

A Guide to the **MEDICINAL PLANTS** of **COASTAL GUYANA**



A Guide to the MEDICINAL PLANTS OF COASTAL GUYANA

BY

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INTRODUCTION

This book is the second in a series of publications describing and illustrating plants used medicinally in countries of the Commonwealth Caribbean. The first, entitled 'A Guide to the Medicinal Plants of Trinidad and Tobago', was published by the Commonwealth Secretariat in 1983. The methods used in compiling the data for both these volumes included interviews, plant collection and identification, literature search for chemical and pharmacological information and some basic screening carried out locally. The format and presentation are also essentially the same. The purpose is to encourage further research into the uses of these plants and, if appropriate, to stimulate product development.

The plants which are described in this book reflect to an unequal extent two aspects of plant life in Guyana. The flora of the coastal region and the banks of the great rivers is mainly associated with areas that are developed and populated; many of the species are the same as those found in the Caribbean islands. These plants have been studied more intensively and provide the bulk of the material dealt with in this publication. A much larger number of potentially important species belong to the huge reserves of forest which cover 16.29 million hectares of interior Guyana. Here we include only a few of the better known or commoner forest species. Many others form the domain of the indigenous Amerindians. These tribes still live in stable vibrant communities maintaining their traditional languages, ceremonies and culture which includes the uses of plants for medicinal and other purposes. It is hoped that studies similar to those being carried out on indigenous populations in neighbouring Suriname will, with the collaboration of the Amerindian Studies Department of the University of Guyana and the Commonwealth Science Council, be embarked on presently.

There are several earlier publications dealing with the medicinal plants of Guyana, but none have been illustrated and descriptions were often sketchy or lacking. Rodway, in 1885, dealt with plants of the coastal region and the common names he used were mainly those of anglophone origin. His work is remarkable in that most of his botanical identifications are valid today, and many of the stated medicinal uses are the same as we have found for this study. Abraham's article 'Materia Medica Guian. Britt.', published in 1912, has about 200 statements of therapeutic uses of plants mostly referred to by Amerindian names only, with very few botanical identifications. Many of the local names used in Abraham's publication are the same as or similar to those recorded here and it would be interesting to carry out a study of the consistency of their application to plants in Guyana over the intervening years.

Another significant publication is that of Fanshawe in 1950 in 'Minor Forest Products of Guyana, Part II'. This work deals with the possible multiple uses of Guyana forest plants for fibres, tannins and dyes, latex products, resins, essential oils, fatty oils and waxes, cellulose products and drug and food plants. The medicinal uses of over one hundred plants are described. These too remain for the most part to be re-investigated.

Haynes, 1969, has been an important source of information, particularly for the correlation of local and botanical names.

It is to be noted that data from previously published works have been included in this book only if the plant referred to has been clearly identified. The most important consideration in modern times is that the plants should be recognised and

that communication about them should be accurate. Illustrations, clear descriptions and correct nomenclature aim to achieve this.

Statements about distribution also indicate the kind of place where the plant is most likely to be found growing.

Under the heading Medicinal Uses, the ailments for which the plant is believed or alleged to provide a treatment or remedy are stated. If known, the part of the plant used and the methods of preparation are also given. The latter rarely specify quantities because these are not consistent or not known. The plants may be used alone or in mixture and these vary in composition from user to user according to individual preference or availability of ingredients. In no case should any statement by the present authors be regarded as a recommended prescription and, where an opinion is offered at all, it is more likely to be a warning against a toxic principle or possibly some dangerous property of which the user should be aware.

As more phytochemical research is undertaken world-wide, more substances are being found, isolated, identified and tested. The constituents have different pharmacological activities and some of them may prove after testing to be not useful or even harmful. Thus, medicinal application must respond to ever-increasing knowledge. More careful dosage or even total avoidance, in spite of symptomatic remissions, may sometimes be indicated. Where Biodynamic Notes are lacking, as they are for many species in this book, obviously further research is called for.

No attempt has been made to analyse or rationalise the pharmacology of mixtures here. One of those, most alluded to, is that which regularly contains Devil-doer (**Strychnos spp.**), Sarsparilla (**Philodendron sp.**) and other standard ingredients, which are mostly forest climbers. In various forms this recipe seems to be very popular for use as an aphrodisiac and for urinogenital complaints and venereal diseases. The properties of the constituents are dealt with individually where they arise. A naming problem exists with the anomalous use of the word Sarsparilla in Guyana. In other countries this name is consistently applied to species of **Smilax** - see p. 212.

The text of this book has entries for 173 native and naturalized Guyanese plants, as well as a few cultivated species. Of these, 148 are illustrated by line drawings, 102 of them being original by local artists and the remainder adopted from the companion volume for Trinidad and Tobago.

In compiling this study, we were ably assisted by a wide range of people such as market vendors, old villagers, porknockers and, for this, we are extremely grateful. Significant technical inputs were also forthcoming from the staff of the Herbarium at the University of Guyana, some staff members of the Department of Biology at the University and the Natural Products research group at the Institute of Applied Science and Technology in Guyana. For this we would like to express our appreciation. Finally, we would like to acknowledge the full support given by the Commonwealth Science Council to this project.

D.A. Lachman-White
C.D. Adams
U.O. Trotz

Abelmoschus esculentus
(Syn. *Hibiscus esculentus*)

OCHRO
OKRA

(MALVACEAE)

Description

A short-lived robust undershrub to about 3 m or more high. Leaves alternate, broadly rounded in outline, often 5-lobed, very variable but mostly to about 15 cm long and 18 cm broad, toothed, glabrous or with a few stiff hairs beneath and on the petiole. Flowers with 8-12 bracteoles on the calyx; corolla showy, clear light yellow with a dark reddish-purple spot on the base inside. Fruit a fleshy, ribbed, elongated berry, truncate at the base, pointed at the tip, mostly 8-16 cm long, the seeds in mucilage; the dry ripe fruit becomes fibrous and opens longitudinally.

Habitat and Distribution

Commonly cultivated in home and commercial gardens. Native of the Old World tropics, now widespread in all warm countries.

Medicinal Uses

The juice from the young fruit is used for chest colds and as an 'eye-drop'. The fruit is also crushed with young leaves and used for washing hair especially as a treatment for dandruff.

Biodynamic Notes

Anti-tumor activity against sarcoma-180 in mice was shown by the peptidoglycans obtained from the related species *Hibiscus manihot* in a root extract (Sankyo Co., 1982). Quercetin 3-robinobioside, quercetin 3'-glucoside, quercetin, hypericin and myricetin were isolated from *Abelmoschus manihot* flowers which are used in the treatment of chronic bronchitis and toothache (Wang et al, 1981).



Abrus precatorius

CRABS-EYES
LICKRISH
WILD LIQUORICE

(LEGUMINOSAE - PAPILIONATAE)

Description

A slender woody twiner. Leaves alternate, paripinnate, 5-13 cm long; leaflets 10-20 pairs, oblong, rounded at both ends, 1-2 cm long, 3-6 mm broad, glabrous above, the terminal leaflet replaced by a bristle. Racemes axillary, 3-8 cm long; flowers clustered, pea-like, the corolla dusky purplish-pink, 8-12 mm long. Pods oblong, beaked, brownish, the valves 2-4 cm long, curling back to reveal pendulous ovoid red and black seeds 5-7 mm long.

Habitat and Distribution

In thickets and on fences, usually in rather dry low-elevation areas throughout the subtropics and tropics.

Medicinal Uses

A decoction of the bark is taken as a beverage for relief of bellyache, thrush, colds, coughs and asthma. For relief of chest colds, leaves are boiled together with leaves of Tamarind (*Tamarindus indica*), Soursop (*Annona muricata*) and Sweet-sage (*Lantana camara*), and made into a syrup which is taken orally.

Red seeds are used for chronic ulcers and certain eye problems.

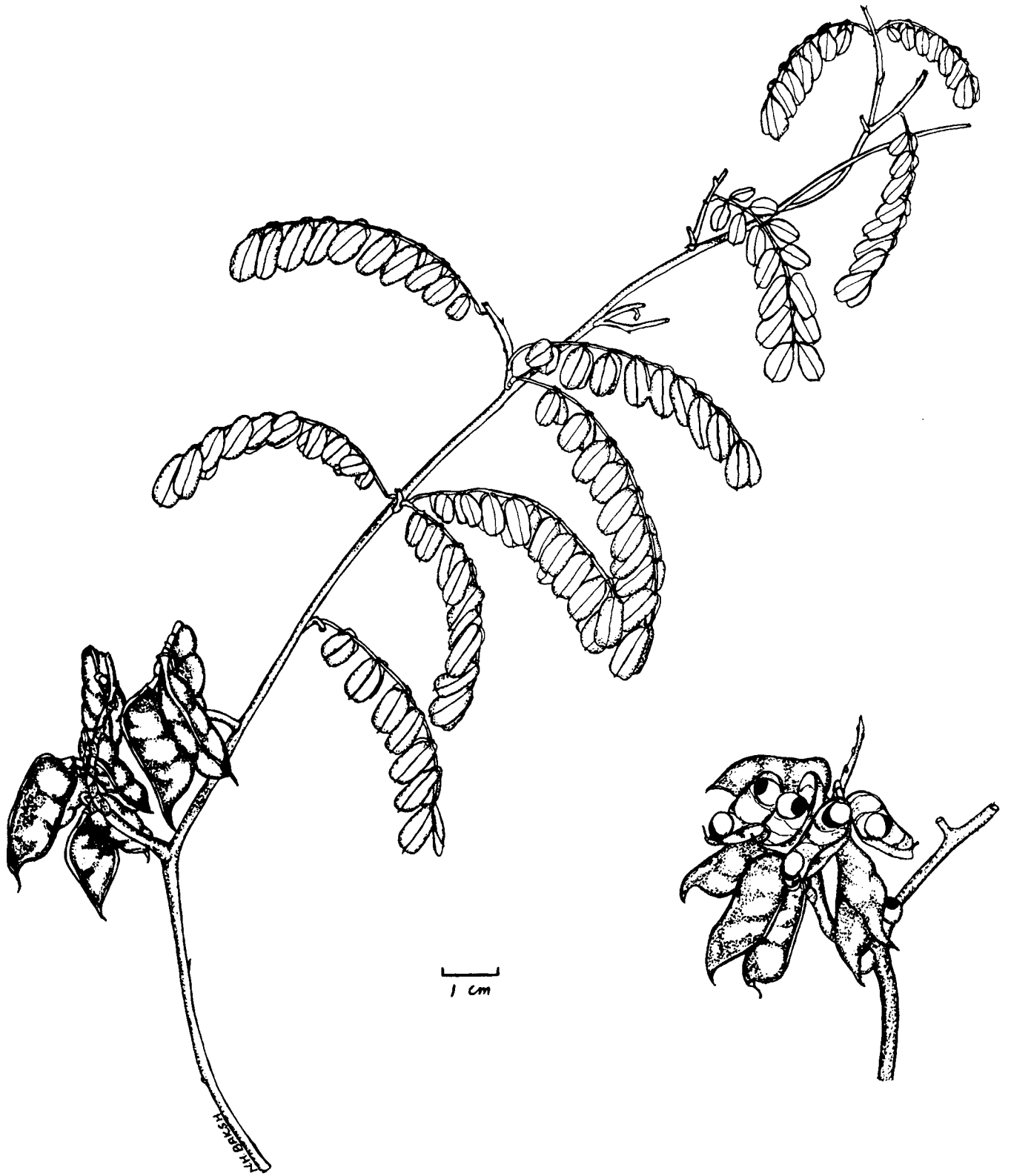
A concentrated aqueous extract of bark is taken orally as a treatment against cancer. Externally, extract (from soaking bark in water) is applied on the affected area until relief is experienced.

Biodynamic Notes

Ethanol extracts of the seeds were shown to have antimicrobial activity against *Staphylococcus aureus*, *Escherichia coli*, *Salmonella paratyphi*, *Shigella dysenteriae*, *Trichophyton interdigitale*, *T. rubrum* and *Epidermophyton floccosum* (Desai and Sirsi, 1966), whereas petroleum ether and alcoholic extracts of the roots exhibited antifertility activity (Milhet et al, 1978; Agarwal et al, 1970). It has been reported that extracts from this plant have been used as an effective oral contraceptive (Das, 1976).

Both roots and seeds contain abric acid and abrin which is the principal poisonous constituent (Desai and Sirsi, 1966; Tung and Ming-Chang, 1960). However, abrin (methyl tryptophane) a blood poison, can be destroyed by boiling or by digestive ferments, or excreted (Roy et al, 1976). Death occurred within a narrow dose range in mice and dogs when treated with ricin and abrin (Fodstad et al, 1979).

The steroids abricin and abridin as well as stigmasterol, beta-sitosterol, cholesterol, campesterol, cycloartenol, beta-amyrin and squalene were isolated from the seed extracts (Gulta et al, 1969; Ghosal and Dutta, 1971; Siddiqui et al, 1979). Only beta-sitosterol was found in the stem-bark (Gulta et al, 1969) and glycyrrhizin was determined in the roots, stem and leaves (Merck Index, 1976).



Achyranthes indica

COW-PIMPLER
DEVILS-WHIP
SOLDIER-ROD

(AMARANTHACEAE)

Description

Short-lived loosely erect herb to about 1 m high, often with long thin branches. Leaves opposite in pairs, broadening to a rounded tip ending in a short cusp, to about 8 cm long and 3 cm broad, sometimes much larger, often smaller. Flowers small and greenish in an elongated spike, all perfect, with 5 perianth-segments, turning downwards in fruit and becoming sharply spiny.

Habitat and Distribution

Common as a weed of cultivated land and waste places throughout the subtropics and tropics.

Medicinal Uses

A decoction of the leaves is taken for the relief of high blood-pressure and as a 'tea' substitute.

A decoction of the whole plant either alone or mixed with Buck-cotton (*Gossypium hirsutum*), is drunk for relief of colds, stomach troubles and thrush.

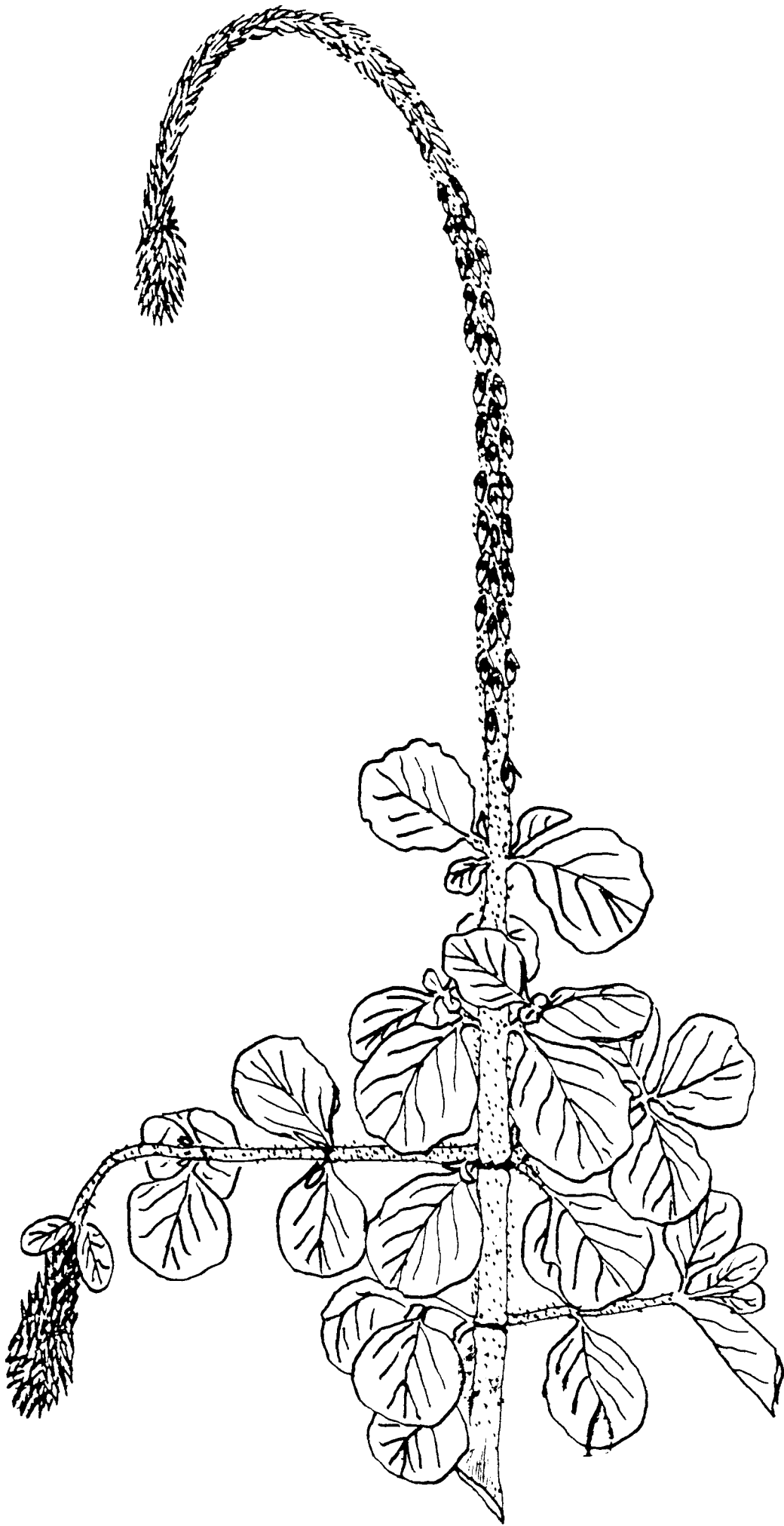
An infusion of the entire plant alone is taken for heart problems.

Biodynamic Notes

The seeds of *Achyranthes aspera* have been used as an emetic; the saponin fraction yielded methyl esters of oleanic and maslinic acids (Haribaran and Rangaswami, 1970; Batta and Rangaswami, 1973).

Antifertility activity was detected in the benzene extract of *A. aspera* (Pakrashi and Bhattacharya, 1977). Ecdysterone and two oleanolic-based saponins were obtained from the roots (Banerji and Chadda, 1970; Banerji et al, 1971). In addition to ecdysterone, another ecdysterol, inokosterone, was isolated from various species of *Achyranthes* (Hikimo et al, 1971).

Betaine was also reported in *A. aspera* (Kapoor and Singh, 1966), and uterotonic saponins have been found in *A. bidentata* (Yip et al, 1980).



(ZINGIBERACEAE)

Description

A ginger-like perennial rhizomatous herb with separate leafy and flowering shoots. Leafy shoot to about 1 m high with the leaves in 2 rows; leaf-blades broadly linear, mostly about 20 cm long and 3 cm broad, long-tailed-acuminate, with numerous closely parallel prominent lateral veins, glabrous. Flowers solitary at ground-level, orchid-like, the labellum showy, pink or lilac, about 4 cm long. Fruit ovoid, smooth, about 4 cm long, beaked by the persistent calyx, bright scarlet.

Habitat and Distribution

Naturally growing in the forest undergrowth and also cultivated in West Africa, widely cultivated in other tropical countries.

Medicinal Uses

A decoction of the macerated plant is drunk as a relief for menstrual pains. The seeds are chewed for relief of gripes and slight pains in the abdomen (seeds are usually preserved in brandy). For the relief of pains resulting from constipation, a sweetened decoction of the seeds is drunk, or ground seed is given in an enema.

The plant is macerated together with St Johns-bush (**Justicia secunda**) and the decoction used as a laxative and general medicine. Seeds boiled together with Ginger *(**Zingiber officinale**) are given for colds and fever.

Guinea pepper (seeds) and Black pepper (seeds of **Piper nigrum**) are ground together and mixed with coconut oil. The resulting ointment is massaged into the skin for relief of general swelling and pains.

Ground seeds are mixed with mustard oil and the resulting ointment is used for the relief of arthritic pains.

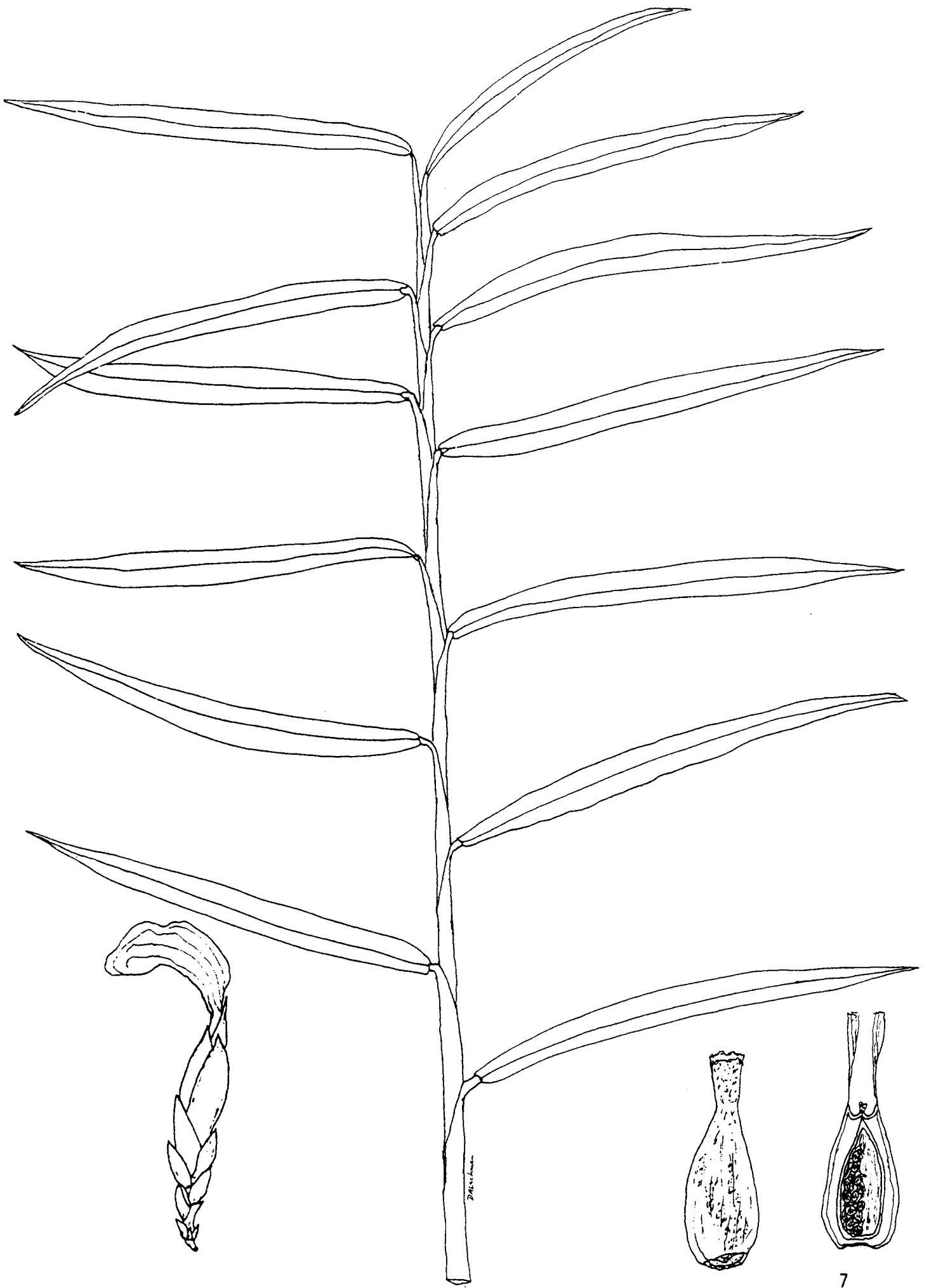
Biodynamic Notes

The seeds have the volatile oil paradol, with carminative, antispasmodic and pectoral actions (Wong, 1976).

Aframomum melegueta has alkaloids (piperine), essential oils and resins (Githens, 1948; Harten, 1970).

Footnote

* Ginger is an important medicinal plant in its own right. Forms of gingerol are present in the rhizome (Purselove, 1981) and the crude methanol extract showed cardiotoxic activity (Shoji et al, 1982). A preparation known as Fiery-jack ointment, containing Ginger, is made in Guyana.



Allamanda cathartica

BARUDA-BALLI
BUTTERCUP
PORCUPINE-BATTY

(APOCYNACEAE)

Description

A straggling or climbing shrub with copious milky sap. Leaves in whorls of 3 or 4, oblong-lanceolate, shortly acuminate, narrowed to a short petiole, 5-12 cm long, 2.5-6 cm broad. Flowers showy in few-flowered axillary cymes; calyx-lobes spreading, green, mostly about 1 cm long; corolla bright yellow, bell-shaped at the throat, 7-9 cm long, the 5 rounded lobes overlapping to the left. Fruit a globose prickly capsule about 4 cm in diameter; seeds compressed, without a coma.

Habitat and Distribution

Native in riverside thickets in tropical South America; cultivated ornamental varieties are widely grown in warm countries.

