. *Phyllites (Pterospermum) gracilis* Geyler, Bibl. 13, p. 80, pl. 1, fig. 5; Bibl. 25, p. 334.

- Cylicodaphne cuneata* Blume. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 32, fig. 25—26; Bibl. 39, p. 21, pl. 13, fig. 99—100; recent Sumatra, Borneo.
- „ *fusca* Blume. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 32, fig. 27—28; Bibl. 39, p. 26, pl. 13, fig. 97—98; recent Sumatra.
- „ *Lenorae* Selenkae Schuster. — Pliocene W. Java, Bibl. 39, p. 21, fig.
- Cryptocarya ferrae* Blume, var. *oblongeifolia*. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238; Bibl. 39, p. 22, pl. 14, fig. 105—106; recent Malacca, Java.
- Daphnogene intermedia* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 44, pl. 9, fig. 63; Bibl. 16, p. 180; Bibl. 9, p. 375; Bibl. 25, p. 331.
- „ *javanica* Göppert, see *Cinnamomum Göppertii* Ettinghausen.
- Daphnophyllum bielschmiedioides* Ettinghausen. — Tertiary W. Java, Bibl. 9, p. 375. *Laurophyllum bielschmiedioides* Göppert, Bibl. 15, p. 45, pl. 10, fig. 65a, b; pl. 11, fig. 66, 68, Bibl. 16, p. 180; Bibl. 25, p. 331.
- „ *bielschmiedioides* Heer see *Bombax Heerii* Ettinghausen.
- „ (*Tetranthera?*) *concinum* Heer see *Castaneopsis Heerii* Ettinghausen.
- „ *elongatum* Heer see *Castaneopsis Schefferi* Ettinghausen.
- „ *lanccolatum* Heer see *Castaneopsis lanceolata* Ettinghausen.
- „ (*Cyclodaphne?*) *Schefferi* Heer see *Castaneopsis Schefferi* Ettinghausen.
- Dehaasia squarrosa* Miq. et Zoll. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 238; Bibl. 34, p. 21, pl. 14, fig. 103—104; recent Java.
- Laurineen?* — Tertiary Labuan, Bibl. 14, p. 492; Bibl. 25, p. 335.
- Laurinium Meyeri* Felix. — ? Tertiary N. E. New Guinea, Bibl. 11, p. 488, pl. 12, fig. 4, 7, 8; Bibl. 20, p. 21 (wood).
- Laurophyllum bielschmiedioides* Göppert see *Daphnophyllum Bielschmiedioides* Ettinghausen.
- „ *Haasioides* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 46, pl. 10, fig. 65d; pl. 11, fig. 70; Bibl. 16, p. 180; Bibl. 25, p. 331.
- „ *minimum* Kräusel. — Upper Tertiary S. Sumatra, Bibl. 27, p. 357, textfig. 16, 17, pl. 1, fig. 14; pl. 5, fig. 5.
- „ *viburnifolium* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 45, pl. 10, fig. 65c; pl. 11, fig. 69; Bibl. 16, p. 180; Bibl. 25, p. 331.
- Litsaea Boetgeri* Geyler. — Tertiary S. E. Borneo, Bibl. 13, p. 73, pl. 1, fig. 3; Bibl. 9, p. 375; Bibl. 25, p. 334.
- Phyllites* species 2. — Tertiary Labuan, Bibl. 14, p. 504, pl. 38, fig. 4, 5.

- Tetranthera alnoides* Miq. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236, pl. 32, fig. 29—31, p. 244, fig. 1, p. 246, fig. 2—4; Bibl. 39, p. 20, pl. 13, fig. 94—96, pl. 14, fig. 101—102, pl. 26, fig. 6—13; recent tropical Asia.
- „ *salicifolia* Rab. — Trinil strata Java, Bibl. 36, p. 8, Bibl. 38, p. 238, pl. 32, fig. 32—33; Bibl. 39, p. 21, pl. 7, fig. 90—91, pl. 13, fig. 92—93; recent Malacca.

## HAMAMELIDACEAE.

- Altingia excelsa* Noronha. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236, pl. 31, fig. 13—14; Bibl. 39, p. 17, pl. 8, fig. 54—55; recent S. E. Asiatic continent, Sumatra, W. Java.

## ROSACEAE.

- Parinarioxylon Itersonii* Pfeiffer et van Heurn. — Pliocene W. Java, Bibl. 31, p. 474, fig. 2, 3 (wood).