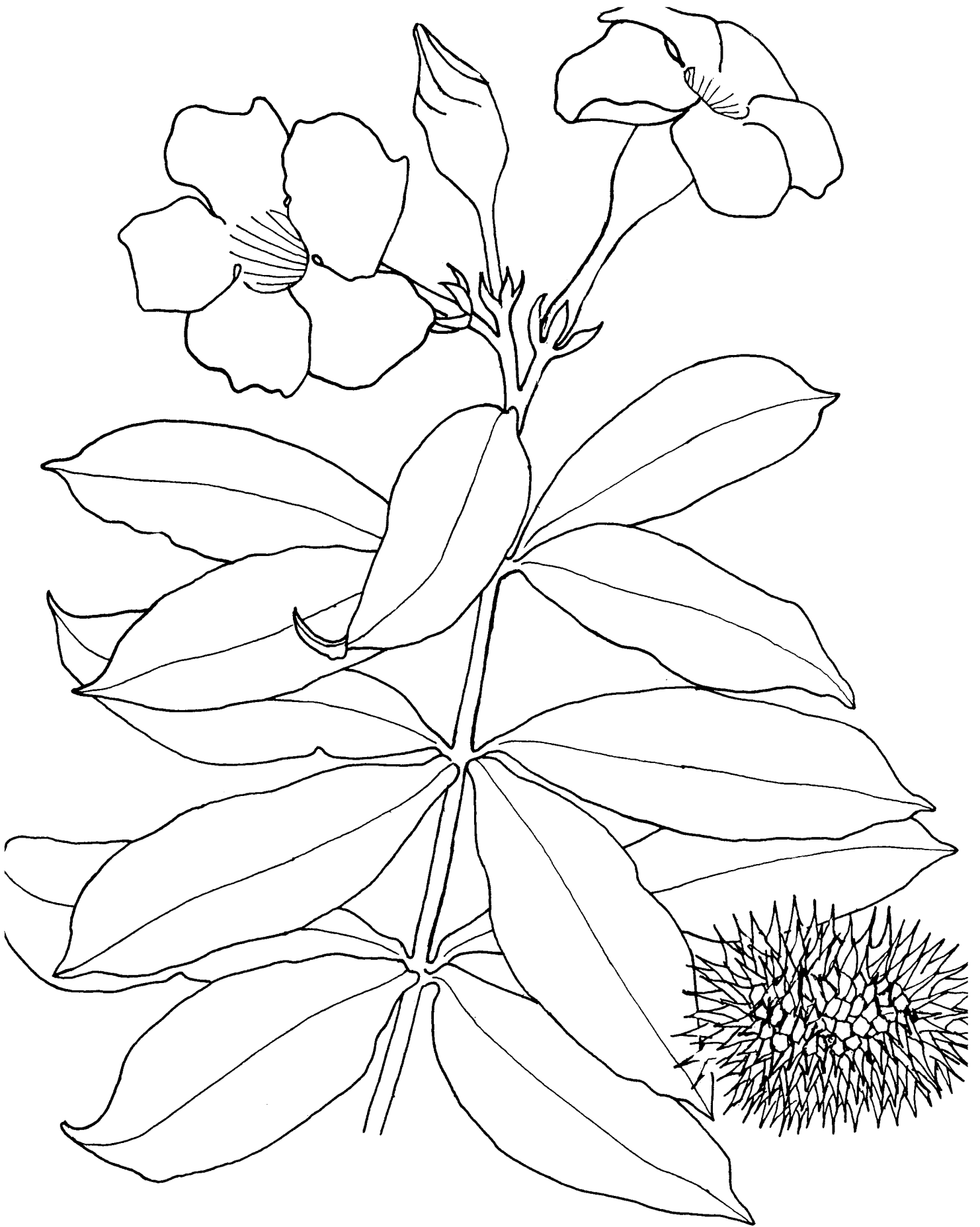
Medicinal Uses

A decoction of leaves is taken as a cathartic and for biliousness. A decoction of leaves and flowers is taken as a cure for anuria. A decoction of leaves and flowers together with Monkey-ladder stem (*Bauhinia scala-simiae*) is used as a treatment for impotency.

Biodynamic Notes

Allamandin, and antileukemic iridoid lactone, and the companion iridoid allamdin were isolated from *A. cathartica* (Kupchan et al, 1974).

Plumericin and isoplumericin were obtained from the acetone extracts of the stem, root and bark (Pai et al, 1971). In addition to plumericin, plumieride, flavoplumierin and the antifungal sesquiterpenoid isoplumerin, were isolated from the roots (Jewers et al, 1971; Jewers et al, 1975). The leaves also contained isoplumericin, plumericin and plumieride in addition to beta-amyrin, beta-sitosterol and ursolic acid (Jewers et al, 1970; Gulta et al, 1969). The flowers yielded kaempferol, quercetin and a fungitoxic glycoside, allamandoside (Tiwari et al, 1979; Dixit and Tripathi, 1982).



Aloe vera
(Syn. *A. barbadensis*)

ALOES
BITTER ALOES

(LILIACEAE)

Description

A tufted perennial herb developing rosettes of tapered fleshy leaves from a shortly branched creeping rhizome. The leaves, which have soft marginal prickles, are brittle and when broken exude a clear yellowish viscous bitter sap. Flowers tubular, about 3 cm long, compact and nodding in an elongated raceme from the centre of the rosette, yellow or greenish-yellow. This species does not set fruit and is propagated by means of rhizome branches.

Habitat and Distribution

Although behaving as a native plant in some parts of the West Indies where it has escaped from cultivation, especially on to rocky hillsides in dry areas, this species is probably native in the Mediterranean region. It is often grown in gardens in tropical America.

Medicinal Uses

The juice of this plant, usually mixed with raw cow's milk, is widely used for the relief of colds, asthma, pneumonia and biliousness. The juice is also mixed with grated cassava and 'fresh fat' and applied externally for ring worm and 'tete'.

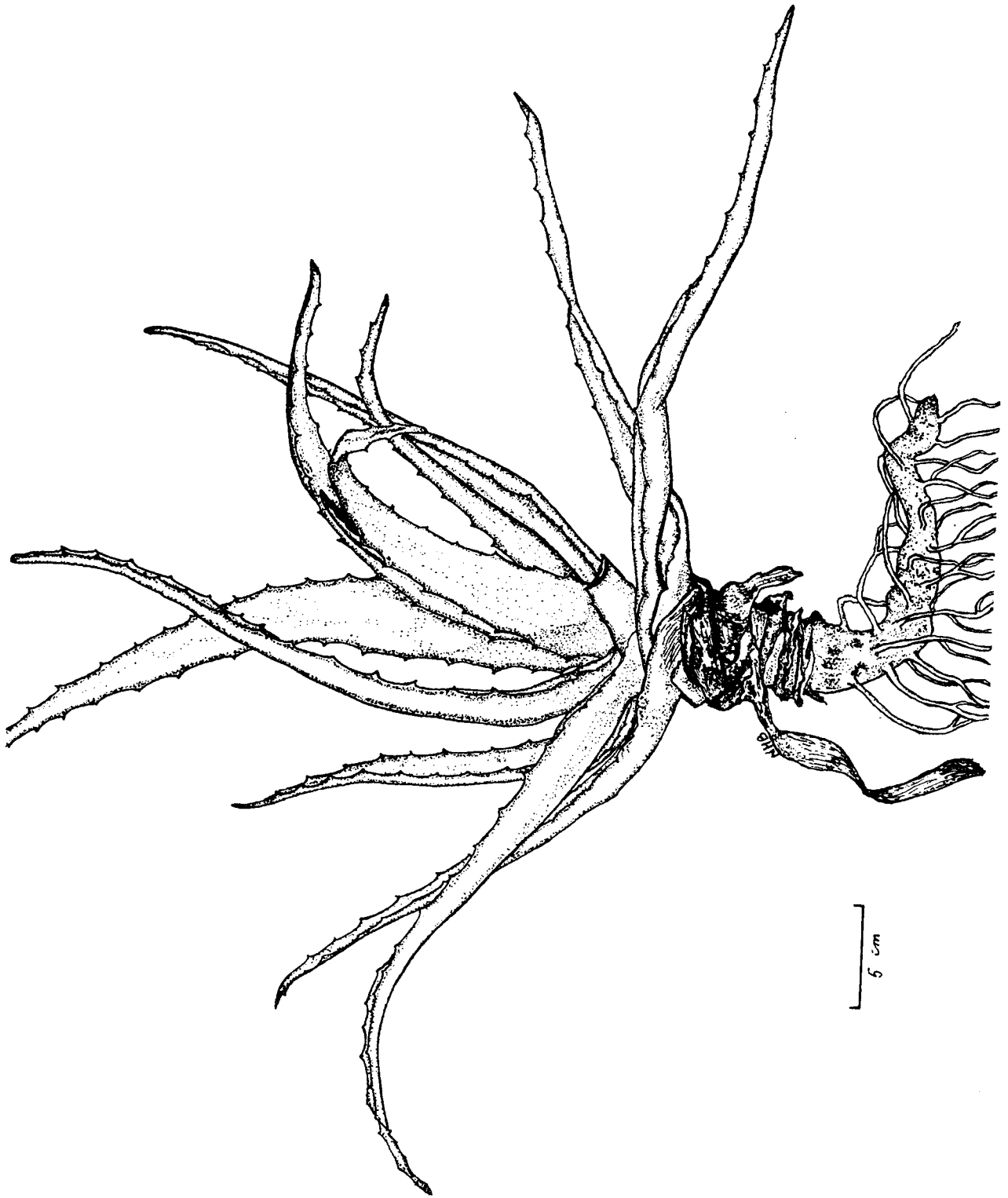
The sap from cut or bruised leaves is applied to cuts to stop bleeding or beaten up with the white of an egg and drunk as a purgative or emetic.

A mild decoction of the leaves is sometimes used as a bitter tonic.

Biodynamic Notes

Species of *Aloe* have been used in folk remedies as a cathartic and astringent, and commercially in ointments, cosmetic creams, lotions and shampoos (Morton, 1961), and for gastrointestinal disturbances, burns, insect bites and athlete's foot (Morton, 1961; Suga and Hirata, 1983). A polysaccharide obtained from aloe juice has been used for treating skin and body tissue wounds including burns, open wounds, ulcers, insect bites and also arthritis (Farkas, 1967a, b; Farkas and Mayer, 1968; Maret and Cobble, 1975; Kawashima and Shinno, 1979). Aloin is commonly used as a laxative (Thomson, 1971) and laxative-hypnotic drug combinations consisting of aloe extract are useful in the prophylaxis of drug abuse, e.g. attempted suicide through overdose of sleeping tablets (Hesse, 1972). Extract of *Aloe vera* is used in topical compositions as a cosmetic base for decreasing wrinkles and smoothing skin (Lubowe, 1984; Maret and Cobble, 1975). Antimicrobial activity of the juice has been reported against *Pseudomonas aeruginosa* and *Proteus vulgaris* (Soeda et al, 1966). *Aloe vera* extract was bactericidal against several organisms including *Escherichia coli*, *Streptococcus faecalis* and *Bacillus subtilis* (Robson et al, 1982) and Fugita et al, 1978, reported antifungal activity.

Aloe vera was found to contain aloe-emodin, barbaloin, lupeol, campesterol, cholesterol, sitosterol, chrysophanol and aloesin (Suga and Hirata, 1983).



Anacardium giganteum
(Syn. *A. rhinocarpus*)

HUBUDI
MEREHI
UBUDI
WILD CASHEW

(ANACARDIACEAE)

Description

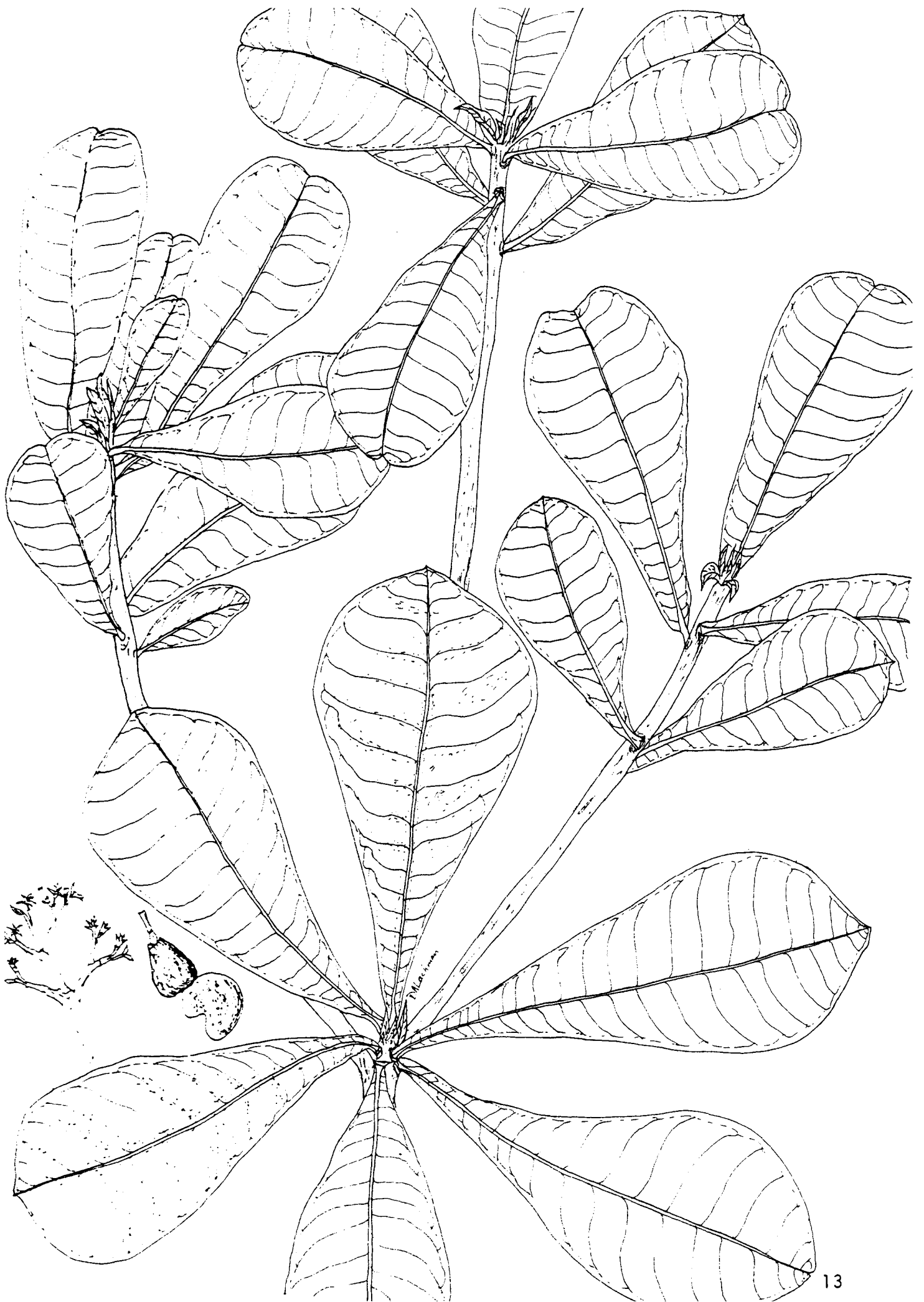
A small tree with rough twigs. Leaves alternate, simple, obovate to oblong-spathulate, emarginate, obtuse or shortly acuminate at the tip, cuneate to obtuse at the base, 10-35 cm long, 5-15 cm broad, rather leathery, glabrous and shiny above, puberulous on prominent veins and nerves beneath; petiole short. Panicle terminal, to about 25 cm long, the lower bracts leafy, more branched than in *A. occidentale*, but terminal clusters with relatively few flowers. Flowers 5-merous; sepals small; petals 5-6 mm long, 1.5-2 mm broad, red with black dots within; stamens 7-10. Nut kidney-shaped, compressed-ovoid; enlarged flower-stalk red.

Habitat and Distribution

Forests in Guyana

Medicinal Uses

A decoction of bark is used for common colds, sore throat, vomiting, iron deficiency and for treating cancerous ulcers and venereal diseases. The bark and leaves are boiled together with the bark or young fruit of Guava (*Psidium guajava*) and the liquid is drunk for the relief of coughs and dysentery.



Anacardium occidentale

CASHEW
CASHEW-NUT
MERCHE
MEREHI

(ANACARDIACEAE)

Description

A tree with usually rather gnarled spreading branches, at most to about 12 m high. Leaves spiral, obovate-elliptic, rounded or emarginate at the tip, mostly narrowed to the base and cordulate, to about 18 cm long and 10 cm broad, rather leathery, glabrous. Flowers in panicles exceeding the leaves, polygamous, crowded towards the ends of the branches, 5-merous, fragrant; petals 7-13 mm long, yellow turning pink; stamens 8-10, one being larger to 11 mm long. Fruit a nut-like kidney-shaped drupe to 3.5 cm long containing the edible seed; enlarged flower-stalk red or yellow.

Habitat and Distribution

Common, mostly in cultivation, throughout the American tropics, now widespread in warm countries.

Medicinal Uses

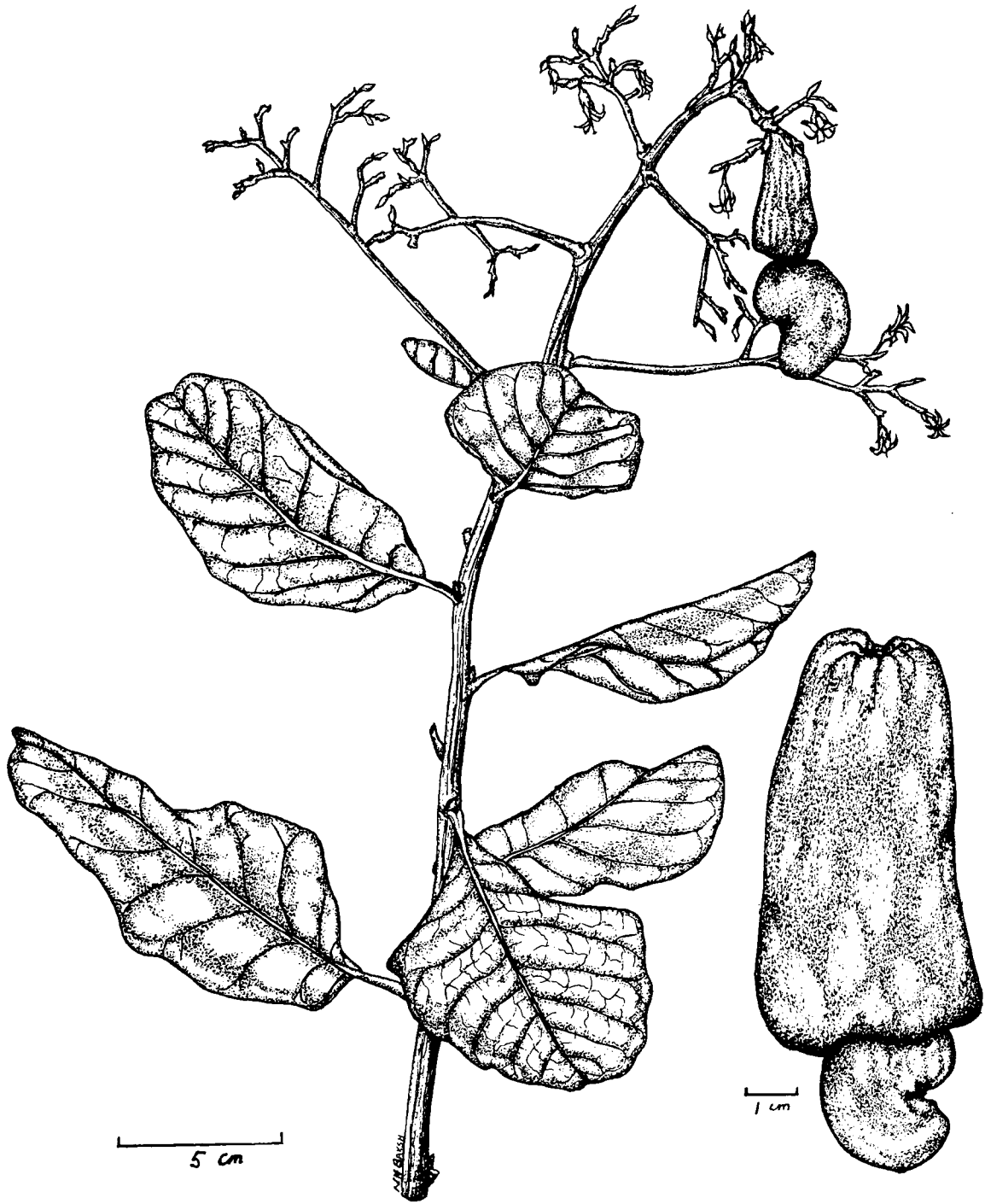
A decoction of bark is used as an astringent and for diarrhoea (it is felt that this bark is more effective than that of *A. giganteum*). An infusion of bark is used as a mouthwash for oral ulcers. An infusion of bark in 'high wine' is used as a tonic.

A decoction of bark together with Sarsaparilla (*Philodendron fragrantissimum*) taken orally by men as a remedy for loss of libido, sexual exhaustion or mental impotence.

Biodynamic Notes

The fruit is edible but the seed oil is toxic and vesicant, the toxic agents being phenols such as cardol which is also found in the bark (Watt and Breyer-Brandwijk, 1962). The extract from the inner bark showed hypoglycemic activity (Costa de Aguiar and Lins, 1958) and an antihypersensitive extract was obtained from the tannin fraction of the powdered bark (Thuillier and Giono, 1971, 1978; Thuillier and Michel, 1972). An alcoholic extract from the leaves was reported to have hypoglycemic and anticancerous properties (Dhar et al, 1968).

The essential oil of *A. occidentale* exhibited hypothermic and analgesic action and was found to be a central nervous system depressant (Garg and Kasera, 1984).



Andira inermis

BAT-SEED
KARARO

(LEGUMINOSAE - PAPILIONATAE)

Description

Tree to 20 m high. Leaves alternate, imparipinnate; leaflets 7-13, opposite on the rachis, oblong, acute or acuminate, 5-11 cm long, 2.5-4 cm broad. Panicles many-flowered, terminal or axillary, the branches tomentose. Flowers pea-like; calyx shortly 5-toothed; standard petal about 1 cm long and broad, pink or purplish; wing and keel petals pinkish. Fruit ellipsoid to subglobose, 1-seeded, indehiscent, about 3.5 cm long.

Habitat and Distribution

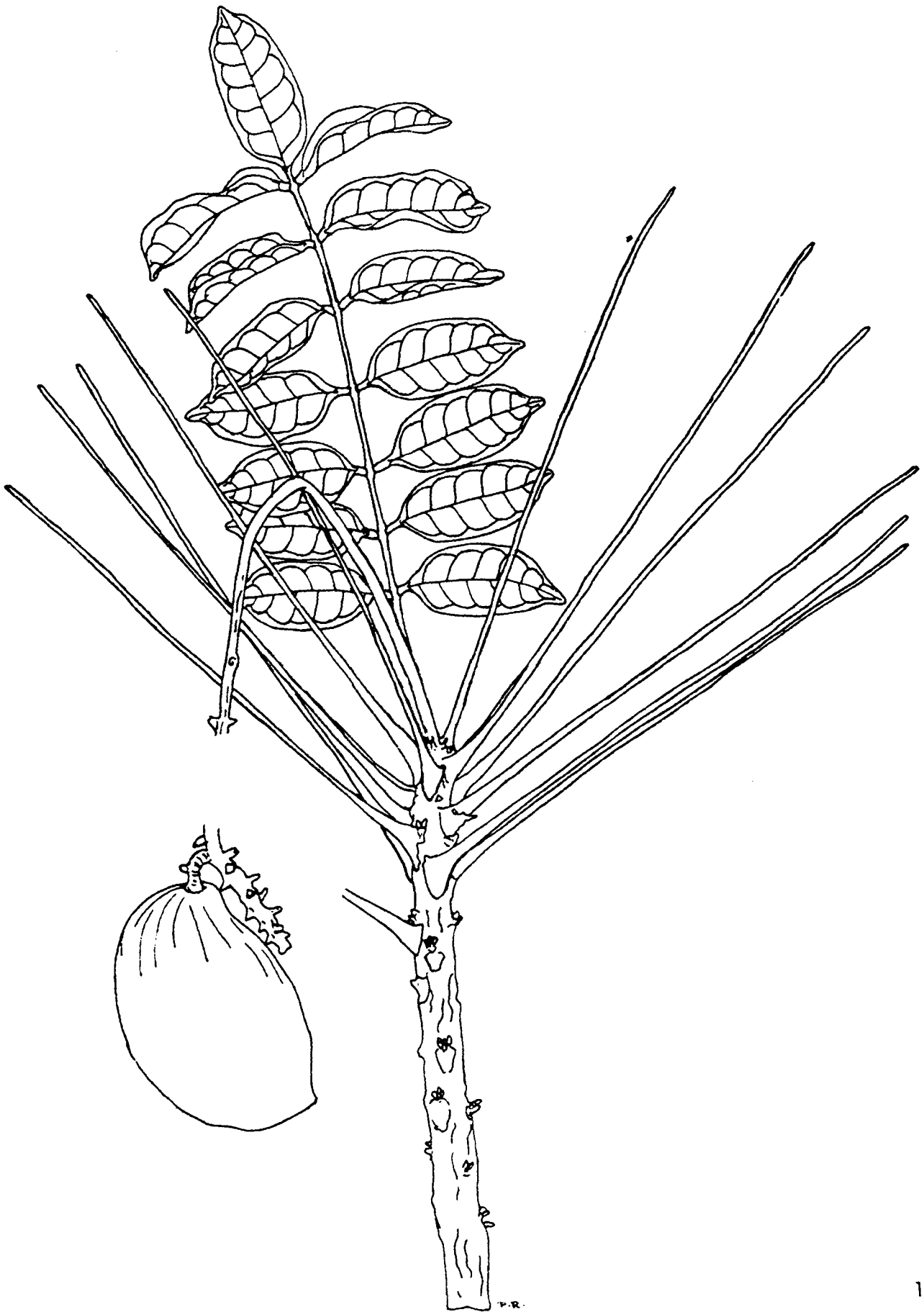
Native in forests and planted in the American subtropics and tropics; also in Africa.

Medicinal Uses

A decoction of the bark is a powerful anthelmintic, narcotic and purgative. The inner bark is scraped and used as an antidote for snake bites. The fruit is thought to be poisonous and therefore great care is required in its use. The seed is burnt in homes to get rid of bat infestations. Twigs may be used to make nests for 'setting hens' since it is believed that the scent discourages mites ('nimbles') and fleas.

Biodynamic Notes

The alkaloids, berberine and andirine, were obtained from the bark (Wong, 1976).



Annona muricata

KAIEDI
SORASAKA
SOURSOP

(ANNONACEAE)

Description

A tree rarely more than 8 m high. Leaves alternate, oblong-obovate, acuminate, 8-25 cm long, 3.5-8 cm broad. The solitary flowers are pendent in the leaf-axils, with 6 thick, greenish-yellow petals, the outer 3 about 3 cm long and broad, acuminate pointed, valvate, the inner nearly as long. The fruit is usually about 20 cm long and 10 cm broad but may be larger; it is covered with large curved soft prickles.

Habitat and Distribution

Native of tropical America; common in cultivation worldwide.

Medicinal Uses

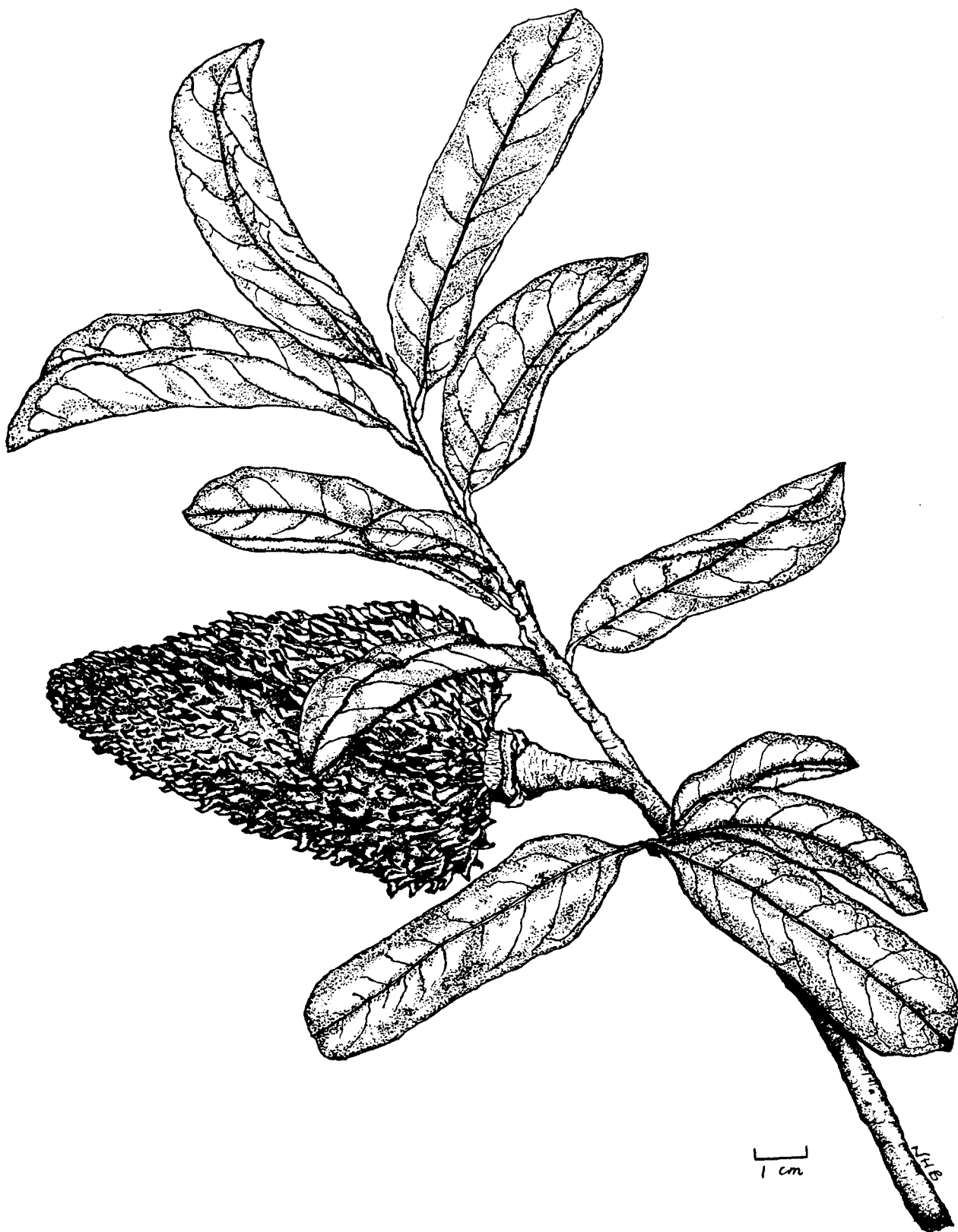
A decoction of the leaves, sometimes mixed with Pear (*Persea americana*) leaves, is taken for hypertension and heart conditions. The centre of the mature fruit is given to children to cure bed-wetting and to adults for relief of high blood pressure; a decoction of leaves is similarly but sparingly administered.

Biodynamic Notes

Several alkaloids have been reported in species of *Annona*. Seven isoquinoline alkaloids have been isolated from the leaves, root- and stem-bark of *A. muricata*. These include: reticuline (main alkaloid), coclaurine, coreximine, antherspermine, stepharine, anomurine and anomuricine (Leboeuf et al, 1981).

An aqueous extract of decorticated seeds contained glucose, xylose, galactose, mannose, xylopyranosylglucose and ursolic acid (Koiman, 1967).

The ethanolic extract of leaves and stems of Sugar-apple (*A. squamosa*) is reported to have anticancer activity (Bhakuni et al, 1969). The aporphine alkaloids anonaine, rosemerine, norcorydine, corydine, norisocorydine, isocorydine and glaucine were isolated and anticancer activity was shown by corydine (Bhakuni et al, 1972). Other compounds found in this species are diazepine, squamolene, friedelin, xylopine, methylarmepavine, lanuginosine and a nitropheteroside (Yang and Chi-Ming, 1972; Bhaumik et al, 1979; Forgacs et al, 1980).



(ARISTOLOCHIACEAE)

Description

A climbing shrub with deeply fissured corky bark. Leaves alternate, rather far apart; the blade ovate and acute or suborbicular, rounded at the base with broadly divergent lobes, 5-nerved, to about 12 cm long and 14.5 cm broad, rather leathery; petioles to 6 cm long. Inflorescences on the woody branches. Flowers with a 1-lipped untailed perianth, the tube about 7.5 cm long, inflated at the base, bent sharply upwards in the middle, the unilateral limb 5-6 cm long and widely spreading; the interior of the tube furnished with large double flattened glands; androgynophore 6-lobed. Capsule about 10 cm long, linear-oblong, obtuse, 6-valved; seed about 6 mm long, oblong, retuse, flattened, narrowly winged, concavo-convex with a prominent midnerve.

Habitat and Distribution

In forests in Guyana, with the leaves, flowers and fruits mostly in the tree-tops.

Medicinal Uses

A decoction of the vine is used as an oral contraceptive for women. It is believed that, by inhalation of the volatile oil, the scent alone is sufficient as a nasal contraceptive and, as such, the vine with leaves is often placed under the pillow or bed. A syrup is made from a decoction of the vine and green Pineapple (*Ananas comosus*) and taken orally as an abortifacient. A decoction of the vine, together with Haiawa (*Protium hostmannii*) acts as an emetic for 'dropsy', and as an antispasmodic. An infusion of scrapings of inner bark is used for the relief of indigestion, coughs, asthma, as an antispasmodic, and as an enema for treating thrush. *Aristolochia trilobata*, a species of riverbank thickets, is used as an emmenagogue.

Biodynamic Notes

Juniper camphor, a sesquiterpene lactone, was isolated from the volatile oil (Trotz, unpublished). The ground vine, fed in diet to female mice, delayed oestrus (Trotz, unpublished). A related species, *A. indica*, contains antifertility agents which include sesquiterpenoid alcohols (Pakrashi et al., 1980). An extract of roots of *A. indica* was shown to have potent pregnancy intercepting activity and p-coumaric acid which was isolated showed fertility inhibiting properties (Pakrashi and Pakrashi, 1977; Pakrashi and Chakrabarti, 1978). Aristolochic acid, a phagocyte stimulant and tumor-inhibitor, was found in several species of this genus (Sharma et al., 1982; Singh and Philip, 1980; Batsford et al., 1980).



Artocarpus altilis
(Syn. *A. communis*)

BREADFRUIT

(MORACEAE)

Description

A tree to 15 m or more high, with large incised leaves, the twigs marked with the ring-scars of spathaceous stipules. The male flowers are borne in spikes and the female in spherical heads on the same plant. The receptacle bearing the female flowers enlarges to a spherical stalked 'fruit' 20-30 cm in diameter, at maturity green and smooth or with low superficial bumps. A seeded variety, sometimes called Breadnut, usually has a rougher surface.

Habitat and Distribution

There are numerous varieties all the progeny of importations, originally from the South Pacific, which began in 1793 when the first plants in the New World were established in St. Vincent and Jamaica. They are common in cultivation everywhere where rainfall is adequate, mostly at low elevation.

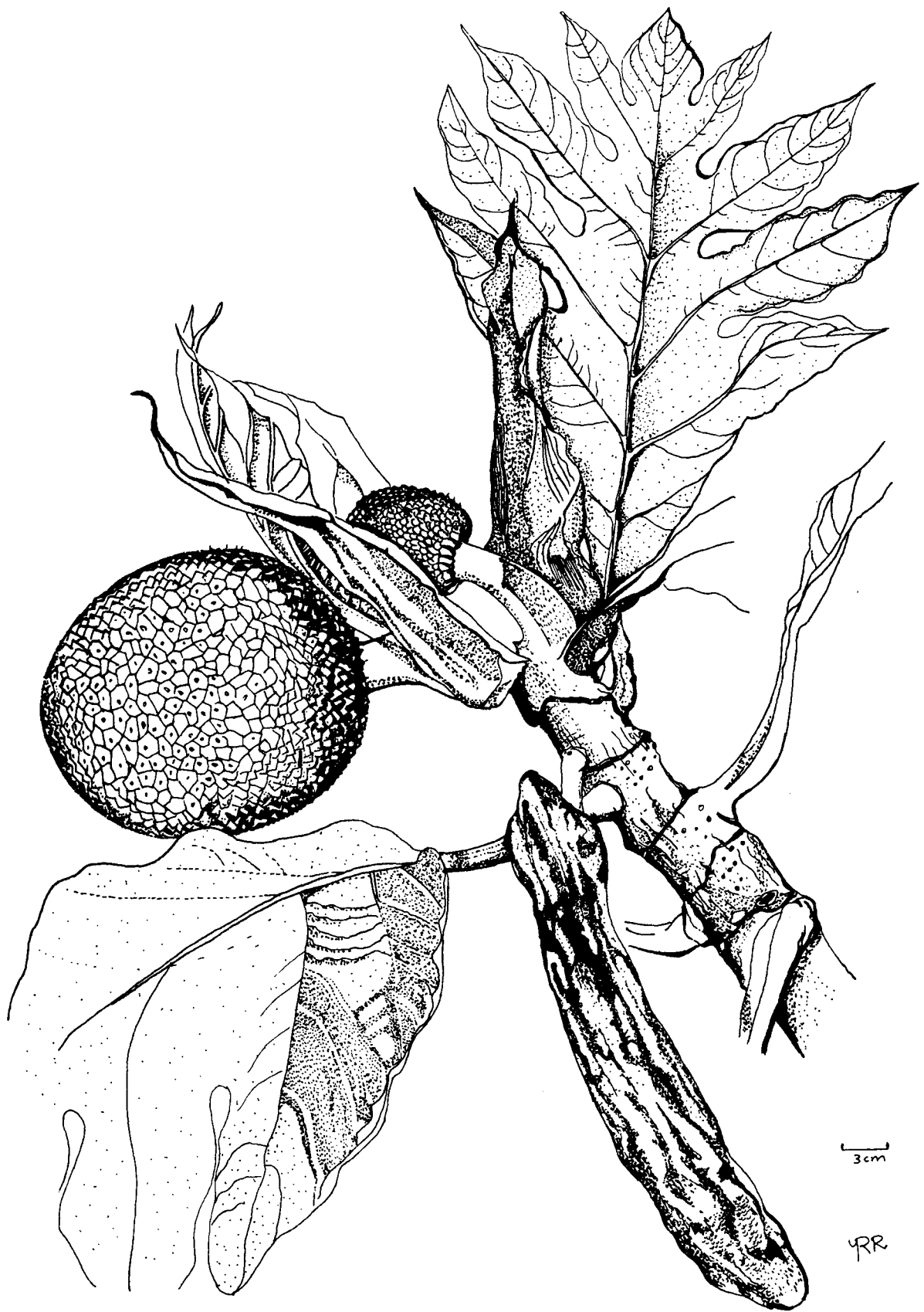
Medicinal Uses

The leaves are boiled together with the leaves of Avocado Pear (*Persea americana*), Papaw (*Carica papaya*) and Soursop (*Annona muricata*) and the resulting beverage is taken as a cure for hypertension and diabetes.

Biodynamic Notes

The leaves have the phenols quercetin and camphorol and gamma-aminobutyric acid, all of which lower blood pressure (Watt and Breyer-Brandwijk, 1962; Durand et al., 1962).

The cyclopropane sterols cycloartenylacetate, cycloartenol and cycloartenone were obtained from the bark of *A. altilis* (Pavanasiviam and Sultanbawa, 1973), whereas cycloart-23-ene-3beta,25-diol, cycloart-25-ene-3beta,24-diol, cycloartenol and alpha-amyrin were isolated from the fruit of the same plant (Altman and Zito, 1976).



3cm

YR

Asclepias curassavica

(ASCLEPIADACEAE)

AGYA-PANI
BLOOD-PLANT
PITIKWANHA
RED-HEAD PLANT
SILKWEED
WILD IPECACUANHA

Description

A weak-stemmed herb to about 1 m high with milky sap. Leaves opposite in pairs, linear-lanceolate to lanceolate, pointed at both ends, mostly to about 11 cm long and 3 cm broad. Flowers in terminal and axillary umbels; pedicels 1-2 cm long; the 5 red corolla-lobes 6-8 mm long, the corona yellow. Fruit a spindle-shaped follicle opening when ripe to expose and release numerous flat reddish-brown seeds overlapping like shingles; each seed bears at one end a silky coma of fine hairs.

Habitat and Distribution

Throughout the American subtropics and tropics as a weed of pastures and waste ground. Introduced and fully naturalized in many parts of the Old World.

Medicinal Uses

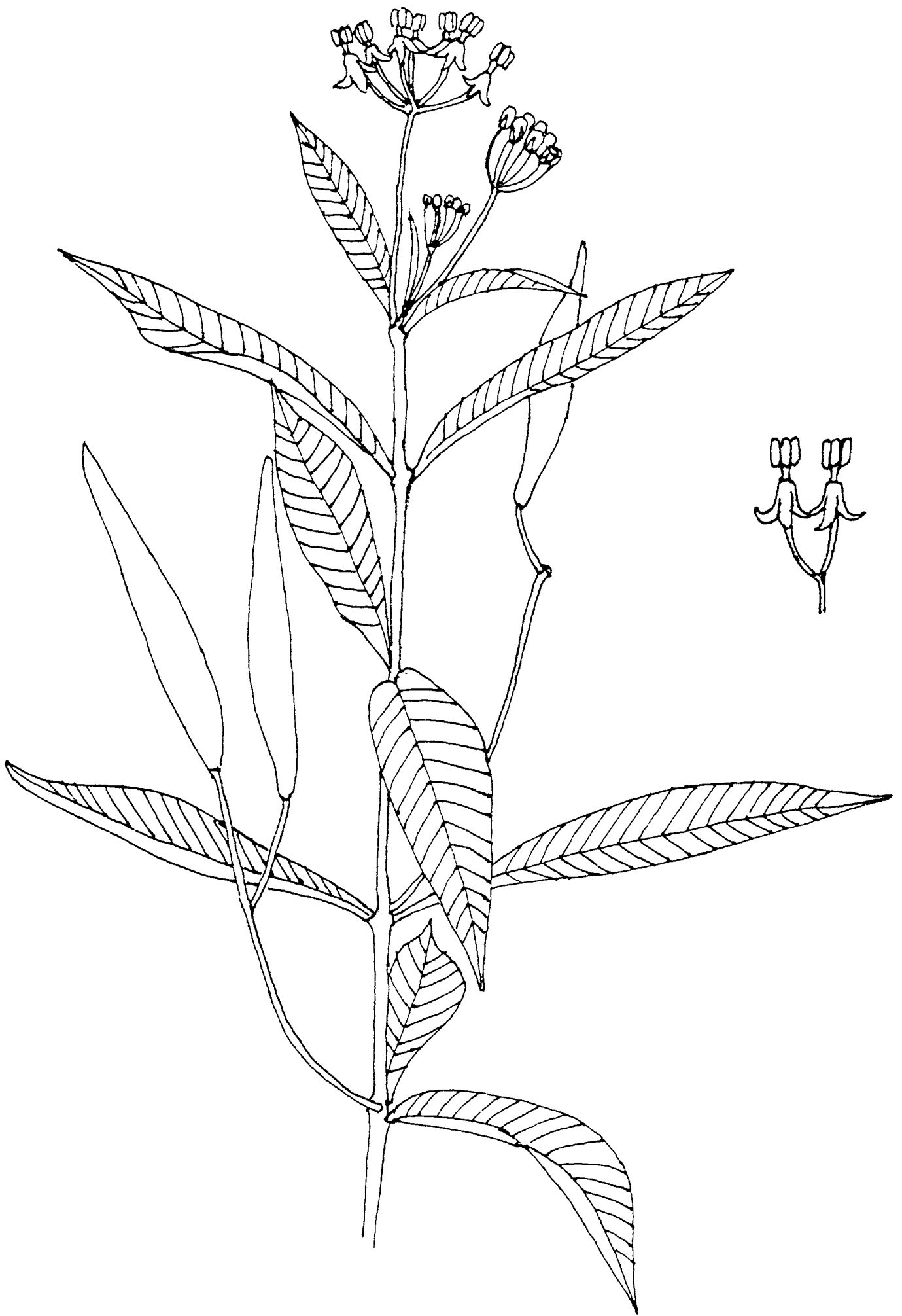
The juice of the macerated plant is mixed with disinfectant and applied externally to cure lotta, ringworm, sores, rashes and dermatitis. A decoction of the plant is used for the relief of dysentery, the root being most effective. To cure sores, the leaves are crushed together with Snake-vine (*Cissus erosa*) and Bird-vine (*Phthirusa adunca*) and applied as a poultice to the affected area.

Biodynamic Notes

Extracts of this plant proved toxic to rabbits and rats (Hassan and Reed, 1952). Extracts of this and other species were found to stimulate the central nervous system (Del Pillar, 1971). Alcoholic extracts of the dried plant, containing the cytotoxic principle calotropin showed inhibitory activity when tested in vitro against cells derived from human carcinoma of the nasopharynx (Kupchan et al, 1964). Asclepin showed cardiotoxic activity (marked positive inotropic effect) in vitro and in vivo at doses of 1.46 ± 0.09 $\mu\text{g}/\text{ml}$, and cardiotoxicity at doses of 2.15 ± 0.19 $\mu\text{g}/\text{ml}$ (Patnaik and Kohler, 1978).

The latex of *A. curassavica* contains cardenolides and esterified triterpenes as major constituents (Groeneveld and Van der Made, 1982). Cardenolides including asclepin, calactin, uzarigenin and calotropin have been identified in Indian plants (Singh and Rastogi, 1969). Brazilian plants contain calotropin, calotropagenin, coroglaucigenin, corotoxigenin and uzanin (Tschesche, 1972; Kupchan et al, 1964). Four aglycones of the cardenolide series i.e. asclepagenin, clepogenin, curassavogenin and ascurogenin were isolated from leaves (Von Cuiv et al, 1967; Jordan, 1967).

Other compounds that have been identified in *A. curassavica* include the sterols, beta-sitosterol and beta-amyrin, fatty acids (myristic, stearic, palmitic, oleic, linoleic, linolenic, arachidic and arachidonic), flavonoids (rutin and quercetin), carbohydrates (glucose and fructose) and acidic mucilage (Karawya et al, 1980).



(MELIACEAE)

Description

An evergreen densely leafy tree to 15 m or more high; bark rusty-brown. Leaves alternate, compound and mostly imparipinnate with a small terminal leaflet; leaflets about 8 pairs, very asymmetric at the base, long-acuminate, serrate-dentate, to about 11 cm long and 3 cm broad, glabrous. Panicles axillary with numerous white, pedicelled, mostly hermaphrodite flowers; petals oblanceolate, 5-6 mm long; staminal tube with 10 anthers and appendages. Fruit ellipsoid, drupaceous, 1 or rarely 2-seeded, smooth, 1.2-2 cm long, yellow when ripe.

Habitat and Distribution

A native of India, widely introduced and cultivated in the tropics but not everywhere common; sometimes cultivated in plantations for firewood; planted as a street tree in Cuba and Central America.

Medicinal Uses

A decoction of the leaves is used as a bitter tonic for treating diabetes and jaundice.

A bath is made from leaves and used to treat measles, also leaves are spread on the bed of a person suffering from measles, to relieve itching. Aerial parts of the plant are used to control insect pests. A decoction of aerial parts, including flowers, is used as an abortifacient and a decoction of the bark is used to treat malarial fevers.

Biodynamic Notes

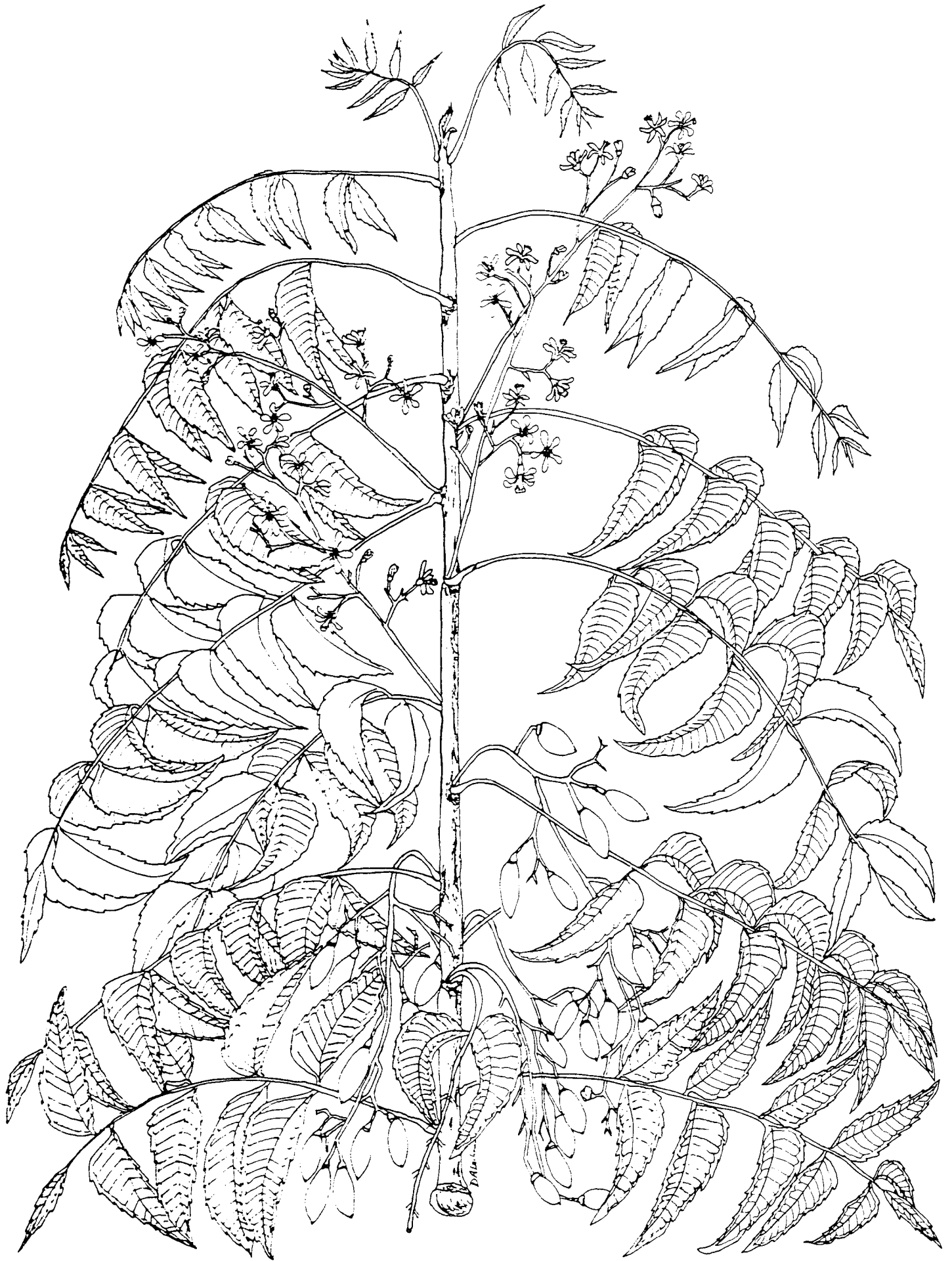
The leaves of *A. indica* have been used in treatment of ulcer, eczema, jaundice and liver complaints and a tetranotriterpenoid, nimocinol, has been isolated from the ethanolic extract and is expected to have potential pharmacological application (Siddiqui et al, 1984).

Hypotensive activity was confirmed in the ethanolic extract of the leaves and an isoprenylated flavone, nimbaflavone, along with the meliacins, nimbolide, 3-disacetyl salannin and sitosterol were isolated (Garg and Bhakuni, 1984a). The leaves have also been reported to reduce fertility of male mice or rats without affecting spermatogenesis (Deshpande et al, 1980).

A number of tetranotriterpenoids (meliacins) have been isolated from the seeds (Kraus and Cramer, 1981a, b; Kraus et al, 1981).

Fresh neem seed oil yielded salamnolide, a new meliacin (Garg and Bhakuni, 1984b).

Melicitrin (a glycoside of myricetin), quercetin-3-galactoside and kaempferol-3-glucoside were obtained from the flowers (Subramaniam and Nair, 1972).