## LEGUMINOSAE.

- Caesalpinioxylon palembangense* Kräusel see *Shoreoxylon palembangense*.
- Cassia alata* L. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 31, fig. 17—18; pl. 246, fig. 8; Bibl. 39, p. 25, pl. 19, fig. 157—158 (wood); recent pantropical.
- „ *australis* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 22, pl. 2, fig. 4; Bibl. 9, p. 375; Bibl. 25, p. 337.
- Cassiophyllum* species I. — Tertiary Labuan, Bibl. 14, p. 504, pl. 39, fig. 7, 8; Bibl. 25, p. 335.
- „ species II. — Tertiary Labuan, Bibl. 14, p. 504, pl. 39, fig. 5, 6; Bibl. 25, p. 335.
- Dalbergia grandiflora* Heer see *D. Junghuhniana* Heer.
- „ *Junghuhniana* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 17, pl. 3, fig. 4—6; Bibl. 19, p. 21; Bibl. 9, p. 375; Bibl. 25, p. 337. *Dalbergia grandiflora* Heer, Bibl. 17, p. 6.
- „ *pumilio* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 22, pl. 2, fig. 5b; Bibl. 9, p. 375; Bibl. 25, p. 337.
- Deguelia* (*Derris*) *elliptica* Benth. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 238, pl. 238, pl. 32, fig. 3—18; Bibl. 39, p. 26, pl. 17, fig. 139—142, pl. 18, fig. 143—154; recent tropical Asia, New Guinea.
- Indigofera tinctoria* L. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 238, pl. 32, fig. 1—2; Bibl. 39, p. 26, pl. 18, fig. 155—156; recent tropical Asia.
- Leguminosites* (*Albizzia*?) species. — Tertiary S. E. Borneo, Bibl. 13, p. 84, pl. 2, fig. 7; Bibl. 9, p. 376; Bibl. 25, p. 334.
- „ species. — Tertiary Mid. Sumatra, Bibl. 19, p. 22, pl. 3, fig. 2; Bibl. 9, p. 375; Bibl. 25, p. 337.
- Phyllites* species 4. — Tertiary Labuan, Bibl. 14, p. 505, pl. 39, fig. 9; may also belong to this group.

*Saraca minor* Miq. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 32, fig. 19—20; Bibl. 39, p. 26, pl. 17, fig. 137—138; recent S. E. Asiatic continent, Malacca, Sumatra, Java.

## RUTACEAE.

*Feronia elephantum* Corea. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 32, fig. 38—40; Bibl. 39, p. 24, pl. 16, fig. 127—132 (fruit); recent Br. India, Ceylon.

## MELIACEAE.

*Aglaia palembanica* (Miq.) D. C. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 32, fig. 23—24; Bibl. 39, p. 25, pl. 17, fig. 133—134; recent Malacca, Sumatra, Borneo, the Philippines.

## MALPIGHIACEAE.

*Malpighiastrum Junghuhnianum* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 51, pl. 13, fig. 84; Bibl. 16, p. 180; Bibl. 9, p. 375; Bibl. 25, p. 331.

## EUPHORBIACEAE.

*Aporosa fruticosa* M. Arg. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 17, pl. 9, fig. 63—64, pl. 10, fig. 67—68; recent Malacca to Java.

*Cleistanthes myrianthus* Kurz. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 236; Bibl. 39, p. 17, pl. 9, fig. 38—62; recent Malay islands.

*Flueggea obovata* M. Arg. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 236; Bibl. 39, p. 17, pl. 7, fig. 51—53; pl. 22, fig. 5; recent tropical Asia, Africa and Australia.

*Mallotus moluccanus* M. Arg. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 236, pl. 31, fig. 15—16; Bibl. 39, p. 18, pl. 8, fig. 56—57; recent tropical Asia.

## ANACARDIACEAE.

*Anacardioxylon Mollii* Kräusel. — Miocene Palembang, S. Sumatra, Bibl. 22, p. 252, pl. 2, fig. 5; pl. 4, fig. 4, 5; pl. 6, fig. 3, 6, 7; pl. 7, fig. 3—5; Bibl. 25, p. 339. *Sumatroxylon Mollii* den Berger, Bibl. 1, p. 145 (wood).

*Podiocarpus Verbeekii* Warburg. — ? Pliocene Bangka, Bibl. 45, p. 229, fig. 6—15, (fruit of dubious affinity).

*Rhus bidens* Heer see *Quercus bidens* Ettinghausen.

## CELASTRACEAE.

*Ceanothus javanica* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 51, pl. 14, fig. 86a; Bibl. 16, p. 181; Bibl. 9, p. 375; Bibl. 25, p. 331.