Bambusa vulgaris

**BAMBOO
KAMWATTA**

(GRAMINEAE or POACEAE)

Description

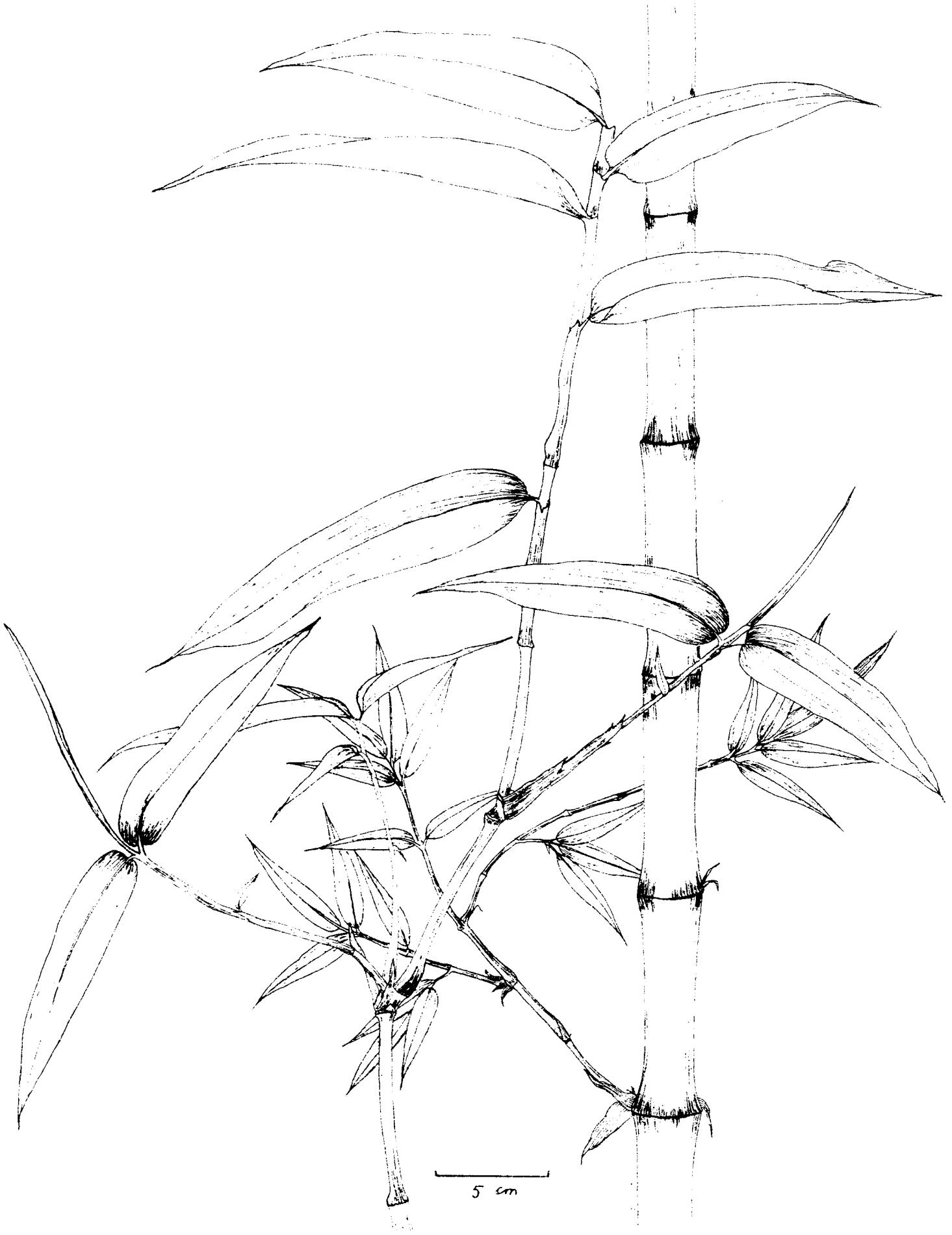
An arborescent grass with culms to 10 m or more high, deriving from a perennial massive stock by means of short ascending branches. Stem 10-12 cm in diameter with thickened ring-like nodes and hollow internodes. Leaf-blades articulated to and deciduous from the sheath. Flowering infrequent.

Habitat and Distribution

Native of the Asian tropics and now very widespread in warm countries.

Medicinal Uses

The leaves are boiled and used as a fever bath. A decoction of the leaves is also used by women as a 'clean-out' (i.e. for dilatation and curettage) and as an aid to the expulsion of the afterbirth for both women and cows.



Bauhinia scala-simiae

HIKURI-TARAFO
MONKEY-LADDER
TURTLE-STEP

(LEGUMINOSAE - CAESALPINIOIDEAE)

Description

Massive woody climber, wide-scrambling to the tops of trees, the base of the stem as thick as a man's body, the stem flattened and pocketed alternately to simulate a ladder. Lower leaves bilobed, more or less strongly 9-nerved, variable in middle and high positions on the plant, the upper mature leaves being mostly quite entire and about as long as broad, from 4-6 cm to 20-25 cm, the lower surface conspicuously reticulate and densely dark coppery-villous. Racemes axillary, few-flowered; calyx about 1 x 1.5 cm; corolla yellowish-white with brown veins, the lower four petals subequal, nearly 2 cm long, the fifth petal slightly small and folded. Pod flat, densely rusty-tomentose, 12-16 cm long and about 4.5 cm broad.

Habitat and Distribution

Frequent on trees along the creeks of the Essequibo River.

Medicinal Uses

A decoction, or infusion in wine, of the stem is used as a tonic and is said to possess aphrodisiac properties. It is often used with other plants such as Cockshun (*Smilax* sp.), Devil-doer (*Strychnos* spp.), Kapadula (*Doliocarpus* sp.) and Sarsparilla (*Philodendron* sp.). The decoction is said to be particularly useful for patients suffering from back-ache.

Biodynamic Notes

The bark and leaves of *Bauhinia racemosa* are used in treating skin diseases, headache and malarious fever. The seed oil yielded lauric, myristic, palmitic, stearic, oleic and linoleic acids (Joshi et al, 1981).

Beta-sitosterol, lupeol and dimethoxyflavone pyranoside were obtained from *B. variegata* (Gupta et al, 1980).



Bidens alba
(Syn. *B. pilosa*)

BUR-MARIGOLD
SPANISH-NEEDLE

(COMPOSITAE or ASTERACEAE)

Description

A short-lived erect variably hairy herb, rarely as much as 1 m high. Leaves opposite in pairs, the lower often simple, the upper with one to three pairs of lateral toothed leaflets. Flower-heads on long or short stalks in a terminal inflorescence. Outer florets of the head with white spreading conspicuous limbs, these rarely altogether wanting; inner flowers, tubular, short, regular, yellow. Achenes spreading at maturity, each with 2-3 retrorsely barbed awns.

Habitat and Distribution

A common weed of roadsides and waste places, generally distributed through the tropics of both hemispheres.

Medicinal Uses

An infusion of the entire plant is used for diabetes and baby thrush. The juice from fresh leaves is used as an eye-wash especially to allay itching and tiredness.

Biodynamic Notes

Juices of the plant have shown antibacterial properties (Watt and Breyer-Brandwijk, 1962). Phenylheptatriyne which is at present in the plant cuticle is said to protect the plant against certain micro-organisms in the presence of sunlight (Wat et al, 1979). The consumption of this plant in South Africa was found to contribute to the etiology of human oesophageal cancer. It was shown to be a weak oesophageal carcinogen (Mirvish et al, 1985).

Phenylheptatriyne, isolated from *B. pilosa*, showed cercaricidal activity towards trematode cercariae (Graham et al, 1980), and other antiparasitic activity in extracts has been attributed to polyacetylene phenylheptatriyne (N-Dounga et al, 1983; Towers, 1984).

Bidens cynapiifolia

This is a common weed in warm parts of America, also known as Spanish-needle in Guyana. It is a short-lived erect bushy herb like *B. alba* but usually taller. The leaves are bipinnate with caudate-acuminate leaflets. The outer florets of the head are rather small and yellow, and the usually 4-awned achenes are curved outwards at maturity.

Medicinal Uses

A decoction of the entire plant is used for fluttering hearts and for diabetes.



Bryophyllum pinnatum
(Syn. *Kalanchoe pinnata*)

LEAF-OF-LIFE
SAGIWANOR
TREE-OF-LIFE

(CRASSULACEAE)

Description

A glabrous laxly erect fleshy herb to about 1 m high. Leaves opposite in pairs, the lower simple, the upper pinnate, the blades to about 18 cm long and 12 cm broad, the margins with curved crenations, producing at times small plantlets in the marginal notches. Flowers nodding in terminal panicles; calyx light green turning yellowish, inflated, about 3 cm long; corolla dull brownish-red, 2.5-4.5 cm long, the 4 lobes triangular; stamens attached to the constriction of the corolla-tube.

Habitat and Distribution

Native of Madagascar; introduced as an ornamental into many warm countries and escaping from cultivation occasionally and becoming naturalized, especially in rocky places.

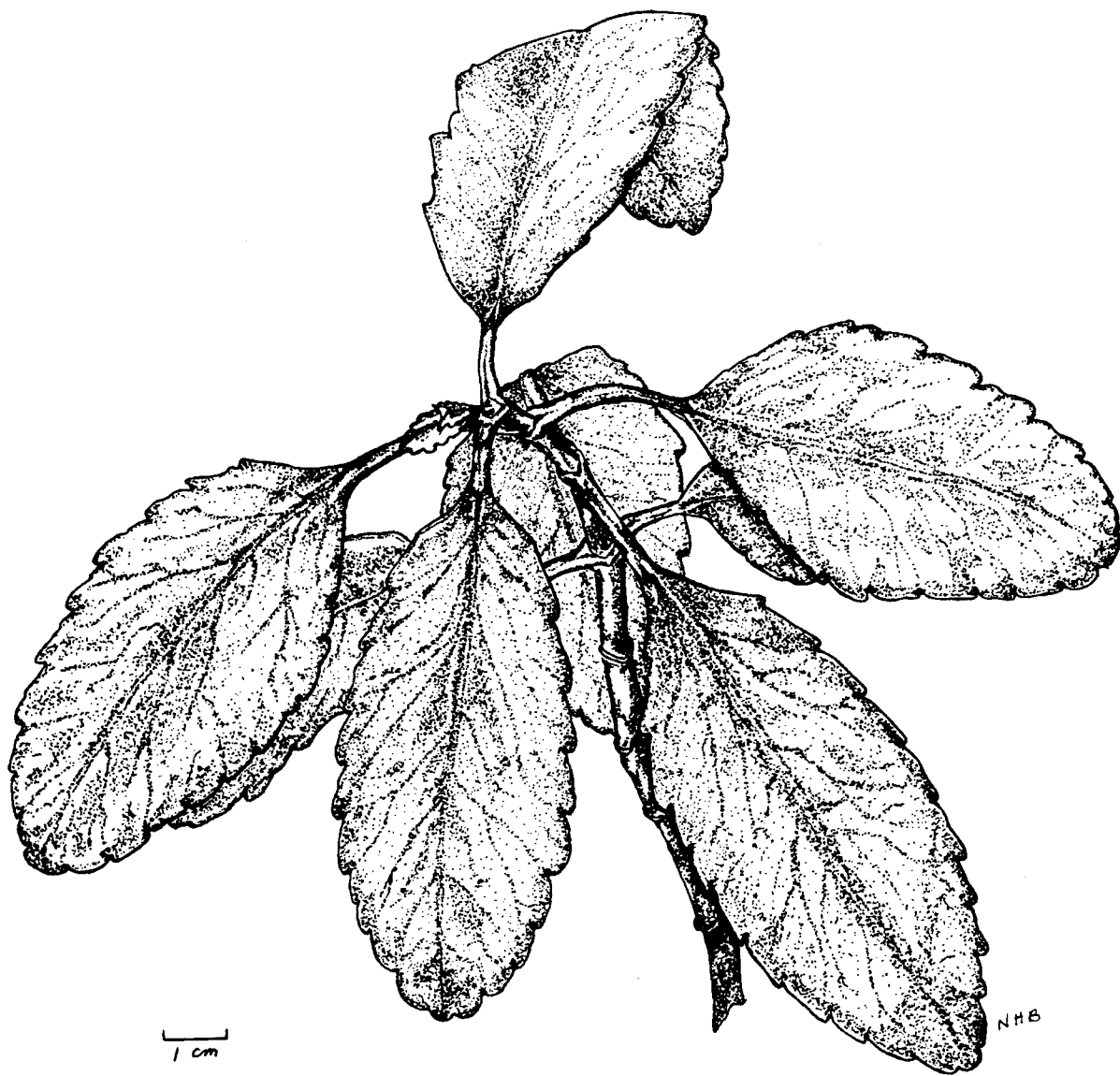
Medicinal Uses

Juice from the leaves may be mixed with a pinch of salt and taken orally for colds and coughs, and also to allay gripes and looseness of the bowels in teething babies. The juice from leaves is also squeezed directly into the eyes to relieve pain in cases of conjunctivitis ('red' or 'pink' eyes).

Sap from the leaves is applied to sores and swellings to relieve pain, and whole leaves, together with the leaves of Wild Tobacco (*Lisianthus grandiflorus*), are warmed and strapped to the affected area for the relief of pain resulting from hernia.

Biodynamic Notes

The plant possesses antimicrobial properties (Boakye-Yiadom, 1977). Fumaric acid was isolated from this plant (Gand and Gupta, 1972).



1 cm

NHB

Byrsonima coriacea var. *spicata*

HICHA
HURIA

(MALPIGHIACEAE)

Description

A tree to 40 m high, or, when coppiced, shrub-like; bark dark brown with white marks; young twigs densely rusty-silky-hairy. Leaves opposite in pairs, oblong-lanceolate to elliptic, acute or acuminate at the tip, cuneate at the base, to 18 cm long and 5.5 cm broad, papery, glabrous above at maturity except along the midrib, light brown with persistent hairs beneath; petioles short, joined across the node. Racemes terminal, peduncled, 15-40-flowered. Flowers yellow, 1.5 cm across, on slender pedicels; petals clawed, the blade reniform, 5-6 mm long, 7-8 mm broad, the mid-petal smaller; stamens 10. Fruit a globose yellow drupe to 14 mm in diameter with one 3-locular pyrene.

Habitat and Distribution

In forests on soils poor in nutrients and relict in derived savannas, in Central and northern South America, Trinidad and Tobago.

Medicinal Uses

A decoction of the bark is used as an antidote for rattlesnake bites and also as a purgative and febrifuge.

Biodynamic Notes

Triterpenoids were isolated from plants of this genus (Souza, 1970). In a related species, *B. verbascifolia*, triterpenes, sterols, flavonoids, gallic tannins and saponins were detected and eicosane, heneicosane, alpha-amyrin, oleanolic and ursolic acid, quercetol, isoquercetin and 3-arabinosyl-quercetol were isolated (Dosseh et al, 1980).



Cajanus cajan

GREEN PEAS
PEAS
PIGEON-PEAS

(LEGUMINOSAE - PAPILIONATAE)

Description

A short-lived shrub to about 3.5 m high; some modern varieties are uniformly shorter. Leaves alternate, with three elliptical silvery-hairy leaflets to about 9 cm long. Flowers in stalked racemes, yellow or yellow with brown markings, 1.5-1.8 cm long. Pods about 5-seeded, obliquely depressed between them, to about 7 cm long, 1.3-1.4 cm broad, finely pubescent and glandular. Seeds smooth, green, about 8 mm broad.

Habitat and Distribution

Native of the Asiatic tropics, now widespread in cultivation in the subtropics and tropics of both hemispheres.

Medicinal Uses

The pods, or the leaves if the plant is not in fruit, are boiled with salt and administered thrice daily with a few drops of 'steel-drops' for the relief of leucorrhoea.

The leaves and flowers are boiled and taken orally for diabetes. This preparation is also believed to act as a diuretic.

The macerated leaves are applied externally as an antiperspirant/deodorant. An infusion of leaves is used as a fever bath and also to relieve headaches.

As a treatment for venereal disease, Pigeon-pea leaves are boiled with Coarse-leaf Thyme (*Plectranthus amboinicus*) and Cloves,* and a few drops of 'Hoffman's drops' and 'steel-drops' added. The liquid is then strained and drunk.

Biodynamic Notes

Cajanone, an antimicrobial agent, was isolated from the root of this plant (Preston, 1977). Four phytoalexins were isolated from the seed and included cajanin, cajanol and two isoprenylated isoflavones (Dahiya et al, 1984).

* Eugenin, found in the seed of *Syzygium aromaticum* (Clove) showed antiviral activity against herpes simplex (Takechi and Tanaka, 1981). The major constituent of the volatile oil of Clove is the phenol eugenol (Purseglove, 1981). Extracts were found to inhibit brain acetylcholinesterase (Akinrimisi and Akiwande, 1976), and were used in pharmaceuticals for peptic ulcer and for treating gum diseases including pyorrhoea (Tu, 1979; Parisheva, 1985).



Calotropis gigantea

MADAR-FLOWER
WARAIO-BALLI

(ASCLEPIADACEAE)

Description

A shrub to 2 m high, with straggly branches, the bark pale and downy-white when young; sap milky. Leaves opposite in pairs, soft-textured and downy when young, elliptic or oblong-obovate, sessile or shortly stalked, usually obtuse at the apex and cordate at the base, to 14.5 cm long and 8 cm broad, remaining downy beneath. Flowers pentamerous in terminal umbelliform racemes, showy with a very short-tubed mauve corolla to 2 cm long, the lobes ovate, reflexed; corona-scales about 1.2 cm long, joined to the stalk of the boss-like central prominent gynostegium. Fruit-follicles inflated, smooth, about 8 cm long. Seeds flattened, ovoid, with a tuft of hairs at one end.

Habitat and Distribution

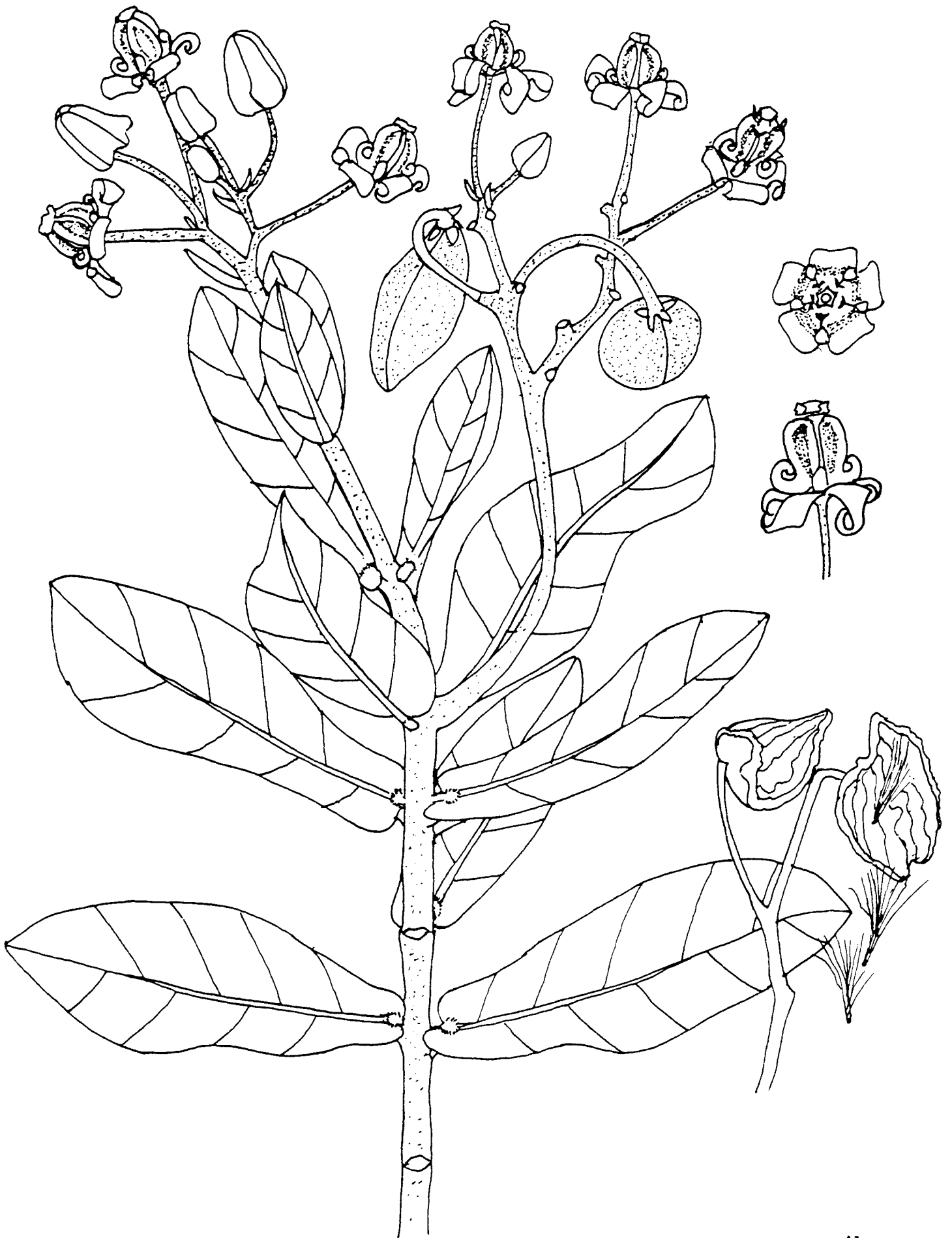
In open ground in disturbed areas. Native of the Old World tropics, becoming naturalized in tropical America following introduction and cultivation as an ornamental, and also for use in Hindu religious functions.

Medicinal Uses

The milky sap is applied externally to treat burns, bruises, cuts, sores and to stop bleeding. It is mixed with milk and salt and taken orally as an emetic for relieving heavy colds. An infusion of the leaves is drunk for heavy chest colds and heart conditions.

Biodynamic Notes

The triterpenes, alpha-amyrin, beta-amyrin, psi-taraxasterol, taraxasterol and lupeol were identified in the hexane and methanol soluble extract of the latex coagulin (Thakur et al, 1984), and two cysteine proteinases, calotropins DI and DII, and calactin were isolated from the latex (Sengupta et al, 1984, Hesse and Ludwig, 1960).



(EUPHORBIACEAE)

Description

A rather weak-stemmed straggly herb to about 1 m high, with spreading stiff gland-tipped hairs. Leaves alternate, narrowly lanceolate to oblong, obtuse or acute at the tip, rounded at the base, serrate, 4-12 cm long, 1-2.5 cm broad, with many pinnate nerves prominent beneath; petioles 3-20 mm long, hispid. Plants monoecious. Racemes terminal and axillary, 4-10 cm long. Flowers small, with white petals; male flowers pentamerous with lanceolate sepals about 1.5 mm long and unequal oblanceolate petals; female flowers with 6 sepals and 5 petals. Capsule 4-5 mm long, 5-7 mm broad, muricate.

Habitat and Distribution

In swamps and wet meadows in tropical America and Africa.

Medicinal Uses

A decoction of the aerial parts is taken as a tea generally and specifically for bladder and kidney disorders and the relief of back-pains.



Capraria biflora

BHUYARA
NIGGER-BROOM*
WILD TEA

(SCROPHULARIACEAE)

Description

An erect bushy herb or undershrub to about 1.5 m high, very variable in hairiness. Leaves spiral, oblanceolate to elliptic-lanceolate, pointed at both ends, to about 9 cm long and 1.5(-2) cm broad, serrate at least in the distal half. Flowers 1-4 on slender axillary pedicels; sepals linear-lanceolate, 4-6 mm long; corolla subregular, campanulate, white, about 1 cm long. Capsule ovoid to ellipsoid, 4-6 mm long, with a persistent style.

Habitat and Distribution

Common on disturbed ground and along roadsides and in ditches. Throughout subtropical and tropical America; introduced and established sporadically in the Old World.

Medicinal Uses

The leaves are used as a tea generally.

The entire young plant is ground and mixed with soft grease and sugar, and applied as a poultice on hard boils to bring to a point.

Footnote

* The name Nigger-broom is used for this plant and for species of *Sida* for which it is regarded here as more definitive.



Capsicum frutescens

BIRD-PEPPER
BOKORAMANA
BURGOMAN PEPPER
KWA-BADA

(SOLANACEAE)

Description

A short-lived perennial undershrub, 0.5-1.5 m high, with erect or straggling branches. Leaves alternate, ovate, shortly cuneate at the base, acuminate at the tip, mostly to about 9 cm long and 4.5 cm broad, often smaller, glabrous to thinly pubescent. Flowers pedicellate, usually two per node, erect at flowering; calyx subtruncate; corolla greenish-white, 6-10 mm long. Fruits usually narrow and rarely over 3 cm long and 1 cm broad, sometimes globose, and almost always very pungent, usually red at maturity.

Some of the many varieties of Chilli Peppers belong to the closely related *C. annuum* which also includes the less pungent Sweet Peppers. The two species are normally distinguished by the plants of *C. annuum* being more usually cultivated and annual, with larger leaves and solitary flowers with often curved pedicels, the calyx 5-dentate, the corolla whitish and the fruit larger, but some extremely pungent forms occur.

Habitat and Distribution

The plants or their progenitors were probably native of tropical America whence they were early transported to the Pacific and other warm countries. They are cultivated and naturalized in disturbed places and thickets, mostly near habitations.

Medicinal Uses

An infusion of the leaves and green fruits is drunk for coughs and colds. The fruits are given to poultry as a treatment for yaws and colds.

Biodynamic Notes

Capsaicinoids are pungent principles obtained from species of *Capsicum* and are powerful skin irritants (Evans and Schmidt, 1980).

A liniment for the treatment of joint diseases such as arthritis consists of a mixture of red pepper (seeds and pods), white petroleum jelly and lead-free gasoline. The effectiveness of this mixture was demonstrated on a horse (Levie, 1982a, b). An ointment made from *Capsicum minimum* and several other plants has been used to treat varicose veins, haemorrhoids, eczema, psoriasis and other skin ailments (Berman, 1985).



Carapa guianensis

CRABWOOD
KARABA

(MELIACEAE)

Description

A deciduous or semi-evergreen tree 25-35 m or more high, with a dense crown; bark usually greyish, scaling in flat squarish plates; young branches thick, rufous-brown. Leaves alternate, paripinnate or with a vestigial terminal leaflet; leaflets opposite in usually 4-8 pairs, elliptic, shortly acuminate, asymmetric at the base, mostly 20-40 cm long and 6-14 cm broad, sparsely hairy on the midrib, brilliant wine-red in flush. Inflorescence axillary or subterminal, a large spreading much-branched panicle. Flowers unisexual, numerous, in cymules, 5-6 mm long, tetramerous; petals white or creamy-white, pinkish outside; staminal tube orange-tipped. Capsule subglobose, 4-valved, 5-10 cm long, 6-8 cm broad; seeds angular, brown, smooth or pitted, 4-5 cm in diameter.

Habitat and Distribution

In swampy ground and low-lying forest. From Belize to tropical South America and eastern Cuba to Trinidad and Tobago.

Medicinal Uses

The seeds yield an oil which is used as a skin lotion, especially for children suffering from thrush and cracked dried skin. The oil is also applied for the relief of pain, swelling and itching. Scrapings from the inner bark are applied as a poultice on sores.

A decoction of the bark is taken orally for diarrhoea.



(SAPINDACEAE)

Description

A slender climber with strong flexible ribbed stems. Leaves alternate, bi-ternately compound, to about 8 cm long, with ovate or lanceolate leaflets to 3.5 cm long and 2 cm broad. Inflorescences axillary, corymbose, developing coiling tendrils. Flowers 4-6 mm long, white with an orange appendage to the anterior petal. Fruit a 3-lobed, inflated, membranous, capsule about 2 cm broad, broader than long. Seed globose, about 3 mm in diameter, black with a 2-lobed white aril.

Habitat and Distribution

In thickets; general in the tropics.

Medicinal Uses

A decoction of the entire plant is used for the relief of chest colds and asthma. A decoction of this plant, together with Inflammation-bush (**Vernonia cinerea**) and Ironweed (**Desmodium barbatum**), is used for kidney disorders.



Carica papaya

PAPAW
PAPAYA

(CARICACEAE)

Description

An unbranched or little-branched soft-stemmed short-lived tree to 5 m or rarely more high. Leaves spirally arranged in a crown, large and dissected on long stalks, the blade divided and lobed, latterly caducous leaving conspicuous scars on the trunk. The stems are hollow and all parts of the plant exude a thin milky sap. The male and female flowers are normally borne on separate plants, but very rarely some plants are found which bear bisexual flowers. The male flowers are produced in a long-stalked panicle, several together; they are very fragrant. The female flowers are solitary or few together in the axils of the leaves; they are larger. Fruits, in different varieties, vary in size and shape; a common shape is ovoid or pear-shaped narrowed to the stigma-tip, but flask-shaped fruits, narrow at the base, occur. The flesh of the fruit is yellow or orange and the seeds in the central cavity have pulpy coats.

Habitat and Distribution

Natives of tropical America, now widespread in cultivation and naturalized in many warm countries.

Medicinal Uses

A proteolytic enzyme in the leaves and immature fruit has a meat-tenderizing property. The green fruit can be cooked and eaten.

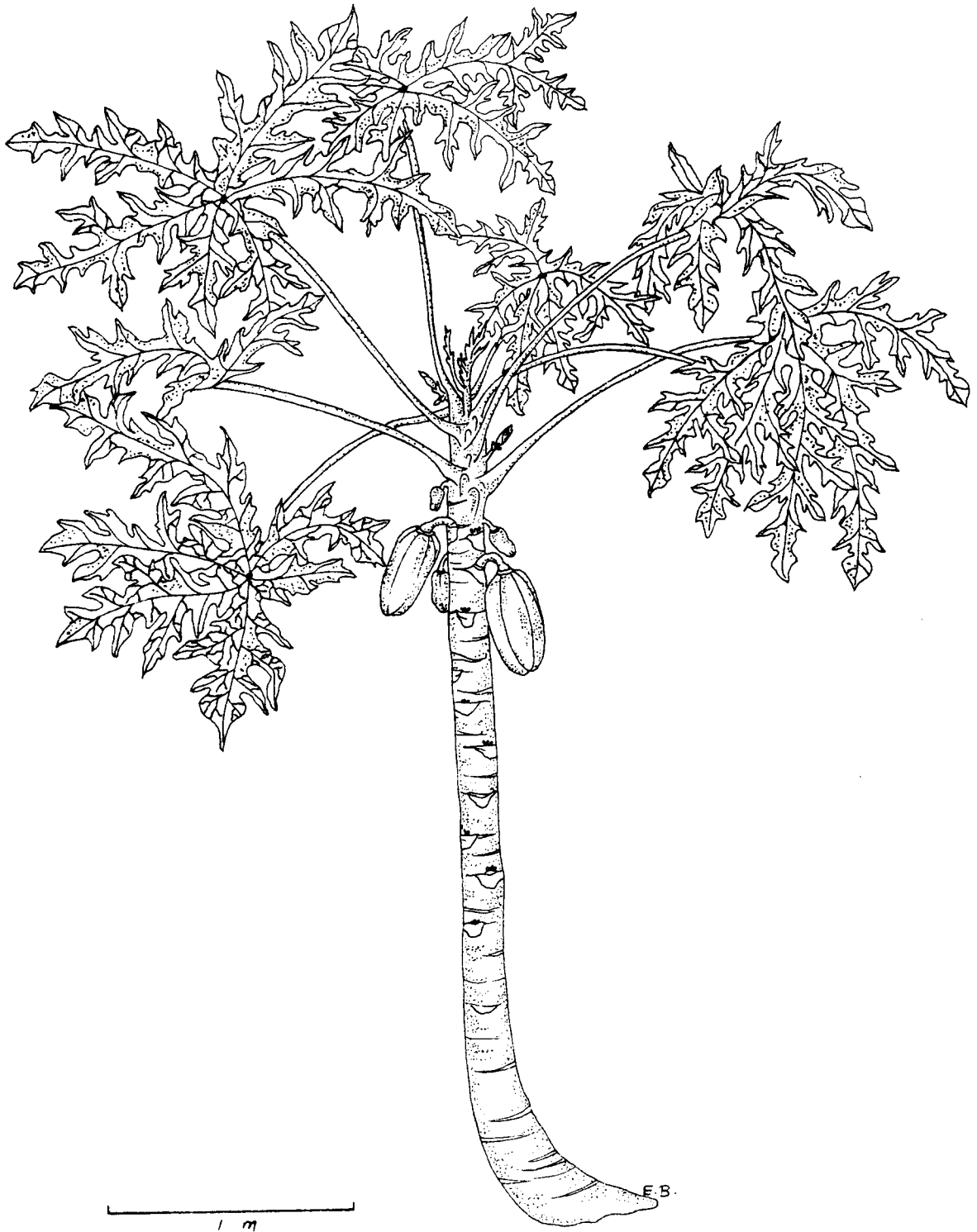
The young fruit is widely used for hypertension and the treatment of diabetes. It is usually grated and the juice extracted and drunk with a pinch of salt. The seeds of the mature fruit are reputed to be effectively laxative and are used especially for anthelmintic purposes. For the relief of stricture, the root (of the tree) is boiled with the tops of immature cane-shoots and sweet spirits of nitre and some of this decoction taken orally, the rest being applied in hot fomentations to the abdomen. The leaves are boiled and taken orally for high blood-pressure and the relief of pain associated with the womb.

Biodynamic Notes

It has been reported that all parts of the plant contain alkaloids such as carpaine, which is known to have amoebicidal, antibacterial and digitalis-like activities, without any negative side-effects (Burdick, 1971; Boum, 1978). The seeds are reported to reduce fertility of male mice or rats without affecting spermatogenesis (Das, 1980).

Carica papaya yields enzymes, such as papain and chymopapain, which are used medicinally besides being responsible for the meat-tenderizing property (Tyler et al, 1981), and cyanogenic glycosides, teraphyllin B and prunasin (Spencer and Seigler, 1984).

Major volatiles such as benzyl isothiocyanate, terpene hydrocarbons (ocimene, limonene, sabinene and neoalloocimene) and terpene alcohols (linolool, alpha-terpineol, nerol and geraniol) as well as linalool oxides have been found in the fruits (Heidlas et al, 1984).



(LEGUMINOSAE - CAESALPINIOIDEAE)

Description

A short-lived shrub to 3.5 m high. Leaves alternate, pinnately compound, with 6-12 pairs of broadly oblong leaflets, blunt at the tip, unequal at the base, the terminal pair to about 15 cm long and 8 cm broad. Flowers roundish in compact axillary racemes, golden-yellow and very showy. Pods 4-winged, 10-15 cm long, black when ripe. Seeds angular, arranged transversely in the pod.

Habitat and Distribution

Locally common along stream banks and in swampy places; often cultivated. A native of tropical America, now widespread in warm countries.

Medicinal Uses

A decoction of leaves, with or without leaves of Zeb-grass (*Tripogandra serrulata*) and Avocado Pear (*Persea americana*) is taken orally for biliousness and hypertension. A decoction of dried blossoms and pods is taken with coconut milk as a laxative. A decoction of flowers taken with a piece of Ginger (*Zingiber officinalis*) is used as an abortifacient and for the relief of 'griping'. A decoction of aerial parts is mixed with egg-white and casareep and taken orally for pneumonia or heavy colds and fever. This mixture is used also as an emetic. An infusion of leaves and flowers is used as a bath by persons suffering from skin diseases such as eczema and lotta, and the crushed leaves and flowers are used in place of a sponge to rub skin. Sap from macerated leaves is mixed with salt (sodium chloride) and sulphur and applied externally as a cure for ringworm.

Biodynamic Notes

Pharmacognostic study of *C. alata* shows its leaves to be a substitute for senna leaves as a laxative (Neubern de Toledo, 1949; Hauptmann and Mazario, 1950; Grote and Woods, 1951). The leaves have been used against ringworm, scabies, ulcers, eczema and as a purgative, abortifacient, expectorant in bronchitis, dyspnea and asthma; the stems yielded chrysophanol, emodin, rhein and aloe emodin, (Villaroya and Bernal-Santos, 1976).

The plant is used as a cathartic (Belkin, 1952). Purgative anthracene derivatives of aloe emodin and rhein were found in leaves and fruits (Rai, 1978; Smith and Ali, 1979).



(LEGUMINOSAE - CAESALPINIOIDEAE)

Description

A shrub 1-3 m high. Leaves alternate, pinnate; leaflets 3-5 pairs, obovate-elliptic to rounded, 1.5-3.5 cm long and 1-2 cm broad, with a blunt gland between the proximal pair. Inflorescences of axillary racemes or a terminal panicle. Flowers yellow; petals 10-18 mm long. Pod subcylindrical, straight or slightly curved, 6-15 cm long, 1-1.5 cm broad. Seeds transverse, about 4-5 mm long, shiny brown.

Habitat and Distribution

Scattered through subtropical and tropical America and a weedy introduction to the Old World.

Medicinal Uses

An infusion of leaves or sap from macerated leaves, with salt (sodium chloride), is applied externally to treat rashes, bites, stings, lotta, eczema, scabies, ringworm and thrush.

Biodynamic Notes

Many species of *Cassia* have been confirmed as having cathartic properties and some have shown insecticidal, antimicrobial and toxicological effects (Morton, 1981).



Cassia occidentalis

CREOLE COFFEE
MAIOMAL (seed)
NEGRO COFFEE
STINKING-WEED
WILD COFFEE

(LEGUMINOSAE - CAESALPINIOIDEAE)

Description

An erect shrubby herb 1-2 m high. Leaves alternate, pinnate with mostly 4-5 pairs of ovate to lanceolate leaflets to 10 cm long and often with a narrow red margin. Flowers yellow. Pod linear, rather compressed. Seeds in one row, broadly ovoid with a smooth flat areole on each side, dark olive-coloured, about 4 mm long.

Habitat and Distribution

Common in waste places which may get very dry, more prevalent at lower elevations, particularly near the sea. General in the subtropics and tropics.

Medicinal Uses

Roasted seeds are used as a coffee substitute and febrifuge. A decoction of the ground plant is used as a treatment for hypertension, diabetes, biliousness and fever, with orange peel and cloves for the relief of griping and thrush in babies, and as a mouthwash in cases of mouth and throat infections. A decoction of root is used as a purgative and sap from macerated roots is used as a powerful emetic. As a cure for 'bush yaws' and eczema, the fresh plant is pounded and mixed with wood-ash and 'dye lotion' and rubbed vigorously onto affected areas.

Biodynamic Notes

The entire plant has been used as a purgative, tonic, febrifuge and diuretic (Gaind et al, 1966; Ginde et al, 1970; Niranjana and Gupta, 1973).

Extracts from the leaves and seeds displayed antibiotic activity (Gaind et al, 1966). It had been reported earlier that the alcoholic, benzene and petroleum ether extracts exhibited antibiotic activity against *Escherichia coli*, *Staphylococcus aureus*, *Salmonella typhosa* and *Vibrus cholerae* (Gallo and Valeri, 1954).

The leaves yielded two flavonoid glycosides matleucinol.7-rhamnoside and jaceidin.7-rhamnoside (Tiwari and Singh, 1977a); an anthraquinone, chrysophanol from a petroleum ether extract, and a bianthraquinone from the ethyl acetate extract (Tiwari and Singh 1977b). Phycion, emodin and phycion-1-beta-D-glucopyranoside were obtained from the benzene extract of the flowers (Niranjana and Gupta, 1973). From the roots, phytosterol and phycion were isolated (Lal and Gupta, 1973). The seeds yielded N-methyl morpholine (Kim et al, 1971), campesterol and beta-sitosterol glucosides (Rizvi et al, 1971). Other compounds identified include emodin, alpha 3-sitosterol, cassiollin (Ginde et al, 1970), and beta-sitosterol (Niranjana and Gupta, 1973).

The raw bean was reported to be toxic to cattle (O'Hara et al, 1970) and muscle degeneration was observed when cattle were fed on the seeds (Henson et al, 1965; Mercer et al, 1967; O'Hara et al, 1969).



1cm

Catharanthus roseus
(Syns. *Lochnera rosea*, *Vinca rosea*)

NEVER-DONE
OLD MAID
PERIWINKLE

(APOCYNACEAE)

Description

An erect or bushy straggling herb to about 80 cm high. Leaves opposite in pairs, oblong-elliptic, 2-7 cm long and up to 3 cm broad. Flowers solitary or in small axillary clusters. Corolla with a narrow straight tube expanded immediately below the limb; limb flat, of 5 obovate lobes about 2 cm long, of one of three colour forms: pink with a crimson eye, white with a crimson eye or white with a light yellow eye. Follicles paired, cylindrical, 1.5-3.5 cm long.

Habitat and Distribution

Originally described from Madagascar, now widespread near habitations in the subtropics and tropics of both hemispheres.

Medicinal Uses

An infusion or decoction of the plant is taken orally to control hypertension, diabetes and 'dropsy'.

Biodynamic Notes

This plant is cultivated for its anticancer properties and alkaloids have been found in the roots and leaves (Taylor, 1968; Taylor and Farnsworth, 1975). Two alkaloids, vincristine (leucocristine) and vinblastine (vincal leukoblastine), have been isolated and used in the treatment of leukemia and other forms of cancer (Armstrong, 1967). These have been reported as the most important plant antitumor agents in clinical use (Rheinhold et al, 1978).

Another alkaloid, ajmalicine (raubasine), has found application in the treatment of circulatory diseases, especially in relief of obstruction of normal cerebral blood flow (Singh et al, 1982). Alkaloids isolated from this plant were reported to act as a spasmolytic on non-striated muscle (Richards and Beer, 1964; Richards, 1968) and to have antimicrobial activity (Hernandez et al, 1977).

The leaves yielded 16-epi-19-S-vindolinine, 16-epi-19-S-vindolinine-N-oxide, fluorocarpamine, fluorocarpamine-N-oxide, vindolinine-N-oxide, pleiocarpamine and rosamine (Atta-ur-Rahman, 1983; Atta-ur-Rahman et al, 1983, 1984; Atta-ur-Rahman and Choudhary, 1984). Beta-sitosterol, ursolic acid and lochnerine have also been identified (Suong et al, 1984).



1 cm

PR

Cecropia dielsiana

CONGO-PUMP
TRUMPETER
TRUMPET-TREE

(MORACEAE)

Description

A tree 2-12 m high, with ring-scars on the trunk and hollow branches, the younger whitish-pilose. Leaves spiral, peltate, deeply 9-lobed, purplish when young, leathery, the lobes obovate, rounded at the tips, attenuate towards the base, 12-22 cm long and 6-10 cm broad, the margin undulate or entire, the lamina rough with short hairs, greyish-tomentose beneath with prominent nerves; petiole 22-35 cm long, densely and shortly pilose-tomentose; stipules 5-6 cm long, 1.5-2 cm broad at the base. Plants dioecious. Inflorescence-spathes acute, about 5 cm long, whitish-tomentose outside; peduncles tomentose, 6-8.5 cm long; male catkins 6-9, cylindrical, sometimes branched, 6-7 cm long and 2-4 mm thick. Female catkins 4, cylindrical, after anthesis 10-12 cm long, 6-8 mm thick, sessile. Fruit tuberculate, about 1.5 mm long.

Habitat and Distribution

At forest margins and on recently cleared forest land. Northern South America.

Medicinal Uses

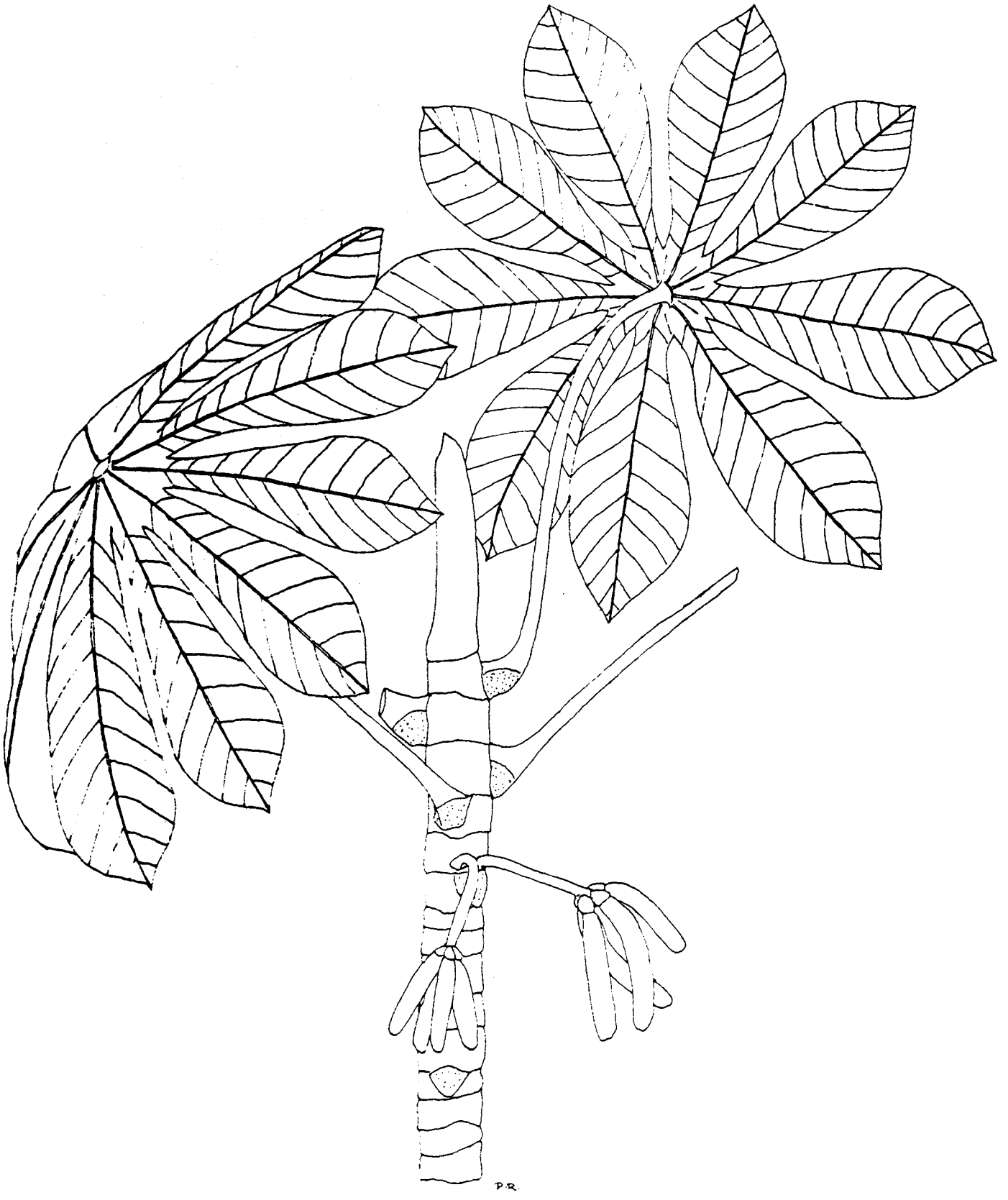
Tea is made from the dried leaves and taken for back pains and kidney defects. A decoction of the inner bark is used for dysentery.

Biodynamic Notes

Free fatty acids, including stearic, arachidic, behenic, lignoceric and cerotic acids, were isolated from **Cecropia spp.** (Neidlein and Koch, 1980). The leaves of **C. peltata** contain leucocyanidin, the bark yielded sterine and urolic acid, and cowleyin was found in the latex (Bulhoes, 1977).

A closely related species, **C. peltata**, differs in being taller, with less deeply divided leaves lacking purplish colour and having shorter flowering spikes; it is also known as Monkey-pump or Wanasoro and has similar uses including the treatment of hypertension and Bright's disease. There is some confusion in identification whereby the reddish-stemmed plants are regarded as female and the white as male.

Another species, **C. sciadophylla**, also known as Congo-pump, has digitately compound leaves with 12-14 radiating leaflets. This plant has been confused with Matchwood (**Schefflera morototoni**) both as to its botanical identity and its medicinal uses.



P.R.

Centropogon cornutus
(Syn. *C. surinamensis*)

KARO-SHIRI
PARROT-BEAK

(CAMPANULACEAE)

Description

A weak green-stemmed shrubby herb about 1 m high, with milky sap. Leaves alternate, ovate to oblong-ovate, acuminate at the apex, rounded or abruptly narrowed into the petiole at the base, 7-17 cm long, 3-8 cm broad, shortly toothed, glabrous. Flowers solitary in the axils of the upper leaves on erect pedicels 4-6 cm long; calyx-tube hemispherical, about 7 mm long, the lobes narrow and longer than the tube; corolla curved, about 4 cm long, scarlet, the upper 2-lobed lip longer than the lower 3-lobed lip, exceeded by the staminal tube. Berry globose, glabrous, 1-1.5 cm in diameter.

Habitat and Distribution

On moist shaded banks and along pathsides in forest. Guadeloupe southwards to Tobago and Trinidad and widespread in Central and South America.

Medicinal Uses

The flowers are steeped in hot water together with filaments from the pistillate corn inflorescence and taken for the relief of stricture, i.e. the infusion acts as a diuretic.

The entire plant is boiled and the resulting liquid drunk as a treatment for venereal disease.



Cissus verticillata
(Syn. *C. sicyoides*)

SNAKE-BITTERS
SNAKE-TONGUE
SNAKE-VINE

(VITACEAE)

Description

A high-climbing shrub to 20 m or more, with flexuous green or thinly barked terete stems; tendrils leaf-opposed. Roots often very long and pendulous, green. Leaves alternate, simple, ovate to ovate-oblong, to 15 cm long and 9 cm broad, the margin with remote bristle-like teeth, fleshy, smooth, glabrous. Flowers small, greenish-yellow, 4-merous, in stalked 2-3-times branched cymes. Berry obovoid, 6-9 mm long, black at maturity.

Habitat and Distribution

On trees, in thickets and on fences, throughout subtropical and tropical America.

Medicinal Uses

The leaves are crushed and applied externally as treatment for thrush, ulcers and snake bites. The sap from the stem, taken orally, is reputed to abate fever.

Cissus erosa

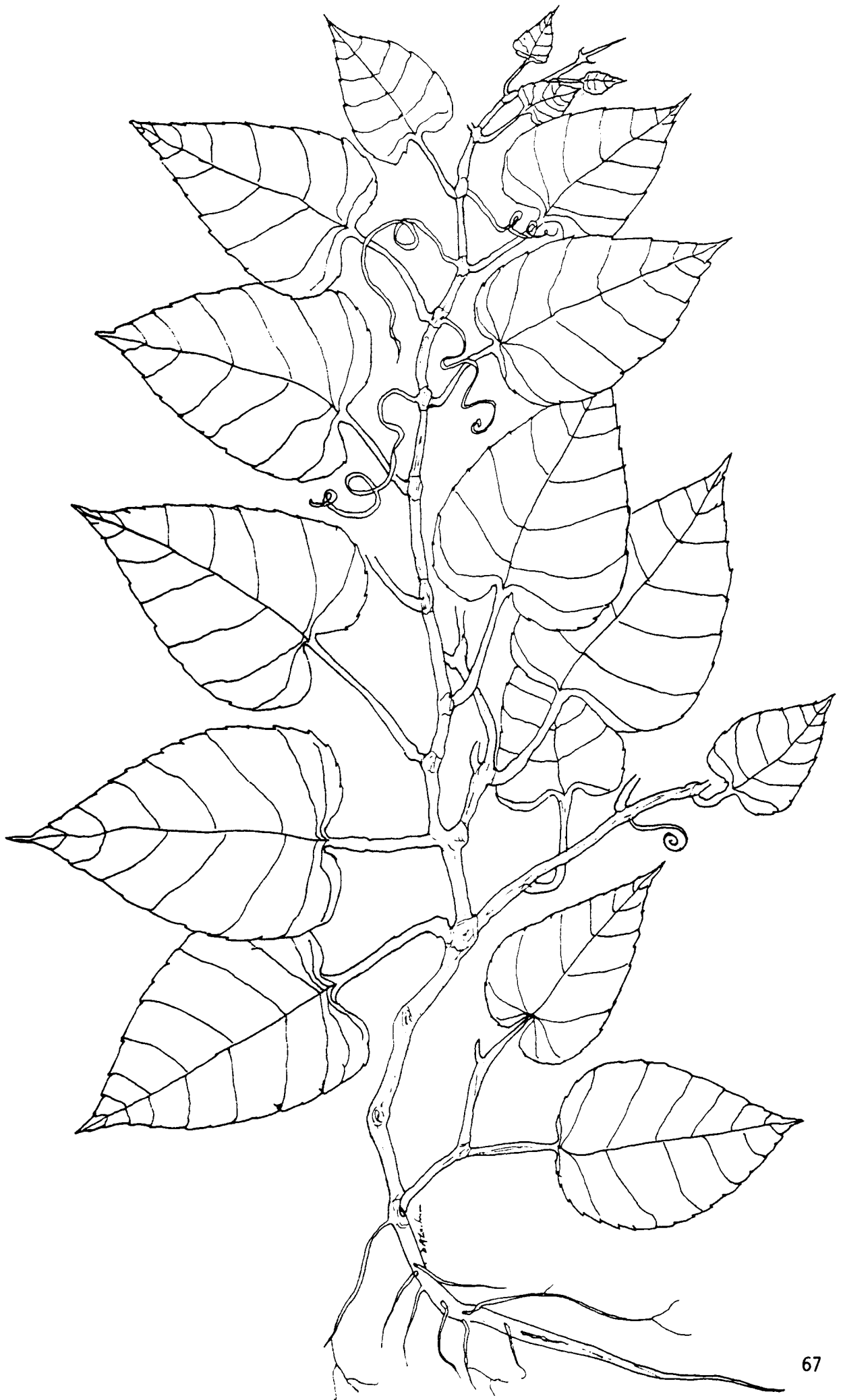
This is a scrambling or low-climbing vine with 4-angled stems and leaf-opposed tendrils. The leaves are trifoliolate, the leaflets mostly lanceolate to broadly ovate, 4-10 cm long, 1.5-5.5 cm broad, the margin regularly toothed, the lower surface conspicuously reticulate-veined and glabrous. The flowers are small, red, 4-merous, in long-stalked cymes. Fruit a subglobose black berry 4-6 mm in diameter.