- Celastrophyllum andromedaefolium* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 52, pl. 14, fig. 91; Bibl. 16, p. 181; Bibl. 9, p. 375; Bibl. 25, p. 331.
- „ *attenuatum* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 52, pl. 14, fig. 89; Bibl. 16, p. 181; Bibl. 9, p. 375; Bibl. 25, p. 331.
- „ *myricoides* Göppert see *Rhamnus myricoides* Ettinghausen.
- „ *olaefolium* Göppert see *Pterocelastrum olaefolius* Ettinghausen.
- Pterocelastrum olaefolius* Ettinghausen. — Tertiary W. Java, Bibl. 7, p. 190; Bibl. 9, p. 375. *Celastrophyllum olaefolium* Göppert, Bibl. 15, p. 53, pl. 14, fig. 92, 93a; Bibl. 16, p. 181; Bibl. 25, p. 331.
- Rhamnus dilatatus* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 52, pl. 14, fig. 88; Bibl. 16, p. 181; Bibl. 9, p. 375.
- „ *myricoides* Ettinghausen. — Tertiary W. Java, Bibl. 7, p. 191; Bibl. 9, p. 375. *Celastrophyllum myricoides* Göppert., Bibl. 15, p. 53, pl. 14, fig. 93b; Bibl. 16, p. 181; Bibl. 25, p. 331.
- „ *ventilagoides* Crié. — Pliocene W. Java, Bibl. 4, p. 15, pl. 6, fig. 1; Bibl. 25, p. 331.

## HIPPOCRATEACEAE.

- Hippocrateoxylon javanicum* Hoffmann. — Tertiary W. Java, Bibl. 20, p. 179; Bibl. 21, p. 29 (wood).

## SAPINDACEAE.

- Djambioxylon sumatranum* Kräusel. — Miocene Palembang, S. Sumatra, Bibl. 22, p. 272, textfig. 28, pl. 2, fig. 2, pl. 4, fig. 7, pl. 5, fig. 7—9, 12; Bibl. 1, p. 147; Bibl. 25, p. 339 (wood).
- Nephelium Verbeekianum* Geyler. — Tertiary S. E. Borneo, Bibl. 13, p. 83, pl. 1, fig. 6; Bibl. 25, p. 334. *Phyllites Geyleri* Ettinghausen, Bibl. 9, p. 382, 376.
- Sapindopsoxylon Klitzingii* Pfeiffer et van Heurn. — Pliocene W. Java, Bibl. 31, p. 472, fig. 1 (wood).
- Sapindoxylon Jansonii* Kräusel. — Miocene Bencoolen, S. Sumatra, Bibl. 22, p. 256, textfig. 22; pl. 1, fig. 9; pl. 2, fig. 3; pl. 3, fig. 6; pl. 5, fig. 5; pl. 6, fig. 2. Miocene Palembang, S. Sumatra, Bibl. 22, p. 258, pl. 1, fig. 8 (rather dubious); Pliocene W. Java, Bibl. 31, p. 471; Bibl. 25, p. 339 (wood).
- Sapindus aemulus* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 20, pl. 2, fig. 5a; Bibl. 9, p. 375; Bibl. 25, p. 337.
- „ *anceps* Heer. — Tertiary Mid. Sumatra, Bibl. 17, p. 16, pl. 3, fig. 3; Bibl. 18, p. 20; Bibl. 9, p. 375; Bibl. 25, p. 337. *Sapindus macrophyllus* Heer, Bibl. 17, p. 16.
- „ *macrophyllus* Heer see *Sapindus anceps* Heer.

## BOMBACACEAE.

- Bombax Heerii* Ettinghausen. — Upper Tertiary Mid. Sumatra, Bibl. 8, p. 400; Bibl. 9, p. 375. *Daphnophyllum bielschmiedioides* Heer (non Ett.); Bibl. 17, p. 13, pl. 2; Bibl. 18, p. 13; Bibl. 25, p. 337.

## STERCULIACEAE.

- Dombeyopsis Padangiana* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 19, pl. 5, fig. 2; Bibl. 9, p. 375; Bibl. 25, p. 337.
- Phyllites* (*Pterospermum*) *gracilis* Geyler, see *Cinnamomum gracile* Ettinghausen.
- „ (*Sterculia*?) species. — Tertiary S. E. Borneo, Bibl. 13, p. 79, pl. 2, fig. 5; Bibl. 9, p. 376, 384; Bibl. 25, p. 337.
- Reevesia Wallichii* R. Br. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238; Bibl. 39, p. 24, pl. 24, fig. 5—6 (wood); recent S. E. Asiatic continent.