The common names and uses in Guyana are the same as for *C. verticillata* and the plant may be found in thickets scattered throughout tropical America.

Biodynamic Notes

Chemical information has been derived from other species.

The triterpenoids sitosterol, delta-amyrin and delta-amyrone were isolated from ethanolic extracts of *C. quadrangularis* (Bhutani et al, 1984). Triterpenoids vomifoliol and romalen allene, alkaloids quinolizidine and crytoleusine, and flavonoid vitexin were isolated from leaves of *C. rheifolia* (Saifah et al, 1983). *Cissus pteroclada* yielded bergenin (Pan and Pu, 1981).



(VERBENACEAE)

Description

A shrub or small tree to 12 m high, the branches 4-angled, glabrous and without spines. Leaves opposite in pairs, simple, elliptic or oblong, obtuse or shortly acuminate at the tip, acute at the base with 1 or 2 black marginal glands, 4-25 cm long, 2-11 cm broad, mostly in the large range, coarsely dentate on saplings, entire on the branches of mature plants. Inflorescence of simple or compound nodding racemes to 25 cm or more long. Flowers on short stalks; calyx 3-4mm long, obsoletely toothed; corolla white, the tube 4-6 mm long; sweetly fragrant. Fruit drupaceous, about 1 cm long, red then finally black.

Habitat and Distribution

Probably commonest in open and secondary woodlands. Scattered through tropical America.

Medicinal Uses

A decoction of the young twigs is used to treat thrush in babies, and a decoction of the bark for treating colds generally.



Citrus aurantifolia

LIME
NIBUA

(RUTACEAE)

Description

A rather small tree branching low and continuously replacing the leaf and fruit-bearing twigs, quite likely to lose many of its leaves in dry weather; very spiny. Leaves alternate, elliptic, mostly 4-7 cm long and 2-4 cm broad, the petiole narrowly winged and articulated to the blade, somewhat leathery, dark green, sharply aromatic. Flowers in short axillary racemes, white, fragrant. Fruit subspherical, to about 5 cm long, lightly pitted, ripening yellow with a greenish very acid pulp.

Habitat and Distribution

There are many varieties all of which are in cultivation, although occasionally plants may grow up as escapes or be present as relicts in abandoned farms. Native of tropical Asia but now widespread in all tropical countries.

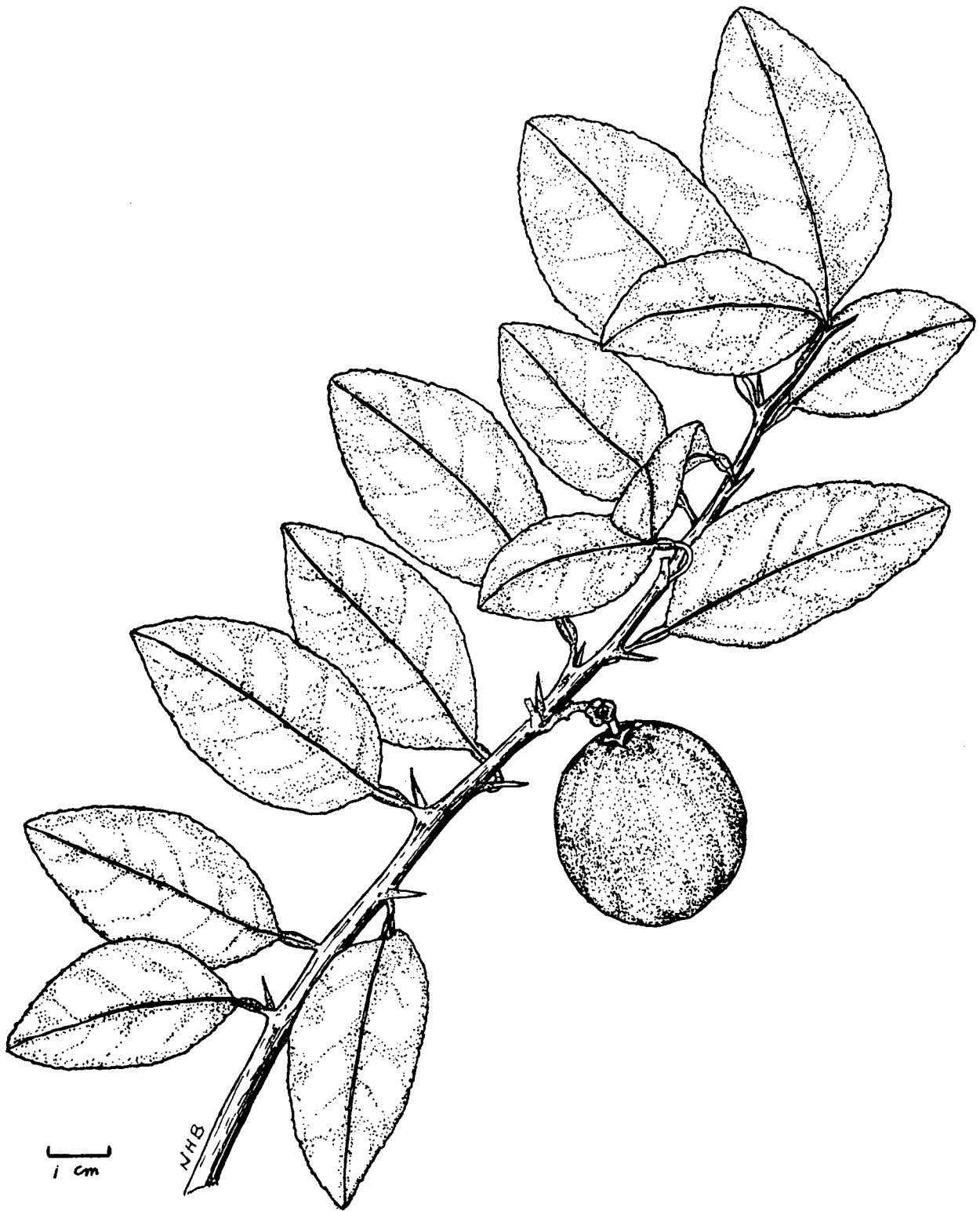
Medicinal Uses

The decoction of the root of the mature plant is taken orally as an anthelmintic and contraceptive. Juice from the fruit is taken with a pinch of salt for the relief of diarrhoea.

Biodynamic Notes

The oil from orange peel has been used for stomach upsets and pains (Morton, 1981). Mycotoxins are found on the outer surface of citrus fruits (Stinson et al, 1981) and have been described as a health hazard (Schlatter, 1980).

Citrus grandis and **Passiflora cochinchinensis** are used as a snake-bite drug (Ma et al, 1982).



(LEGUMINOSAE - PAPILIONATAE)

Description

A tree to 20 m high. Leaves alternate, imparipinnate with 3-7 opposite leaflets; leaflets oblong, obovate or elliptic, acute at the tip, rounded at the base, 13-26 cm long, 8-18 cm broad, glabrous. Inflorescence compound of spreading racemes about 30 cm long, the indumentum silky. Flowers pea-like; calyx about 6 mm long; standard-petal rose-coloured, 8-11 mm broad; wing- and keel-petals white. Pod oblong, shortly beaked, to about 17 cm long and 8 cm broad. Seeds discoid, 4.5-6 cm long, 3-5 cm broad.

Habitat and Distribution

In forests. Trinidad and northern South America.

Medicinal Uses

An infusion of bark is used to cleanse sores and ulcers and as a treatment of insect, scorpion and snake bites. Scrapings of young bark are applied as a poultice to relieve pains, especially those resulting from such bites. A decoction of bark and leaves is used in a bath to get rid of lice, flees and ticks.

Biodynamic Notes

Anagryne, cystisine, delta 5 - dehydrolupanine, rhombifoline, 11-allylcysticine, lupanine and N-methylcysticine were isolated from the seeds. The alkaloid fraction from seeds was toxic to female mice (Hatfield et al., 1980).



Clibadium surinamense

CURE-FOR-ALL*
KUNAMI

(COMPOSITAE or ASTERACEAE)

Description

A shrub to 6 m high with roughly pubescent branches. Leaves opposite in pairs, oblong-ovate to lanceolate, acute or acuminate at the apex, cuneate at the base, to 17 cm long and 8 cm broad, serrate, rough on both surfaces. Flower-heads sessile or shortly stalked, 5 mm long, in corymbs; involucral bracts and receptacle-scales about 4 mm long; outer female florets 3-6, the corolla white about 2 mm long; inner hermaphrodite florets 6-13. Achenes obovoid, 2-3 mm long, ripening fleshy with abundant yellow sap.

Habitat and Distribution

Forest/savanna margins and thickets. Central and tropical South America; West Indies.

Medicinal Uses

The plant is boiled together with Teasam (*Lippia alba*) and Daisy (*Wedelia trilobata*) and the resulting beverage is taken as a cure for head and chest colds. A decoction of the bark is used to wash cuts and sores.

Biodynamic Notes

The leaves possess antibiotic properties. Saline extracts of the leaves showed antibiotic activity against *Micrococcus pyrogenes* var. *aureus*, *Micrococcus pyrogenes* var. *alba* and one strain of *Escherichia coli* (Collier et al, 1950).

Footnote

* These common names, as well as Konali and White-Kunani, are also given to another shrub of this family, *Pluchea symphytifolia* (syn. *P. carolinensis*), which may be put to similar use in local folk medicine. This plant has coarse spiral leaves, ribbed downy branches and numerous capitula in dense terminal corymbs; the florets are minute, pinkish and all narrowly tubular; the minute achenes bear a silky pappus; see Seaforth et al, 1983, pp. 166-7. 'Geritout'.



Clusia fockeana

TETIRUMA

(CLUSIACEAE or GUTTIFERAE)

Description

A shrub or small tree 3-5 m high, often epiphytic and stilt-rooted, the twigs short and crooked. Leaves opposite in pairs, elliptic, oblong or obovate, usually acuminate at the tip, acute or narrowed at the base, to 11(-16) cm long, papery or thinly leathery, the midrib prominent on both surfaces; petiole 1.5-3.5 cm long, with a margined pit. Plants dioecious. Inflorescence terminal, nodding, ternately branched, with 3-9 flowers; bracts and bracteoles triangular-ovate, 2-5 mm long. Sepals 3 or 4, the outer about 7 mm long, the inner about 10 mm long; petals usually 5, flabellate, 12-20 mm long, whitish with a broad purple claw. Stamens numerous in male flowers. Fruit ellipsoid-ovoid, about 2 cm long, dark green, with 5 valves and stigmas; seeds usually one per loculus.

Habitat and Distribution

In woodlands, Guyana and Suriname

Medicinal Uses

An exudate from the stem is applied externally as a cure for snake bites and ulcers. The exudate may be mixed with a pinch of salt or the whole young stem is ground and applied as a poultice on the affected area.

Biodynamic Notes

Clusia rosea contains aplotaxene, friedelin, beta-friedelinol and oleanolic acid (Mathur et al, 1974).



Clusia grandiflora

KUPA-ROPE

(CLUSIACEAE or GUTTIFERAE)

Description

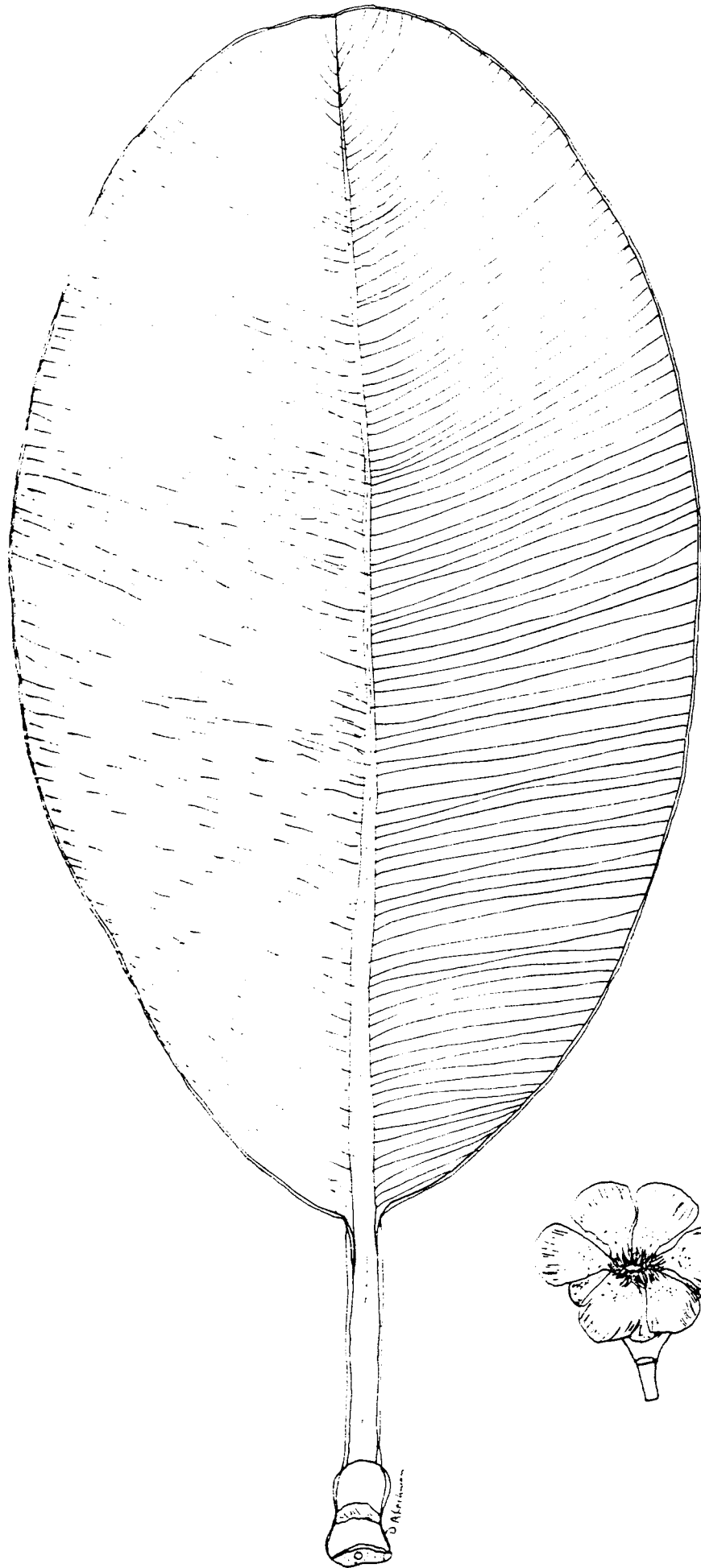
A shrub or small tree to about 7 m or more high, usually epiphytic, the twigs sharply angled or winged. Leaves opposite in pairs, obovate to cuneate-obovate, rounded or obtuse at the tip, gradually narrowed to the long (4-8 cm) petiole, to 20(-30) cm long, stiffly leathery, the midrib prominent on both surfaces. Plants dioecious. Inflorescences terminal, nodding, with a central and two lateral flower-bearing bracteolate branches; bracteoles 2 per flower, 1-2 cm long, connate at the base. Sepals 4 or 6, white with pink margins, the inner pair larger; petals 6-8, obovate or obovate-oblong, to 8 cm long, white, pink or reddish towards the base. Stamens numerous in male flowers. Fruit ovoid to globose when ripe, to 9 cm long, greenish or whitish, valves and prominent stigmas 10-15; seeds numerous, enveloped in orange arils.

Habitat and Distribution

In forests and woodlands. Guyana and Suriname.

Medicinal Uses

The aerial root is cut into pieces and soaked in water or wine. The infusion is drunk as a tonic, especially for back pains. It is often mixed with Cockshun (*Smilax* sp.), Devil-doer (*Strychnos* spp.), Kapadula (*Doliocarpus* sp.), Monkey-ladder (*Bauhinia scala-simiae*) and Sarsparilla (*Philodendron* sp.) and the resulting decoction taken as an aphrodisiac.



Coccinia grandis
(Syn. *C. cordifolia*)

PAIN-CURE

(CUCURBITACEAE)

Description

A slender glabrous perennial vine, with extra-axillary simple tendrils. Leaves alternate, petiolate, broadly cordate, shallowly 5-angled or -lobed, mostly 4-8 cm long and nearly as broad, rough above, smooth beneath. Flowers solitary, with a white 5-lobed bell-shaped corolla about 3 cm long, the lobes cut halfway to the base and spreading. Fruit ovoid or ellipsoid, to about 5 cm long, smooth, mostly scarlet but green at the base, many-seeded.

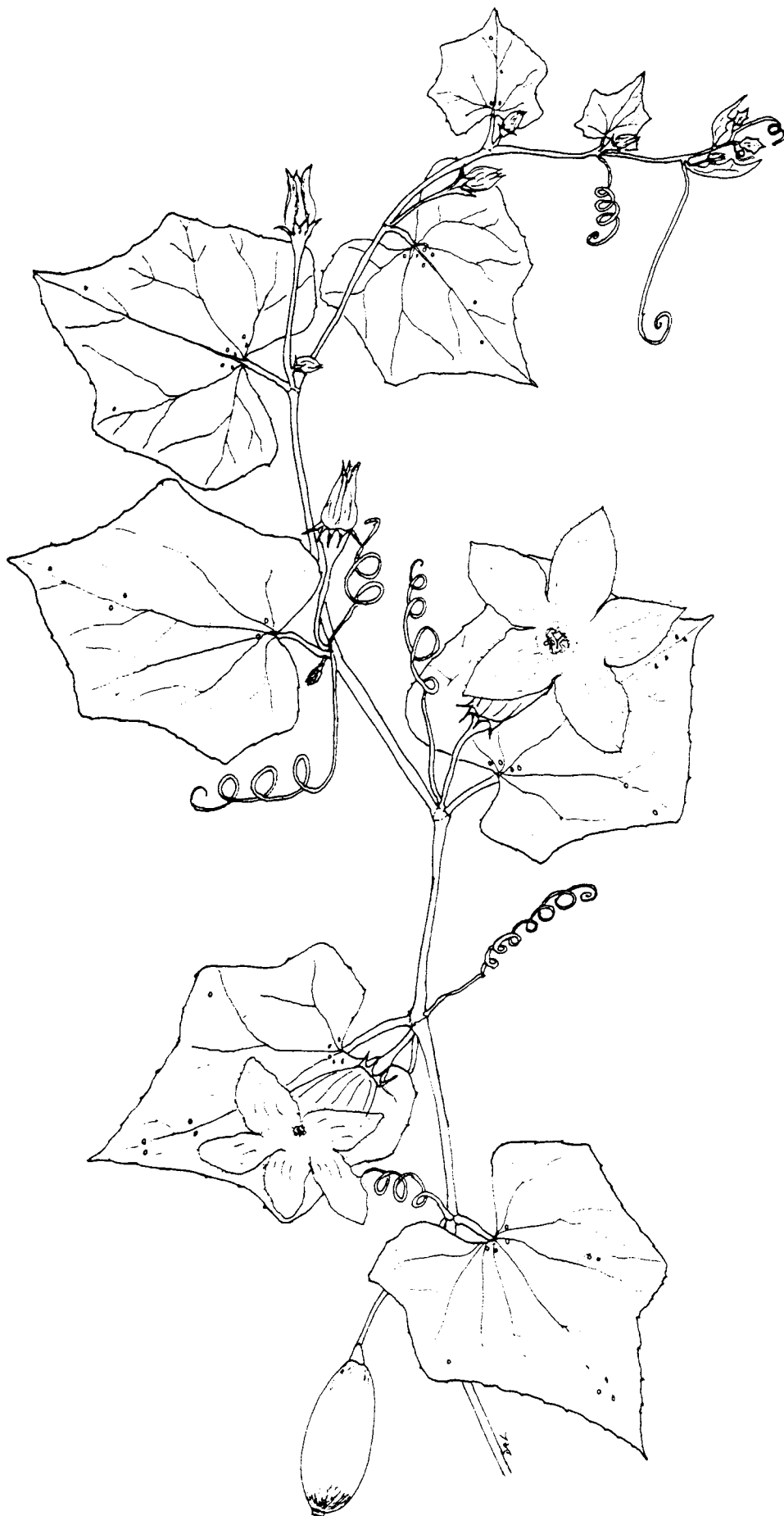
Habitat and Distribution

In hedges and thickets. A native of tropical Asia, long ago introduced and established in Puerto Rico and Barbados, a more recent adventive in Trinidad and elsewhere in the American tropics.

Medicinal Uses

A decoction of the vine is used as a treatment for chest colds.

The plant is crushed and applied externally to affected areas for the relief of pain, including rheumatic pains. To relieve headaches, the crushed plant is tied around the forehead.



Coccoloba uvifera

SEASIDE-GRAPE

(POLYGONACEAE)

Description

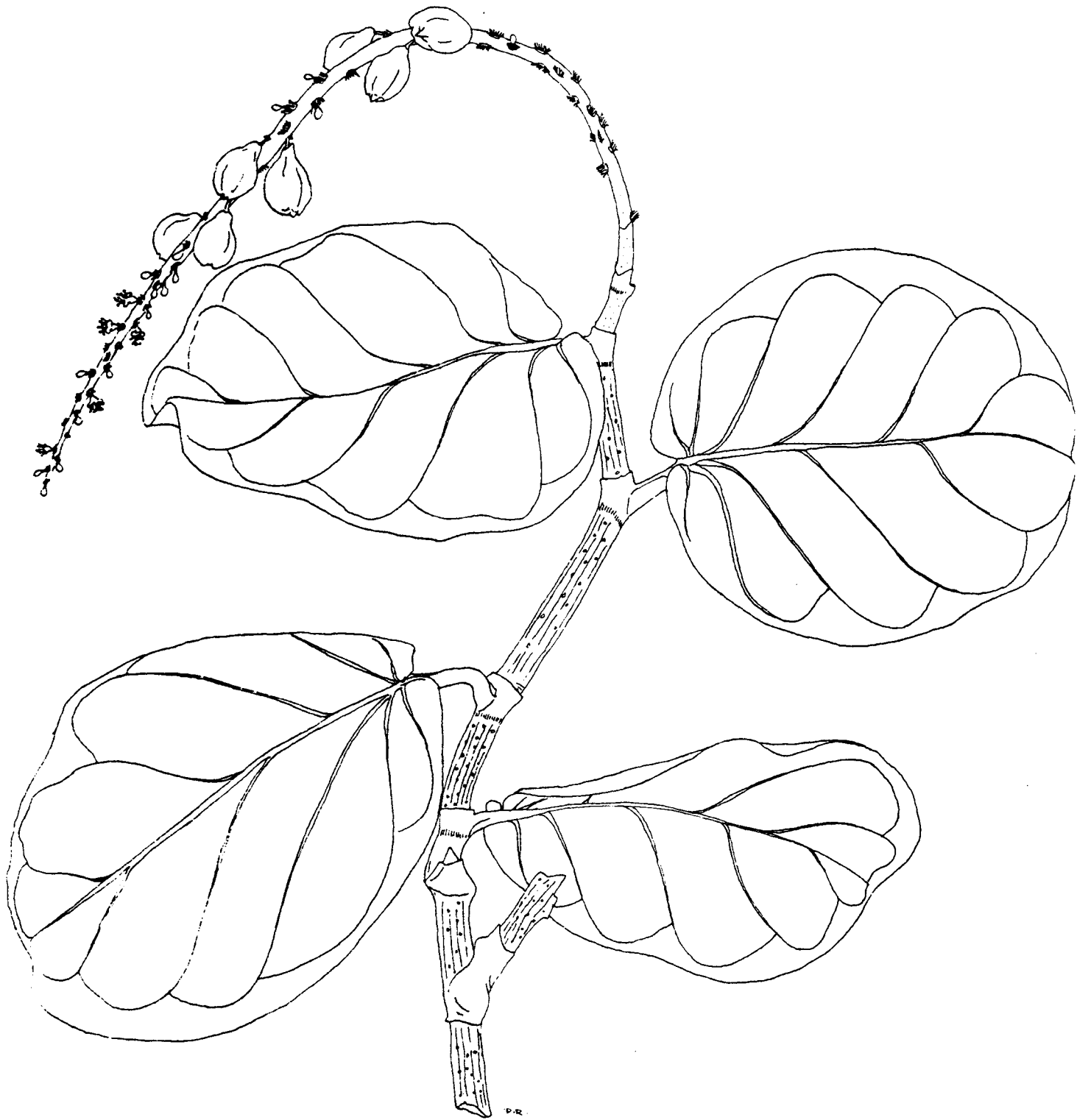
A tree to 5 m or more high or a shrub when coppiced, with straggling branches and finger-thick greyish twigs. Leaves alternate, very shortly stalked and cordate at the base, otherwise broadly circular in outline, to about 15 cm long and 18 cm broad, thickly leathery and glabrous with usually a reddish midrib. Flowers small and greenish-white in racemes to 20 cm long, the usually 5-parted perianth enlarging in fruit to form a false drupe. Ripe fruit in pendulous clusters, grape-like, to about 2 cm long, fleshy and purplish; edible.