## DILLENIACEAE.

- Tetracera sarmentosa* (L.) Willd.; var. *hebecarpa* Hook f. et Th. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 238; Bibl. 39, p. 22, pl. 14, fig. 107—110; recent S. E. Asiatic continent, Sumatra, Celebes, Java.

## TERNSTROEMIACEAE.

- Gordonia*. — Trinil strata Java, Bibl. 2a, p. 429.
- Ruyschioxylon sumatrense* Hoffmann. — Tertiary Sumatra, Bibl. 20, p. 193; Bibl. 34, p. 376 (wood).

## GUTTIFERAE.

- Calophyllum Nathorsti* Geyler. — Tertiary Labuan, Bibl. 14, p. 501, pl. 37, fig. 1, 2, 3b. Upper Tertiary S. Sumatra, Bibl. 27, p. 538, textfig. 18, pl. 5, fig. 8—11; Bibl. 25, p. 336.
- „ species. — Tertiary Labuan, Bibl. 14, p. 502, pl. 37, fig. 4—6; Bibl. 25, p. 336.
- Garcinia dulcis* Kurz. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238; Bibl. 39, p. 22, pl. 15, fig. 111—112; recent Malay islands.
- „ *Grahami* Pierre. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238; Bibl. 39, p. 22, pl. 15, fig. 113—116; recent Borneo.
- „ species. — Upper Tertiary S. Sumatra, Bibl. 27, p. 360, pl. 6, fig. 8—10.
- Mesua ferrea* Choisy. — Trinil strata Java, Bibl. 36, p. 9; Bibl. 38, p. 238; Bibl. 39, p. 23, pl. 15, fig. 117—120; recent S. E. Asiatic continent.

## DIPTEROCARPACEAE.

- Carpites* (*Dipterocarpus*) *pengaronensis* Geyler. — Tertiary S. E. Borneo, Bibl. 13, p. 81, pl. 2, fig. 4; Bibl. 41, p. 268; Bibl. 25, p. 334 (fruit).
- Dipterocarpaceophyllum* *sumatrense* Kräusel. — Upper Tertiary S. Sumatra, Bibl. 27, p. 367, textfig. 23; pl. 6, fig. 6.
- Dipterocarpoxyton* *Göppertii* Kräusel. — Tertiary W. Java, Bibl. 26, p. 4, pl. 1, fig. 3, 4; pl. 2, fig. 5, 6; Bibl. 2, p. 498 (wood, belongs to Anisoptera?).
- „ *javanense* Kräusel see *Dryobalanoxylon javanense* den Berger.
- „ *moroides* Kräusel see *Shoreoxylon moroides* den Berger.
- „ *spectabile* Kräusel see *Shoreoxylon spectabile* den Berger.
- „ *Tobleri* Kräusel see *Dryobalanoxylon Tobleri* den Berger.
- „ species cf. *Tobleri* Kräusel see *Shoreoxylon Kräuseli* den Berger.
- „ species see *Shoreoxylon Djambiense* den Berger.
- „ species. — Miocene Palembang, S. Sumatra, Bibl. 22, p. 271, textfig. 27, pl. 1, fig. 7; pl. 4, fig. 1; Bibl. 25, p. 339 (wood).
- „ species. — Pliocene W. Java, Bibl. 31, p. 470 (wood).
- Dipterocarpus* *antiquus* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 19, pl. 5, fig. 3; Bibl. 41, p. 267; Bibl. 25, p. 337.
- „ *atavinus* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 20, pl. 6, fig. 4; Bibl. 9, p. 375; Bibl. 41, p. 267; Bibl. 25, p. 337.
- „ *Labuanus* Geyler. — Tertiary Labuan, Bibl. 14, p. 500, pl. 36, fig. 4; Bibl. 41, p. 268; Bibl. 25, p. 335.
- „ species cf. *Labuanus* Geyler. — Upper Tertiary S. Sumatra, Bibl. 25, p. 335; Bibl. 27, p. 366, textfig. 22, pl. 7, fig. 3.
- „ *Nördenskiöldii* Geyler. — Tertiary Labuan, Bibl. 14, p. 499, pl. 36, fig. 5; Upper Tertiary S. Sumatra, Bibl. 25, p. 341; Bibl. 27, p. 362, textfig. 21, pl. 6, fig. 1—5; Bibl. 41, p. 268; Bibl. 25, p. 335.
- „ *pengaronensis* see *Carpites pengaronensis* Geyler.
- „ *Verbeekianus* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 15, pl. 2, fig. 3; Bibl. 19, p. 19; Bibl. 9, p. 376; Bibl. 41, p. 267; Bibl. 25, p. 337.
- „ species. — Tertiary Labuan, Bibl. 14, p. 501, pl. 36, fig. 6; Bibl. 41, p. 268; Bibl. 25, p. 335.
- „ species. — Tertiary W. Java, Bibl. 41, p. 268.
- Dryobalanoxylon* *Tobleri* den Berger. — Miocene Palembang, S. Sumatra, Bibl. 1, p. 146. *Dipterocarpoxyton* *Tobleri* Kräusel, Bibl. 22, p. 263, textfig. 24, pl. 1, fig. 5; pl. 2, fig. 6, pl. 3, fig. 3; pl. 6, fig. 8; pl. 7, fig. 10; Bibl. 25, p. 339 (wood).