Habitat and Distribution

Common and locally abundant in littoral and sublittoral situations, along the Atlantic coast from Florida and the Bahamas through the Caribbean islands to the Guianas. Introduced as an ornamental into parts of Asia and the Pacific.

Medicinal Uses

The plant produces an astringent gum called Jamaica Kino which is a very powerful medicine in diarrhoea and dysentery (Rodway, 1885).



Cocos nucifera

COCONUT
NARIAL

(PALMAE or ARECACEAE)

Description

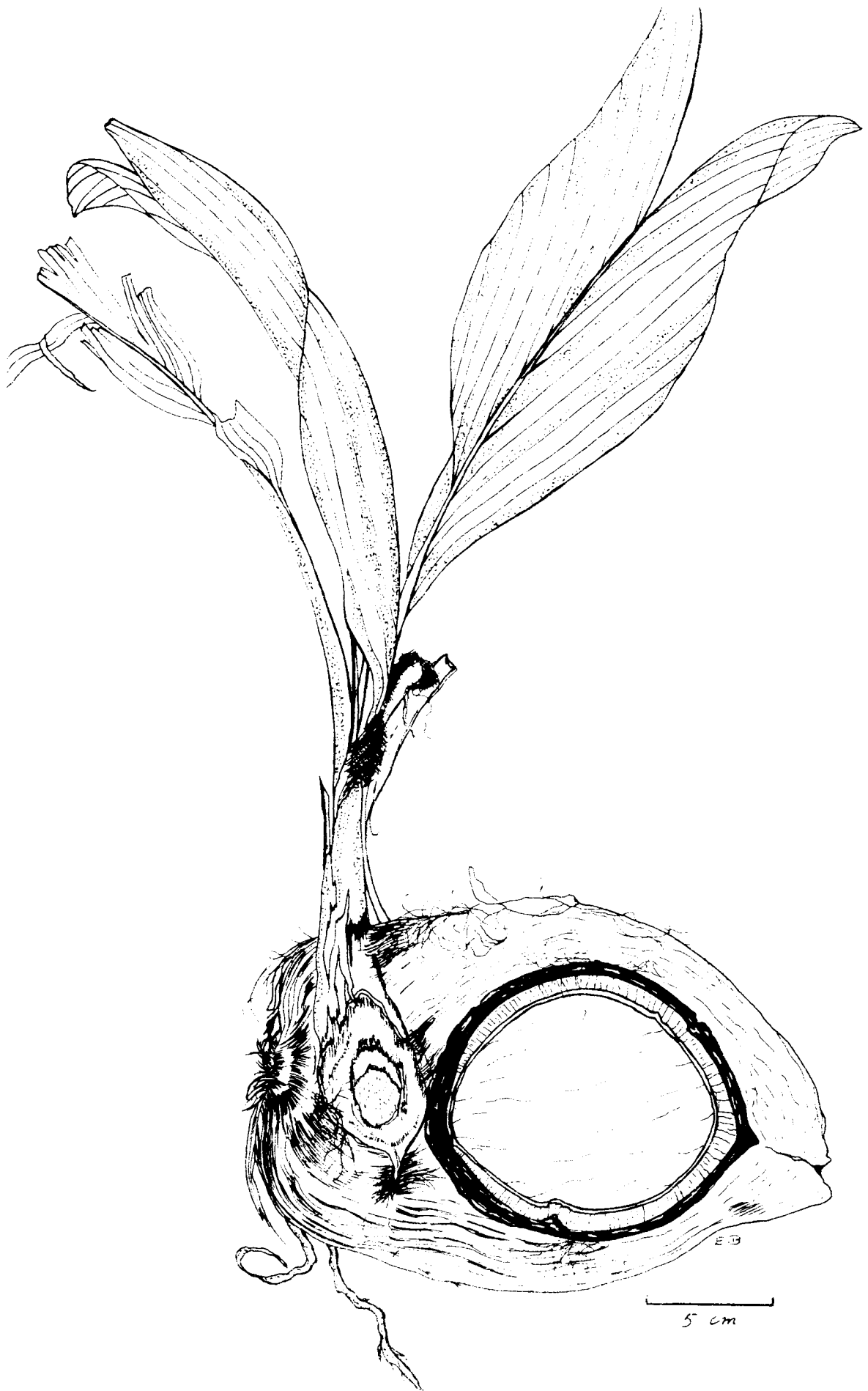
A slender-trunked palm to 20 or sometimes 30 m high; the trunk tapers from a swollen base and is often curved and always unbranched. Leaves pinnate, massive, spiral in a crown, with all the leaflets reduplicately folded, inserted in the same plane. Inflorescences axillary panicles with female flowers few at the bases of the spicate branches and male flowers numerous distally. Fruit ovoid-subglobose, hard, heavy, smooth, to 30 cm or so long, containing one large seed.

Habitat and Distribution

Common, mostly in plantations at low elevations and often near the sea. Perhaps the most important of all palms economically. The origin is uncertain, but was most likely in the Old World tropics. It is not really naturalized in tropical America and when left unattended dies out.

Medicinal Uses

The root boiled with Minnie-root (*Ruellia tuberosa*), etc. is taken as an aphrodisiac as well as for the relief of bladder ailments. The heart of the freshly felled trunk is used for poultices on ulcers. Of the young fruit the 'water' is thought to be rich in vitamin-content and is also thought to 'clean the kidneys', and is taken for the relief of stricture. This water is also often recommended as a tonic for women being said to 'make women back strong'.



Colocasia esculenta

EDDOE

(ARACEAE)

Description

A perennial herb with a rounded or cylindrical tuberous starchy ring-scarred stem, propagating by lateral cormels. Leaves usually long-petioled, basally vaginate, in a compact spiral from the crown of the corm; leaf-blade simple, ovate, sagittate-cordate at the base, acute or acuminate at the tip, peltate, 30-40 cm or more long, 20-30 cm broad, light or dark green, often tinged violet. Flowers (rarely formed) on a short simple peduncle; spathe convolute at the base, 15-35 cm long, persistent and enclosing a spadix with staminate flowers at the tip and pistillate flowers below. Fruit a berry.

Habitat and Distribution

Widely cultivated and naturalized, especially in low-lying wet places. Native of tropical Asia.

Medicinal Uses

The young Eddoe is grated and mixed with coconut oil or soft grease and used as an ointment for ulcers and 'tete'. After the pus has been eliminated, zinc powder and vaseline are applied to heal the wounds. For treating abscesses, castor-oil is applied to the area to soften it and then a poultice of grated Eddoe, soap and soft grease to bring relief. The leaves of the plant are also used for tying on poultices.

A soup made with Eddoes is thought to be highly nutritive and is often given to increase the milk supply of nursing mothers.



Cordia curassavica
(Syn. *C. macrostachya*)

BLACK-SAGE

(BORAGINACEAE)

Description

A shrub or small tree to about 5 m high, with rough dark bark and aromatic foliage. Leaves alternate, lanceolate or elliptic, mostly pointed at both ends and shortly stalked, to 25 cm long and 10 cm broad but usually much smaller, the margin somewhat shallowly toothed. Inflorescence spicate, 15 cm or more long, often drooping. Flowers small, the corolla shortly funnel-shaped, white. Fruit a small drupe, ripening red and protruding from the cuplike calyx.

Habitat and Distribution

Usually to be found on disturbed or abandoned land, mainly in inhabited areas. Native throughout Central and northern South America and the southern Caribbean.

Medicinal Uses

The stem is chewed and used for cleaning teeth and for removing undesirable odours from the mouth. A tea made from the aerial parts is used as a stomachic, sudorific and a cure for hypertension, biliousness, common cold and diarrhoea. Dried leaves are boiled and the liquid drunk to control heavy menstrual flow. Macerated leaves are used externally to get rid of dandruff and insect pests such as mites in chicken pens.

Biodynamic Notes

Some species of *Cordia* contain terpenoid quinones (Moir et al, 1973). Tritriacontane, allantoin and an aliphatic hydroxy ester were isolated from *Cordia ecalyculata* (Saito et al, 1985).



1cm

Costus scaber
(Syn. *C. cylindricus* - as a misidentification)

CONGO-CANE

(ZINGIBERACEAE)

Description

The leafy shoots grow to about 3 m high from a ginger-like rhizome and are sometimes branched. Leaves spiral, narrowly elliptic, acuminate, to about 30 cm long and 10 cm broad, glabrous or puberulous; the ligule hairy. Inflorescence terminal, cone-like, 4-10 cm long in flower, to about 20 cm long in fruit, 1.5-3.5 cm broad, the bracts red or orange-red without any terminal appendages. Flower with corolla orange or yellow, 3.5-4 cm long; labellum yellow, tubular. Capsule ellipsoid to subglobose, 7-12 mm long; seeds black.

Habitat and Distribution

In forest margins and shady thickets. Mexico, through Central America to tropical South America and the West Indies.

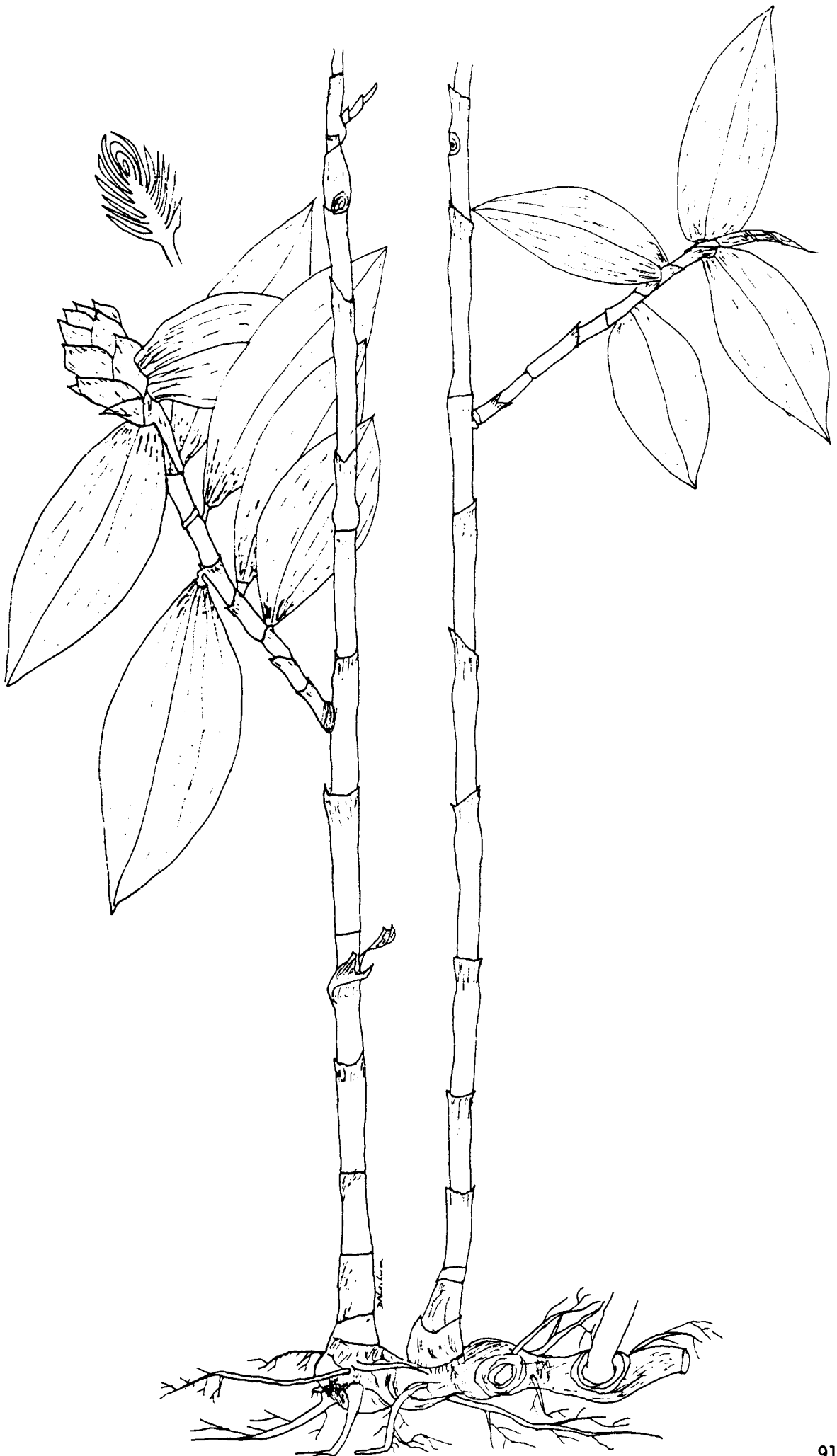
Medicinal Uses

The juice from the stem is taken orally for colds. The stem is boiled with Sorrel (*Hibiscus sabdariffa*) and Toyeau (*Justicia pectoralis*) and the decoction drunk for the relief of whooping cough. A decoction of the entire plant is used to treat high blood-pressure and bladder disorders.

Biodynamic Notes

Some of the saponins and sapogenins that are present in *Costus speciosus* rhizomes caused spasmodic uterine contractions (Dasgupta and Pandey, 1970). Diosgenin was isolated from the rhizomes (Dasgupta and Pandey, 1970; Kaphai et al, 1977), in addition to trigogenin, beta-sitosterol, glucose and rhamnose (Dasgupta and Pandey, 1970). Diosgenin was also found in the rhizomes, roots, stems and leaves of *C. malortianus* (Prasad and Ammal, 1983).

The seeds from *C. speciosus* yielded saponins which exhibited potent hypotensive and bradycardiac activities in dogs (Banerji et al, 1981).



Crescentia cujete

CALABASH
GOOBY

(BIGNONIACEAE)

Description

A tree with numerous low spreading branches, rarely as much as 10 m high. Leaves in clusters on reduced shoots along the older branches, oblanceolate, to 20 cm long and 6 cm broad. Flowers borne on the old wood in clusters; calyx about 2 cm long, deeply split; corolla broadly campanulate with an irregular fimbriate margin, greenish-white to greenish-yellow with brownish-purple markings, foul-scented. Fruit spherical, hard, smooth, green, unilocular, to about 25 cm in diameter.

Habitat and Distribution

Frequently cultivated or semi-cultivated. Widespread in the tropics.

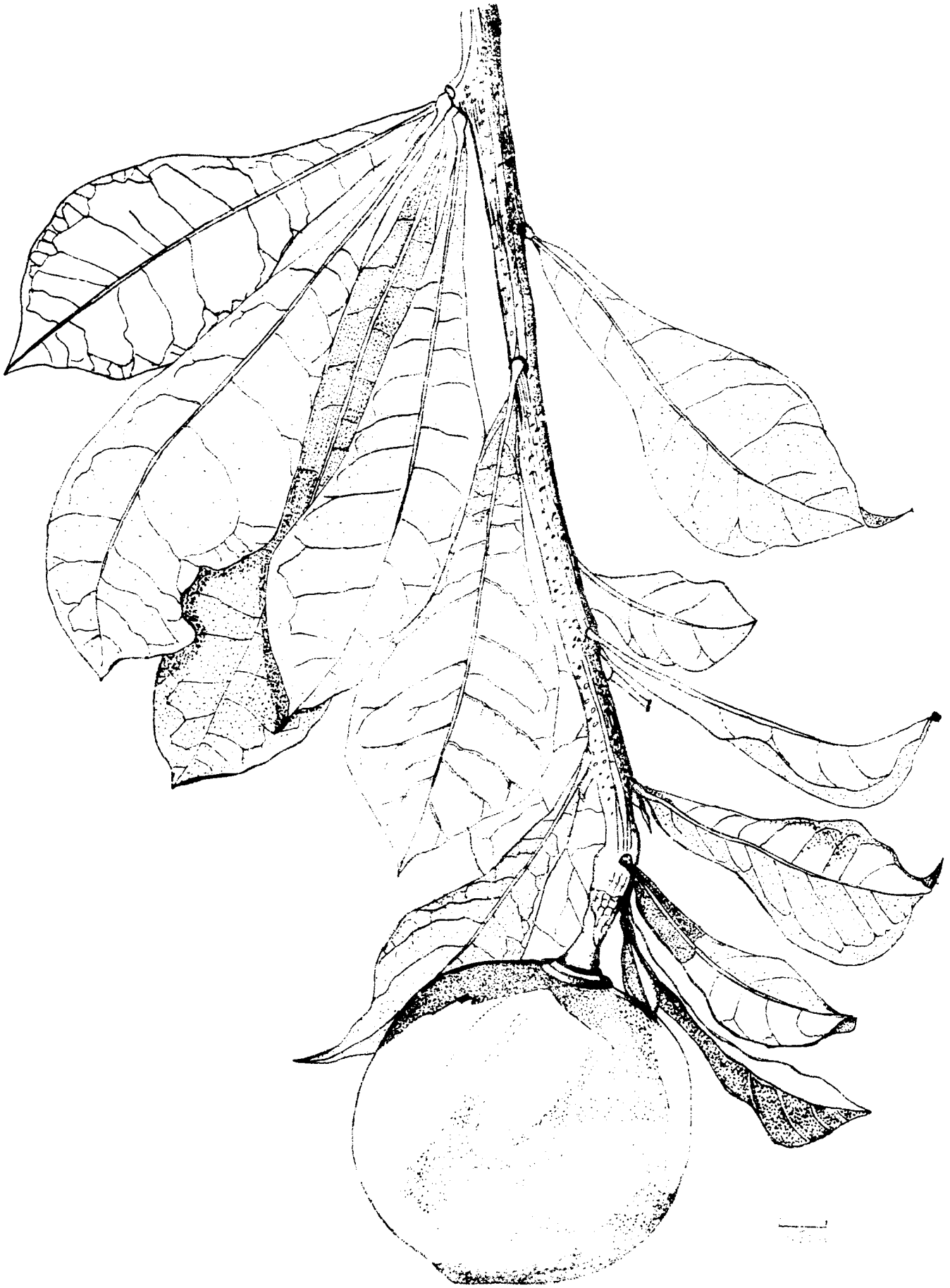
Medicinal Uses

The pulp of the young fruit is used, reputedly, to procure abortions. A very small amount of the pulp may also be used, together with Gully-root (*Petiveria alliacea*) and Minnie-root (*Ruellia tuberosa*) for the relief of severe menstrual pains by assisting to eliminate blood-clots. The pulp of the young fruit also acts as an emetic.

The young leaves are boiled with sugar and a bit of 'soft grease' or 'Buckley's White Rub' is added to the syrup which is drunk as a treatment for colds.

Biodynamic Notes

The ripe pulp was reported to contain crescentic, tartaric, citric, tannic, chlorogenic and hydrocyanic acids and is said to cause abortion in cattle (Morton, 1968).



Crotalaria pallida
(Syn. *C. mucronata*)

BABY SHAK-SHAK
SHAK-SHAK

(LEGUMINOSAE - PAPILIONATAE)

Description

A shrubby little-branched herb 1-2 m high. Leaves alternate, trifoliolate; leaflets elliptic or slightly obovate, 4-13 cm long, 2-6 cm broad. Racemes terminal with dull yellow strongly purple-striped pea-like flowers, the standard petal narrowly ovate and erect. Pod about 4 cm long, inflated, straight or nearly so, minutely puberulous.

Habitat and Distribution

A weed of waste places and roadsides, scattered generally through the tropics.

Medicinal Uses

An infusion of the plant is used to bathe children as a prevention of skin infections and a treatment of thrush.

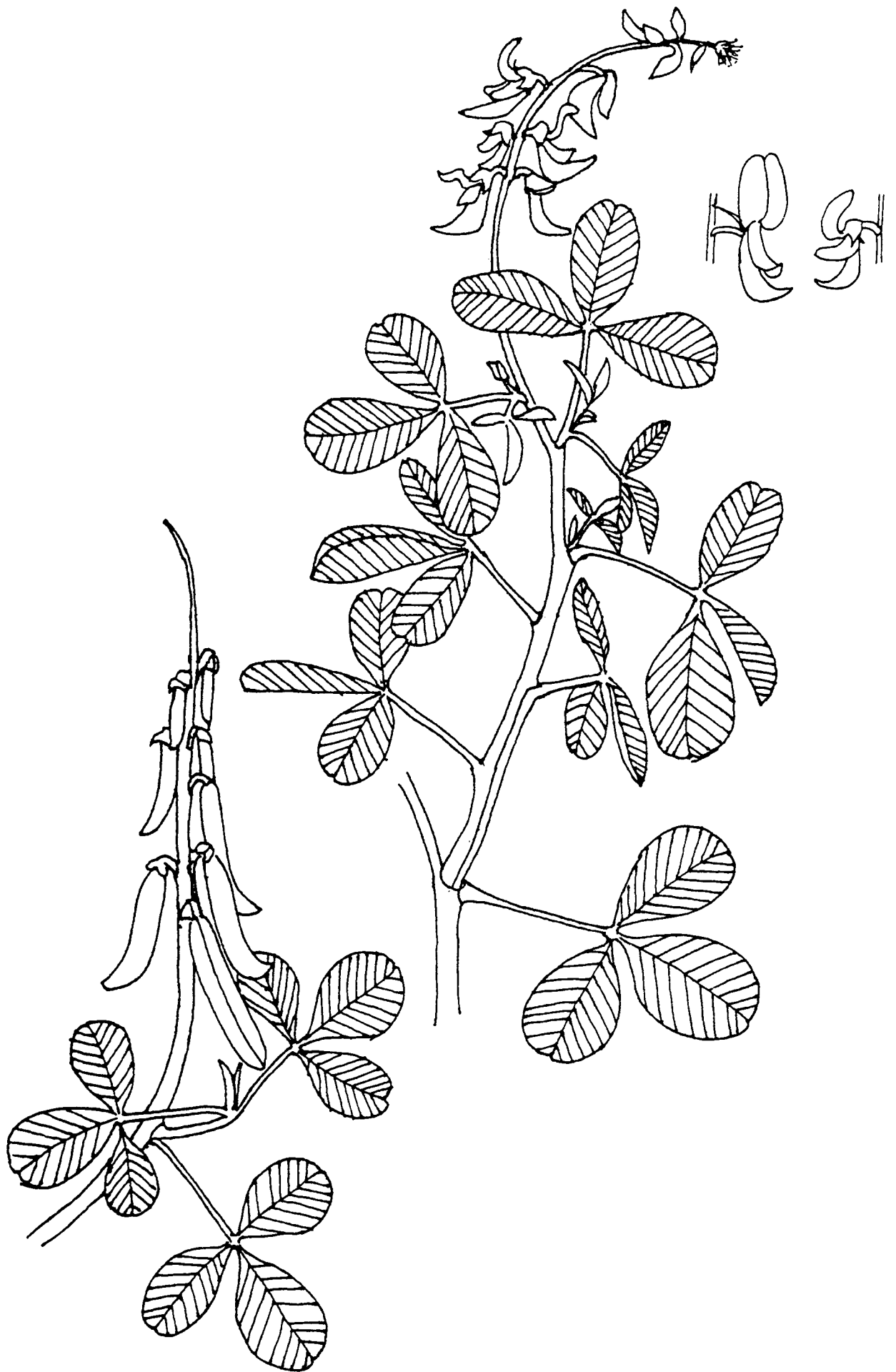
Crotalaria retusa

This is a common pantropical weed, known by the same common names and having the same medicinal uses in Guyana as *C. pallida*. It is a glaucous shrub, about 1 m high, drying blackish. The leaves are simple, oblanceolate, rounded or emarginate at the tip, to 8 cm long and 3 cm broad, with pellucid dots. The flowers are showy in racemes, opening in the afternoon; petals yellow, the standard tinged red outside. The pod is inflated and 3-4 cm long.

Biodynamic Notes

An alkaloid isolated from the seeds of species of **Crotalaria** exhibits inhibitory action on the contraction of guinea pig ileum induced by acetyl-choline histamine, s-hydroxytryptamine, nicotine and barium. Some species are reported to be toxic to livestock (Emmanuel and Ghosh, 1966). Hepatotoxic pyrrolizidine alkaloids, sometime referred to as Senecio alkaloids, are present in *C. retusa* (Adams, Magnus and Seaforth, 1963).

The total alkaloids from seeds of *C. mucronata* exhibited antitumor activity against Walker 256 and Sarcoma 180 rat tumors but the alkaloid usaramine which was isolated showed no activity (Han and Tien, 1981).



Croton trinitatis

ROCK-BALSAM
WILD BLACKPEPPER
WILD MASSALA

(EUPHORBIACEAE)

Description

A woody-based herb to about 70 cm high, the stem variably pubescent with long-rayed stellate hairs. Leaves alternate, ovate to oblong-deltate, 1-5 cm long, to 2 cm broad, acute at the tip, obtuse at the base, the margin coarsely serrate, short- or long-stalked, stellate-hairy on both surfaces. Inflorescences terminal or in the forks of branches, about 1 cm long, with 1-4 female flowers below and 0-8 male flowers above; male flowers with 5 sepals and petals and 8-10 stamens; female flowers also 5-merous, slightly larger than the male flowers, the style short, bifid. Capsule about 4.5 mm long, globose. Seeds 3-3.5 mm long, compressed-cylindric, blackish-brown, smooth.