- Dryobalanoxylon javanense* den Berger. — Tertiary W. Java, Bibl. 2, p. 498. *Dipterocarpoxyton javanense* Kräusel, Bibl. 23, p. 13, fig. 1—5; Bibl. 25, p. 333 (wood).
- „ *spectabile* den Berger. — Pliocene W. Java, Bibl. 2, p. 498. *Dipterocarpoxyton spectabile* Kräusel, Bibl. 26, p. 2, pl. 1, fig. 1; pl. 2, fig. 1, 2. *Naucleoxyton spectabile* Crié, Bibl. 4, p. 19, pl. 8, fig. 1, 2; Bibl. 25, p. 331 (wood).
- „ species. — Pliocene W. Java, Bibl. 31, p. 470 (wood).
- Hopea fagifolia* Blume. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238; Bibl. 39, p. 23; pl. 23, pl. 15, fig. 121—122; recent Malacca, Sumatra, Bangka, Java.
- Phyllites dipterocarpoides* Crié. — Pliocene W. Java, Bibl. 4, p. 14, pl. 5, fig. 1; Bibl. 25, p. 331.
- „ (*Hopea*) *praecursor* Geyler. — Tertiary S. E. Borneo, Bibl. 13, p. 83, pl. 2, fig. 2; Bibl. 25, p. 334. *Alnus praecursor* Ettinghausen, Bibl. 9, p. 374, 377.
- „ species I. — Tertiary Labuan, Bibl. 14, p. 504, pl. 35, fig. 3.
- Shoreoxyton Djambiense* den Berger. — Miocene Djambi, S. Sumatra, Bibl. 1, p. 147. *Dipterocarpoxyton species* Kräusel, Bibl. 22, p. 269, textfig. 26, pl. 1, fig. 6; pl. 2, fig. 7—9; pl. 5, fig. 9; pl. 6, fig. 1; pl. 7, fig. 2; Bibl. 25, p. 339 (wood).
- „ *Kräuseli* den Berger. — Miocene Palembang, S. Sumatra, Bibl. 1, p. 147. *Dipterocarpoxyton species* cf. *Tobleri* Kräusel, Bibl. 22, p. 267, textfig. 25, pl. 1, fig. 4; pl. 3, fig. 4, 5; pl. 7, fig. 1; Bibl. 25, p. 337 (wood).
- „ *moroides* den Berger. — Tertiary W. Java, Bibl. 2, p. 498. *Dipterocarpoxyton moroides* Kräusel, Bibl. 26, p. 4, pl. 1, fig. 2; pl. 2, fig. 3, 4. *Bredaea moroides* Göppert, Bibl. 15, p. 55, pl. 1, fig. 3—5, Bibl. 16, p. 183; Bibl. 20, p. 19; Bibl. 25, p. 331 (wood).
- „ *palembangense* den Berger. — Miocene Palembang, S. Sumatra, Bibl. 1, p. 144. *Caesalpinioxylon palembangense* Kräusel, Bibl. 22, p. 247, textfig. 21, pl. 2, fig. 1; pl. 3, fig. 1, 2; pl. 7, fig. 6, 11; Bibl. 25, p. 339 (wood).
- „ species. — Pliocene W. Java, Bibl. 31, p. 470 (wood).
- Vatica lancaefolia* (Blume). — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 338; Bibl. 39, p. 23, pl. 26, fig. 123—126 (wood); recent S. E. Asiatic continent.

## FLACOURTIACEAE.

- Pangium Treubii* Raciborski. — Miocene W. Java, Bibl. 35, p. 283, fig. 1, 2, 3 (fruit).

## COMBRETACEAE.

- Terminaliophyllum* species. — Tertiary Labuan, Bibl. 14, p. 502, pl. 34, fig. 1; Bibl. 25, p. 335.

## MYRTACEAE.

- Eucalyptus Verbeekii* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 18, pl. 6, fig. 1; Bibl. 9, p. 375; Bibl. 25, p. 337.  
*Eugenia* species see *Myrtophyllum eugenioides* Kräusel.  
*Myrtophyllum eugenioides* Kräusel. — Upper Tertiary S. Sumatra, Bibl. 27, p. 368, textfig. 24, pl. 7, fig. 4—9. *Eugenia* species, Bibl. 25, p. 341.

## MELASTOMACEAE.

- Melastomaceophyllum Geyleri* Kräusel. — Upper Tertiary Palembang, S. Sumatra, Bibl. 27, p. 370, textfig. 25, pl. 7, fig. 1. *Melastomaceophyllum* species, Tertiary Bibl. 14, p. 503, pl. 35, fig. 61. Upper Tertiary Palembang, S. Sumatra, Bibl. 25, p. 335.  
 „ species see *M. Geyleri* Kr.  
*Memecylon floribundum* Bl. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 32, fig. 48—50; Bibl. 39, p. 27, pl. 20, fig. 161—163; recent Java to the Philippines.  
 „ *myrsinoides* Bl. — Trinil strata Java, Bibl. 36, p. 8, Bibl. 38, p. 238, pl. 32, fig. 51—52; Bibl. 39, p. 27, pl. 20, fig. 164—166; recent Malacca, Java.  
*Phylites* species 3. — Tertiary Labuan, Bibl. 14, p. 505, pl. 39, fig. 4 (dubious).

## ARALIACEAE.

- Polyscias pinnata* Forst. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 32, fig. 19—20; Bibl. 39, pl. 19, fig. 159—160 (wood); recent E. Java, Celebes, the Philippines, N. Guinea, N. Caledonia.

## CORNACEAE.

- Cornus benthamoides* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 50, pl. 13, fig. 79; Bibl. 16, p. 186; Bibl. 9, p. 375; Bibl. 25, p. 331.

## MYRSINACEAE.

- Ardisiophyllum* species. — Tertiary Labuan, Bibl. 14, p. 497, pl. 36, fig. 1—3; Bibl. 25, p. 335.

## SAPOTACEAE.

- Isonandrophyllum* species. — Tertiary Labuan, Bibl. 14, p. 498, pl. 33, fig. 9; Bibl. 25, p. 335.  
*Sapotacites crassipes* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 17, pl. 6, fig. 2; Bibl. 9, p. 375; Bibl. 25, p. 337.  
 „ *Delprati* Crié. — Pliocene W. Java, Bibl. 4, p. 18, pl. 7, fig. 1; Bibl. 25, p. 333.

- Sapotacites ovatus* Kräusel. — Upper Tertiary S. Sumatra, Bibl. 27, p. 342, textfig. 26, pl. 7, fig. 2.  
*Phyllites* species 5. — Tertiary Labuan, Bibl. 14, p. 505, pl. 37, fig. 7 (rather dubious).

## EBENACEAE.

- Diospyros Horneri* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 14, pl. 3, fig. 2; Bibl. 19, p. 17; Bibl. 9, p. 375; Bibl. 25, p. 337.  
 „ *dubia* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 47, pl. 12, fig. 72; Bibl. 16, p. 181; Bibl. 9, p. 375; Bibl. 25, p. 331.

## LOGANIACEAE.

- Fagraea littoralis* Blume. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238, pl. 31, fig. 23—24; pl. 32, fig. 53; Bibl. 39, p. 28, pl. 20, fig. 167—168; pl. 21, fig. 170—171; recent tropical Asia.  
 „ *tertiana* Schuster. — Upper Tertiary W. Java, Bibl. 39, p. 28.

## APOCYNACEAE.

- Apocynophyllum alstonioides* Heer. — Tertiary Mid. Sumatra, Bibl. 19, p. 18, pl. 2, fig. 3; Bibl. 9, p. 375; Bibl. 25, p. 337.  
 „ *nervosissimum* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 49, pl. 12, fig. 78; Bibl. 16, p. 180; Bibl. 9, p. 375; Bibl. 25, p. 331.  
 „ *Reinwardtianum* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 48, pl. 12, fig. 74, 75; Bibl. 16, p. 180; Bibl. 7, p. 190; Bibl. 9, p. 375; Bibl. 25, p. 331.  
 „ *willughbeoides* Geyler. — Tertiary Labuan, Bibl. 14, p. 496, pl. 38, fig. 1 (2, 3); Bibl. 25, p. 335.  
 „ *sumatranum* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 15, pl. 3, fig. 1; Bibl. 19, pl. 18; Bibl. 8, p. 400; Bibl. 9, p. 375; Bibl. 25, p. 337.  
*Phyllites* (*Tabernaemontana*?) species. — Tertiary S. E. Borneo, Bibl. 13, p. 76, pl. 1, fig. 4; Bibl. 7, p. 383; Bibl. 9, p. 376; Bibl. 25, p. 334.  
*Tabernaemontanophyllum* species. — Tertiary Labuan, Bibl. 14, p. 496, pl. 33, fig. 8; Bibl. 25, p. 335.  
*Willughbya apiculata* Miq. — Trinil strata Java, Bibl. 36, p. 8, Bibl. 38, p. 238, pl. 31, fig. 21—22; Bibl. 39, p. 29, pl. 21, fig. 172—173; recent Sumatra.

## BORRAGINACEAE.

- Cordia* aff. *suavolens* Blume. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 38, p. 238; Bibl. 39, p. 28, pl. 25, fig. 1—3; pl. 26, fig. 15 (wood); recent Java.

## RUBIACEAE.

- Grumileophyllum attenuatum* Geyler. — Tertiary Labuan, Bibl. 14, p. 494, pl. 35, fig. 4, 5; Bibl. 25, p. 335.  
 „ species. — Tertiary Labuan, Bibl. 14, p. 493, pl. 34, fig. 2; Bibl. 25, p. 335.  
*Ixorophyllum abnorme* Geyler. — Tertiary Labuan, Bibl. 14, p. 496, pl. 34, fig. 6; Bibl. 25, p. 335.  
 „ *anceps*. Geyler. — Tertiary Labuan, Bibl. 14, p. 495, pl. 35, fig. 1, 2; Bibl. 25, p. 335.  
 „ *primaevum* Geyler. — Tertiary Labuan, Bibl. 14, p. 495, pl. 34, fig. 3; Bibl. 25, p. 335.  
*Phyllites* (*Grumilea*) *mephitidioides* Geyler see *Castanopsis mephitidioides* Ettinghausen.

## CAPRIFOLIACEAE.

- Viburnum coriaceum* Blume. — Trinil strata Java, Bibl. 36, p. 8; Bibl. 37, p. 779; Bibl. 38, p. 238, pl. 31, fig. 25—26; Bibl. 39, p. 29, pl. 21, fig. 174—175; recent Asiatic continent, Sumatra, Java.

## DICOTYLEDONOUS LEAVES OF UNCERTAIN AFFINITIES.

- Phyllites bullatus* Ettinghausen see *Piper bullatus* Göppert (*Piperaceae*).  
 „ *dipterocarpoides* Crié see under *Dipterocarpaceae*.  
 „ (*Loranthus*) *delequescens* Geyler see under *Loranthaceae*.  
 „ *Geyleri* Ettinghausen see *Nephelium Verbeekianum* Geyler (*Sapindaceae*).  
 „ *Göppertianum* Ettinghausen see *Ficus dubia* (*Moraceae*).  
 „ (*Pterospermum*) *gracilis* Geyler see *Cinnamomum gracile* Ettinghausen (*Lauraceae*).  
 „ (*Entoneuron*) *melastomaceus* Ettinghausen see *Entoneuron melastomaceus* Geyler (*Melastomaceae*).  
 „ (*Grumilea*) *mephitidioides* Geyler see *Castanopsis mephitidioides* Ettinghausen (*Fagaceae*).  
 „ (*Ficus*) *pengaronensis* Geyler see under *Moraceae*.  
 „ (*Hopea*) *praecursor* Geyler see under *Dipterocarpaceae*.  
 „ (*Artocarpus*) *Verbeekianus* Geyler see under *Moraceae*.  
 „ (*Sterculia*) species see under *Sterculiaceae*.  
 „ (*Tabernaemontana*?) species see under *Apocynaceae*.  
 „ species 1 Bibl. 14, p. 504 see under *Dipterocarpaceae*.  
 „ species 2 Bibl. 14, p. 504 see under *Lauraceae*.  
 „ species 3 Bibl. 14, p. 505 see under *Melastomaceae*.  
 „ species 4 Bibl. 14, p. 505 see under *Leguminosae*.  
 „ species 5 Bibl. 14, p. 505 see under *Sapotaceae*.  
*Incertae sedis*. — Miocene Djambi, S. Sumatra, Bibl. 27, p. 372, textfig. 27, pl. 6, fig. 7; textfig. 28, pl. 7, fig. 12.

## DICOTYLEDONOUS WOOD OF UNCERTAIN AFFINITY.

- Helictoxylon Schenkii* Felix. — Tertiary W. Java, Bibl. 10, p. 63; Bibl. 20, p. 39.

- Junghuhnites javanicus* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 54, pl. 2, fig. 11—16; Bibl. 16, p. 183; Bibl. 20, p. 35; Bibl. 25, p. 331.
- Miquelites elegans* Göppert. — Upper Tertiary W. Java, Bibl. 15, p. 56, pl. 1, fig. 6, 7, 7a; Bibl. 16, p. 183; Bibl. 20, p. 35; Bibl. 25, p. 331.
- Tarrietioxylon sumatrense* Kräusel. — Miocene Djambi, S. Sumatra, Bibl. 22, p. 259, textfig. 23, pl. 2, fig. 4; pl. 4, fig. 2, 3, 6; pl. 6, fig. 4, 5, 9; Bibl. 25, p. 339.
- Sumatroxylon Mollii* den Berger see *Anacardioxylon Mollii* Kräusel.

ANGIOSPERMOUS FRUITS OF UNKNOWN AFFINITY.

- Carpolithus radiatus* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 19, pl. 3, fig. 8; Bibl. 18, p. 22; Bibl. 9, p. 375; Bibl. 25, p. 337.
- „ *umbilicatus* Heer. — Tertiary Mid. Sumatra, Bibl. 18, p. 18, pl. 3, fig. 5; Bibl. 19, p. 22; Bibl. 9, p. 375; Bibl. 25, p. 337.
- „ species. — Jurassic Singapore, Bibl. 30, p. 495, pl. 25, fig. 18.
- Monocercarpus miocaenicus* Raciborski. — Miocene W. Java, Bibl. 35, p. 282, fig. 4.

**ANNOTATIONS TO THE LIST OF SPECIES.**

In this enumeration no attempt has been made for a critical revision. The arrangement in families is mostly that of the latest author; sometimes a fossil has been attributed to a family where it might hardly have been included.

Most of the material still needs critical revision of the original specimens. Valuable work in this direction has already been by KRÄUSEL (Bibl. 25, 26, 27). A great drawback to detailed research and a thorough revision is the circumstance that it could not yet be done by a person, who is thoroughly acquainted with the flora of this region. It would be best if a student of the present flora in the later years of his work would turn attention to the fossil remains. But as a mass of important work on the recent flora still has to be done and because of the conditions in the Dutch-East Indies it is to be feared that this will not be possible, at least not in the next time. That the value of the results of the study of fossil remains by comparison with herbarium material only leads to rather doubtful results, is shown by the fossil flora of Trinil and Lasem where a close resemblance to plants still living in the Archipelago might be expected. Both HALLER and MERRILL have criticised the determinations.

## STRATIGRAPHICAL REMARKS.

Some facts remarkable from a geographical point of view may be noted. Firstly the appearance of a flora of Permo-carboniferous age occurring in Sumatra and probably also in Malacca, not showing any elements of the Glossopteris flora of British-India and Australia, but more related to the arcto-carbonic flora, especially to that China (Shansi) and the Western United States. Further the abundance in Java of fossil wood of Dipterocarpaceae which are at present rather scarce there. Even of the genus *Dryobalanops*, which is now wholly wanting on Java, wood has been found. A similar case of a more restricted distribution nowadays may be found in *Dryopteris polifera* (RETZ.) C. CHR., which is known to occur at present only in East-Java, Borneo, Celebes, New-Guinea and the Philippines but has been found in a fossil state in South-Sumatra too. And if the determination of the fossil plant of Trinil and Lasem should prove correct some plants, e. g. *Altingia excelsa* (the rasamala tree) formerly occurred in places where they are now wholly absent.

Because most of the fossil Tertiary plants have been found but once or in a small number of places only and because of the many difficulties offered by their determination, their value for stratigraphical purposes has been relatively low. Perhaps in the future when the lignite bearing strata will have to be carefully studied, their study may become of more importance for a detailed classification.

About the Mesozoic plants hardly any data are available.

The Permo-carboniferous flora of Djambi (Mid Sumatra) may also prove of very high value for stratigraphy because of it occurring intercalated with marine strata, containing well preserved Brachiopoda<sup>1)</sup>.

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<sup>1)</sup> It is a curious sensation to be criticised for preliminary names given to the material in the field for internal use, which names were never intended to be published and which have never been published (see *Palaeontologica Sinica*, (A) II, 1927, p. 287) and could never have been published because the material has afterwards been carefully kept out of my reach. The preliminary report published in *Tijdschrift Aard. Gen.* 1927, p. 807, where the name of *Walohia* was mentioned has been published from private letters, without my consent; moreover it was then kept unknown to me that material of this locality had already been worked out and the results published, while I was in the Sumatra-jungle.

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