Habitat and Distribution

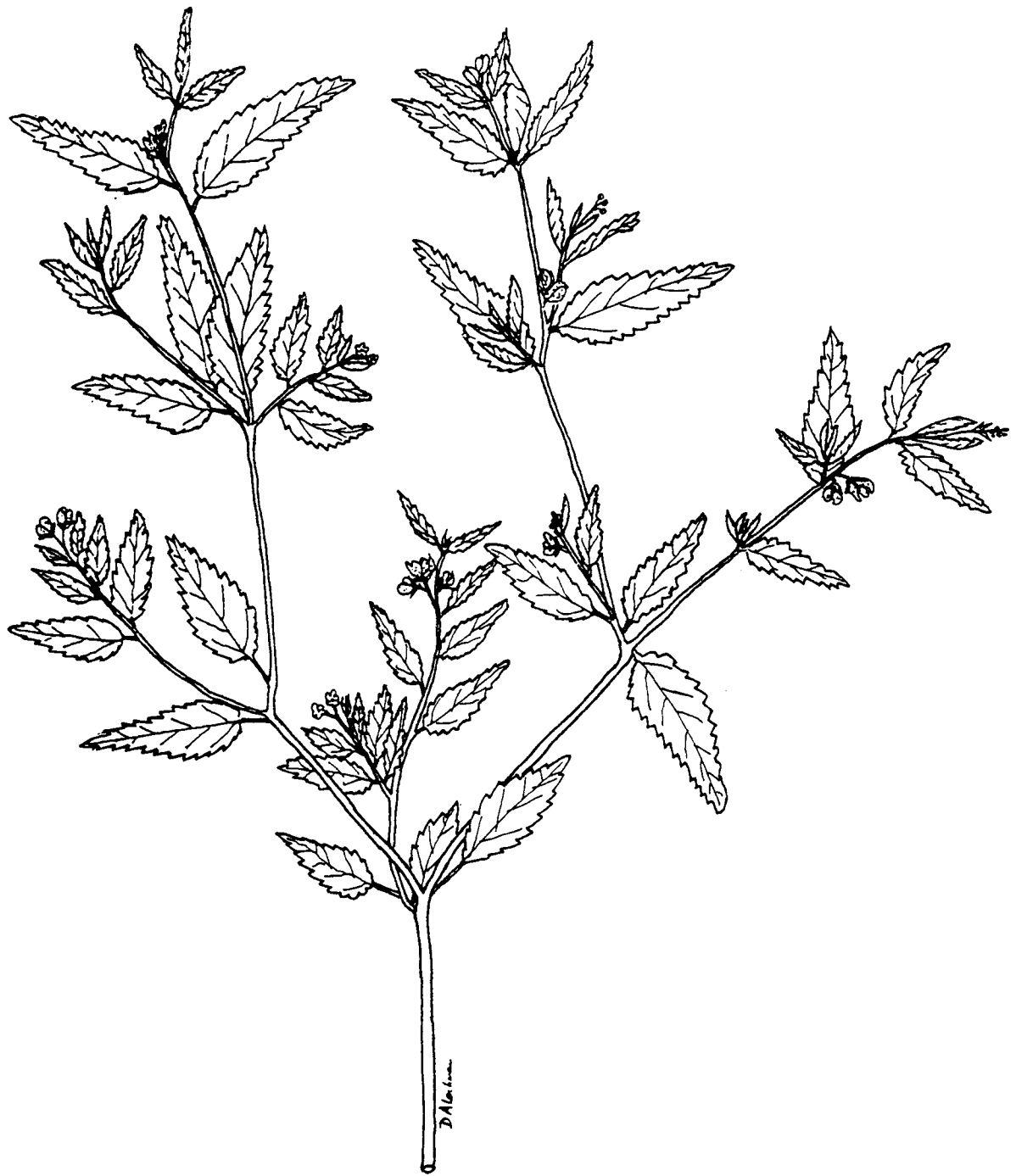
A weedy undershrub of flat open waste places and savanna margins. West Indies, Central and South America.

Medicinal Uses

The plant is boiled and taken as a tea for the relief of fevers, colds and bellyache, and as an abortifacient.

Biodynamic Notes

An anti-inflammatory agent, thasmine, was obtained from *Croton lechleri* (Persinos, 1972) and a diterpene alcohol, which has been used in the treatment of digestive tract ulcer, was isolated from other species (Mishima et al, 1977; Sankyo Co. Ltd., 1982).



Cymbopogon citratus

FEVER-GRASS
LEMON-GRASS

(GRAMINEAE or POACEAE)

Description

A perennial aromatic grass with densely tufted culms to 1.5 m or more high. Leaf-blades tapered to both ends, to 1 m long and 5-15 mm broad, rough-edged throughout. Flowering panicles rarely formed, decompound, 30-60 cm long and nodding, the partial inflorescences are paired racemes of spikelets subtended by boat-shaped spathes 1.5-2.5 cm long; raceme-joints bearded along the sides, the hairs increasing in length upwards but not concealing the sessile spikelets; sessile spikelets about 6 mm long, concave on the back in the lower part.

Habitat and Distribution

Frequently cultivated in gardens and along pathsides. Origin probably in India, now widespread in the tropics.

Medicinal Uses

The leaves are used generally as a tea; they may be boiled together with Bamboo (*Bambusa vulgaris*) leaves and Ginger (*Zingiber officinale*) and the liquid drunk for the relief of fever and ague. Boiled together with Zeb-Grass (*Tripogandra serrulata*), Avocado Pear (*Persea americana*) leaves and Sweet-broom (*Scoparia dulcis*), the tea is taken for jaundice. A decoction of the leaves together with the leaves of Monkey-apple (*Annona glabra*) and Plantain (*Musa paradisiaca*) stalk is used as an emetic to get rid of mucus in the chest.

Biodynamic Notes

The oil has shown antiseptic and antispasmodic properties (Jasper, 1960). The plant yields Lemon-grass oil, of commercial value and especially useful in perfumery.

The antispasmodic principle cryptomeridiol has been identified in *Cymbopogon proximus* (Locksley et al, 1982).

Cymbopogon nardus

CITRONELLA GRASS

A perennial grass like *C. citratus*, often difficult to distinguish from it, but, besides the different odour of the essential oil, the plants are often more robust with a stiffer inflorescence and the sessile spikelets are about 4.5 mm long, lanceolate and flat on the back. A native of Ceylon (Sri Lanka); introduced and cultivated elsewhere. The typical variety has the lower glume of the sessile spikelet narrowly winged and nerveless and awnless. The variety, *confertiflorus*, native of India and Sri Lanka, and also often in cultivation elsewhere, has a 2-3-nerved awned lower glume to the sessile spikelet.

Medicinal Uses

The leaves are used to make tea which is often taken for the relief of colds. The leaves are also used to flavour other teas.



Cynodon dactylon

BAHAMA-GRASS
BERMUDA-GRASS
DEVIL-GRASS
ZIBA-GRASS

(GRAMINEAE or POACEAE)

Description

Low perennial creeping grass, stoloniferous or rhizomatous (underground) according to the state of wetness or texture of the substrate. Flowering shoots leafy at the base, mostly 10-30 cm high. Leaves alternate, strongly distichous, the blade acutely pointed, 2-3 (-5) cm long, 1.5-2.5 mm broad. Spikes digitate, 3-5, simple, slender, straight or slightly curved, 2.5-5 cm long. Spikelets narrow, with one perfect floret, 2-2.5 mm long, in 2 rows on one side of a slender rachis.

Habitat and Distribution

A common weed of newly cleared land, roadsides, pastures and sandy or stony waste places, and cultivated as a lawn grass, near habitations in all warm countries.

Medicinal Uses

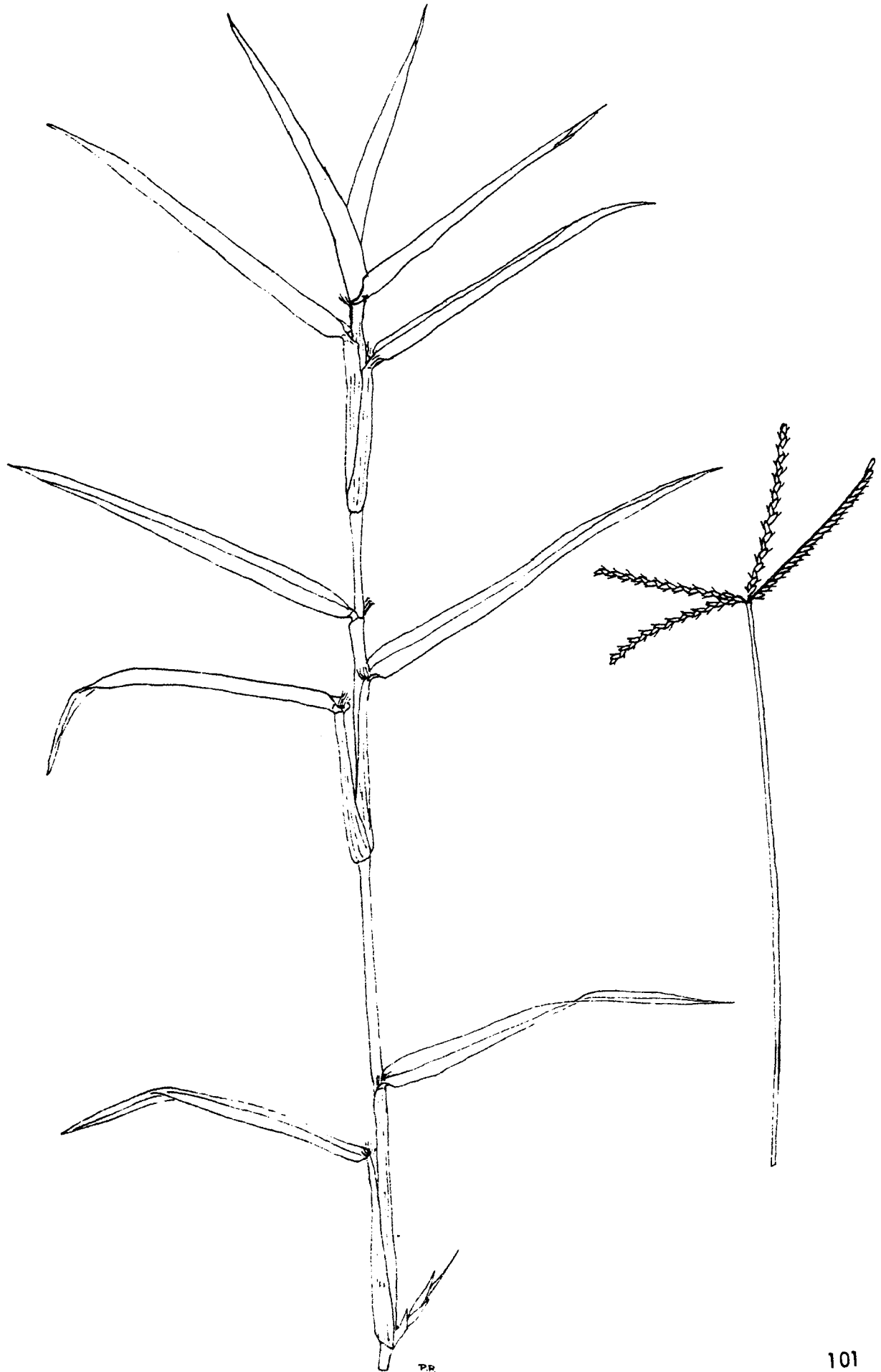
The grass is boiled with Dove-weed (*Euphorbia hirta*) and one schnapp glass taken thrice daily to relieve diarrhoea and biliousness.

A decoction of the entire plant is drunk as a cure for stoppage of water (anuria) and bellyache, and is also used in baths to prevent itching.

Biodynamic Notes

The shoot apex may produce cyanogenetic glycosides especially when development is a response to rain following a spell of dry weather.

Extracts have a high phagocytic index (Broker and Bhatt, 1953).



PR

(CYPERACEAE)

Description

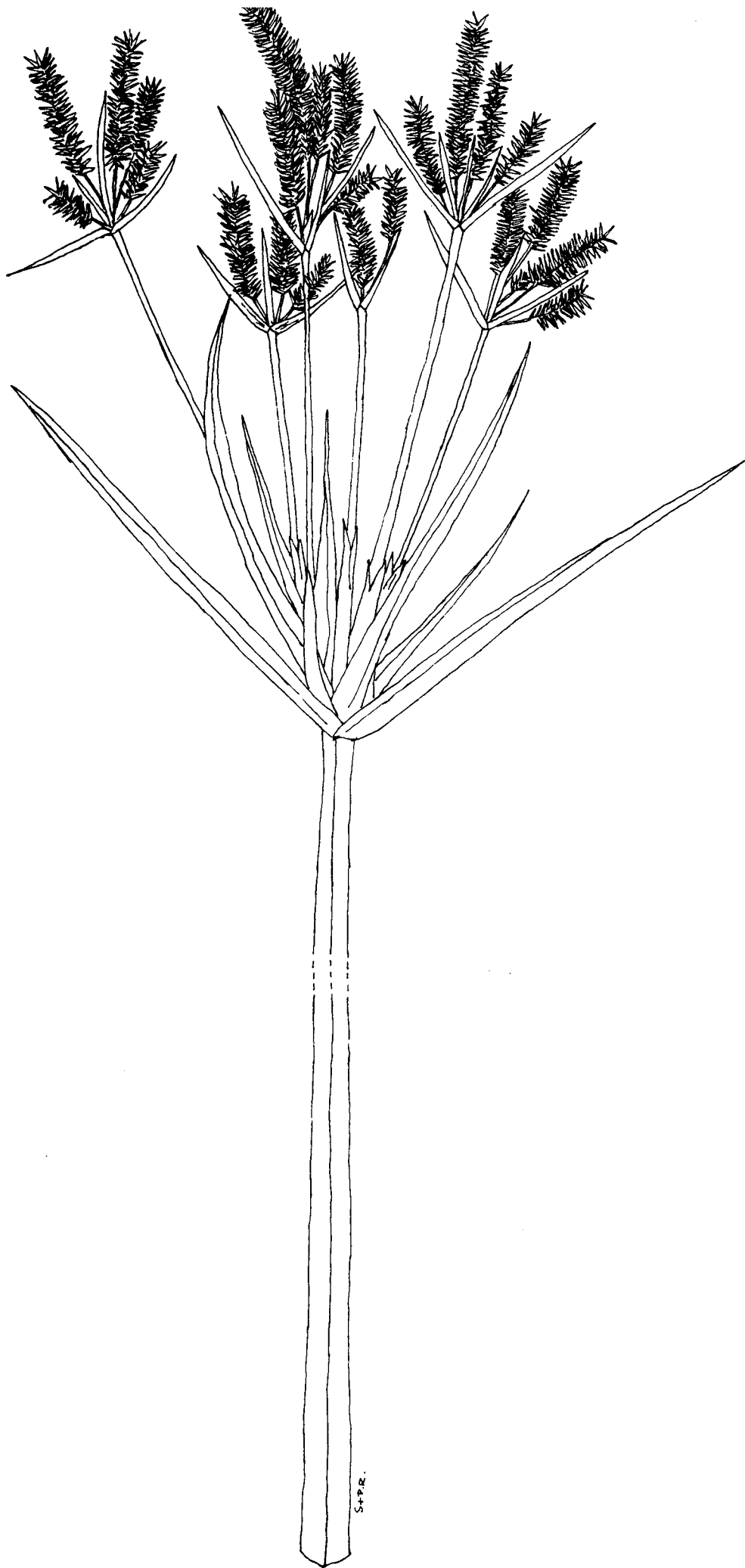
A massive sedge to 3 m or more high, with straight erect unbranched leafless culms from a thick rhizome. Inflorescence a terminal mop of radiating bracts to 50 cm long and 1.5 cm broad, and compound flowering branches, the primary rays to 25 cm long and more or less equal. Spikes terminal, simple, to about 5 cm long and 1-1.5 cm broad. Spikelets about 1 cm long and 1 mm broad, numerous but not tightly compact; glumes 10-20, in 2 rows.

Habitat and Distribution

Often in large colonies in permanent swamps, sometimes, at least during the main rainy seasons, forming the basis of floating vegetation mats. Throughout warm parts of America from Louisiana and Texas to Argentina where extensive aquatic systems exist.

Medicinal Uses

An infusion of the grated rhizome is taken orally for the relief of severe abdominal pains especially during menstruation; it eases the menstrual flow.



S+P.R.

Desmodium adscendensIRONWEED
SWEETHEART
WEAK-BACK

(LEGUMINOSAE - PAPILIONATAE)

Description

Strong-stemmed taprooted herb with spreading branches to about 45 cm long. Leaves alternate with persistent free stipules; leaflets 3, round to elliptic in outline, of thin texture, slightly paler beneath, 1-3 (-4.5) cm long, 7-23 mm broad. Flowers pink fading through mauve to light blue, in a terminal raceme, subtended at first by broad overlapping bracts. Fruit an indehiscent pod, usually straight, with 2-4 segments about 4 mm long.

Habitat and Distribution

Common as a weed of pastures and cultivations and along roadsides in moderately wet areas. Throughout tropical America and also in Africa.

Medicinal Uses

The decoction is used to strengthen the kidneys and back, and for treating nervous conditions. It is also used to cure eczemas.

Desmodium barbatumIRONWEED
SWEETHEART
WATCHMAN**Description**

Bushy or spreading hairy taprooted herb 5-60 cm or more high. Leaves alternate with persistent stipules to 15 mm long; leaflets 3, elliptic, to 3.5 cm long and about 1.5 cm broad, mostly much smaller. Racemes terminal, compact, 1.5-3 cm long. Flowers pink fading blue on drying; calyx long-ciliate, 4 mm long; corolla shorter than the calyx. Fruit an indehiscent pod with 2-4 jointed segments 2.3-3 mm long, with rather long hooked hairs.

Habitat and Distribution

Throughout tropical America on open sandy roadsides and in grassy savannas. Varieties occur in the Old World tropics.

Medicinal Uses

A decoction of the entire plant is drunk for the relief of coughs and colds, and to reduce blood-sugar levels.



Desmodium incanum
(Syn. *D. canum*)

BACKDAM-SWEETHEART
BACKDAM-WATCHMAN
IRONWEED
SWEETHEART

Description

Strong-stemmed herb with erect or spreading branches to 70 cm long, usually shorter. Leaves alternate with persistent partly united stipules; leaflets 3, oblong, of firm texture, whitish-pubescent beneath, the larger terminal blade to about 6 cm long and 3 (-4) cm broad. Flowers pink turning bluish on drying, stalked and well spaced in a terminal raceme; corolla about 5 mm long. Fruit an indehiscent pod with mostly 5-7 D-shaped segments, more deeply notched along the lower margin; the segments 3-4 mm long separating at maturity and adhering to passing objects by means of minute hooked hairs.

Habitat and Distribution

Common in pastures and made-up ground and on roadsides and pathside banks. Scattered through the tropics of both hemispheres.

Medicinal Uses

The dried leaves and stems are boiled and taken as tea. The plant is used, together with Congo-pump (*Cecropia spp.*) and/or Man-piaba (*Leonotis nepetifolia*) for kidney defects, and with Silkweed (*Asclepias curassavica*) and Surinam-bitters (*Phyllanthus amarus*) for ailments of the womb.

Biodynamic Notes

The total alkaloid fraction from aerial portions of *D. gangeticum* produced hypotensive response, with slow recovery and slight stimulation of respiration, in dogs; six indole alkaloids were found (Ghosal et al, 1972).

Flavonoids extracted from *D. styracifolium* when tested on laboratory animals enhanced cerebral and myocardial capillary circulation, increased coronary and cerebral blood flow, increased tolerance to hypoxia and decreased blood pressure (Xu et al, 1981).



(LEGUMINOSAE-CAESALPINIOIDEAE)

Description

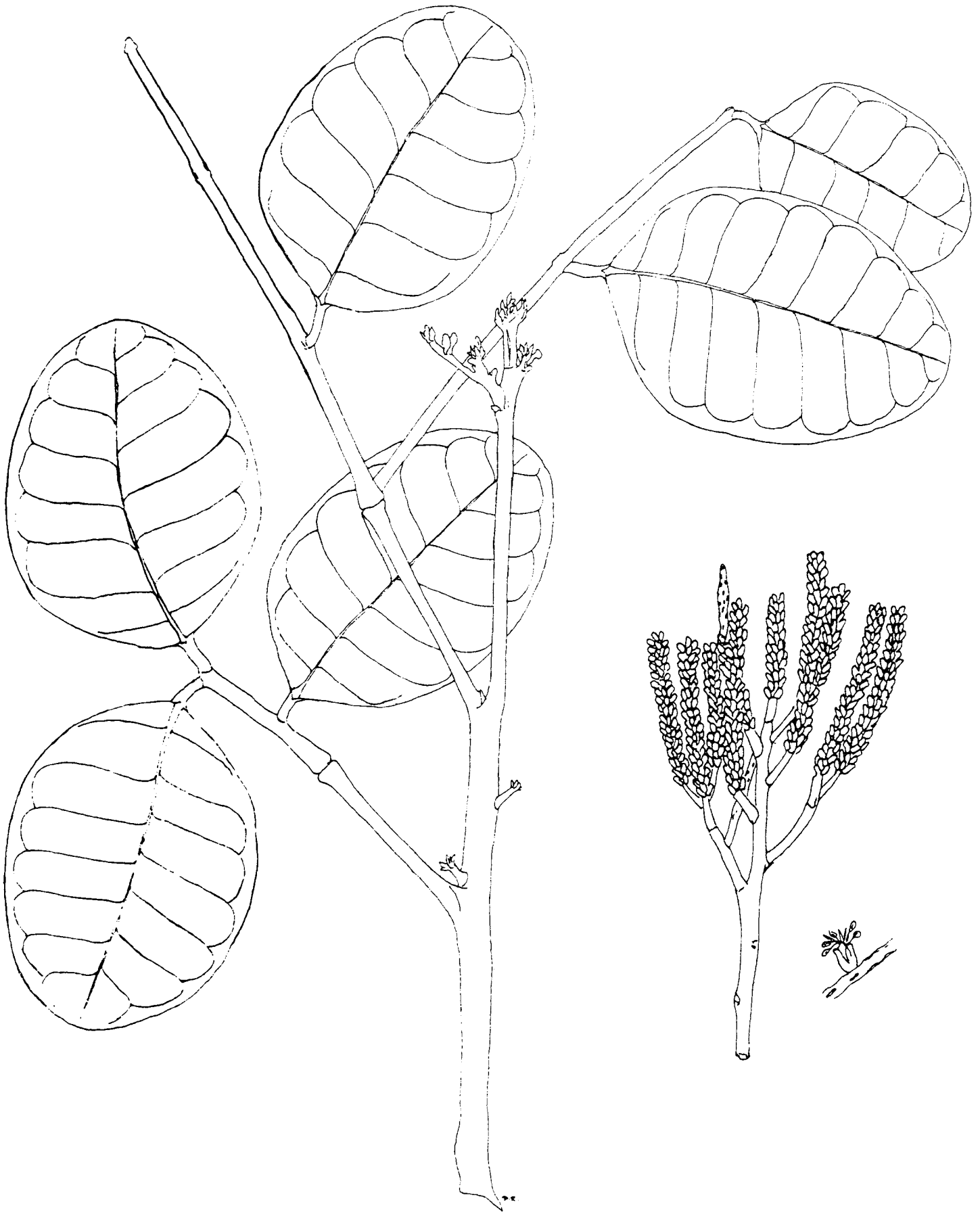
A small tree 2-12 m high. Leaves alternate, bipinnate with 1-2 pairs of pinnae each with 1-3 pairs of leaflets elliptic, rounded or very shortly cuspidate at the tip, cuneate, obtuse or rounded and slightly cordate at the base, 5-24 cm long, 4-15 cm broad, glabrous and shiny above; petiole, rachis and undersurface of leaflet-blade stellate-pubescent, primary lateral nerves 8-11. Inflorescence of numerous spikes less than 10 cm long in a panicle. Flowers sessile, compact, with a cylindrical calyx about 3 mm long; petals as long as the calyx, spatulate, white; stamens 5. Fruit a flat pod.

Habitat and Distribution

In woodland and forest on sand and on dry hills. Guyana.

Medicinal Uses

A decoction of bark taken orally is used as a cure for asthma. An aqueous extract of the bark is used to wash cuts, ulcers and areas affected with 'ground itch', and powdered bark is sprinkled on sores and wounds to enable healing.



Diospyros discolor
(Syn. *D. philippensis*)

BUTTERFRUIT
PEACH

(EBENACEAE)

Description

A tree to about 12 m high with drooping branchlets and dense foliage; bark blackish, rather uneven. Leaves alternate, subdistichous, oblong, usually shortly acuminate at the tip, rounded at the base, 7-22 cm long, 4-9 cm broad, leathery, dark green above, pale and finely silky-hairy beneath; petiole about 1 cm. Flowers about 2 cm across, creamy-white, fragrant; sepals and petals 4. Fruit subspherical, 5-8 cm in diameter, yellowish-brown, densely pungent-hairy with stiff hairs; flesh reddish with a rather sickly odour.

Habitat and Distribution

Cultivated sporadically following introduction from Malaysia and the Philippines.

Medicinal Uses

The leaves heated and squeezed with those of Coarse-leaf thyme (*Plectranthus amboinicus*), are very good for chest colds. A decoction of the young leaves is also used for treating hypertension, heart ailments and diabetes.

Biodynamic Notes

Astragalin and isoquercitrin were the active principles isolated from the traditional oriental medicine of *Diospyros kaki* leaves which showed hypotensive activity (Funayama and Hikino, 1979).

The triterpenes alpha-amyrin and betulin were also isolated from plants of *D. kaki* (Andriamasy et al, 1978) and the tannins from the fruit inactivated microbial toxins and vaccines (Okonogi et al, 1978).

A number of naphthoquinones and triterpenoids were isolated from several species of *Diospyros*; the naphthoquinones included diosindigo A and B, 7-methyljuglone, isodiospyrin, bis-isodiospyrin and diosquinone, whereas the triterpenoids were betulin, betulinic acid, lupeol, alpha-amyrin, ursolic acid, 2-alpha-hydroxyursolic acid and euscaphic acid (Khan and Kishima, 1985).

Doliocarpus dentatus

KAPADULA

(DILLENACEAE)

Illustrated overleaf

Description

A woody climber to 16 m, the young branches greyish-pubescent. Leaves alternate, simple, lanceolate to elliptic or obovate, acute or obtuse and abruptly acuminate at the apex, acute to rounded at the base, 6-24 cm long, 3-10 cm broad, the margin strongly serrate in the distal part, with 10 or more pairs of strong nerves 1-1.5 cm apart, running out to the teeth, the lesser veins parallel, firm-textured, glabrous except shortly hairy on the midrib above. Inflorescence composed of 10-30 or more one-flowered peduncles in clusters at usually leafless nodes; peduncles in flower to 1 cm long, to 2.5 cm long in fruit. Flower-buds globose; petals creamy-white. Ripe fruit globose, 6-9 mm in diameter, berry-like, red, splitting when dry to release one seed.

Habitat and Distribution

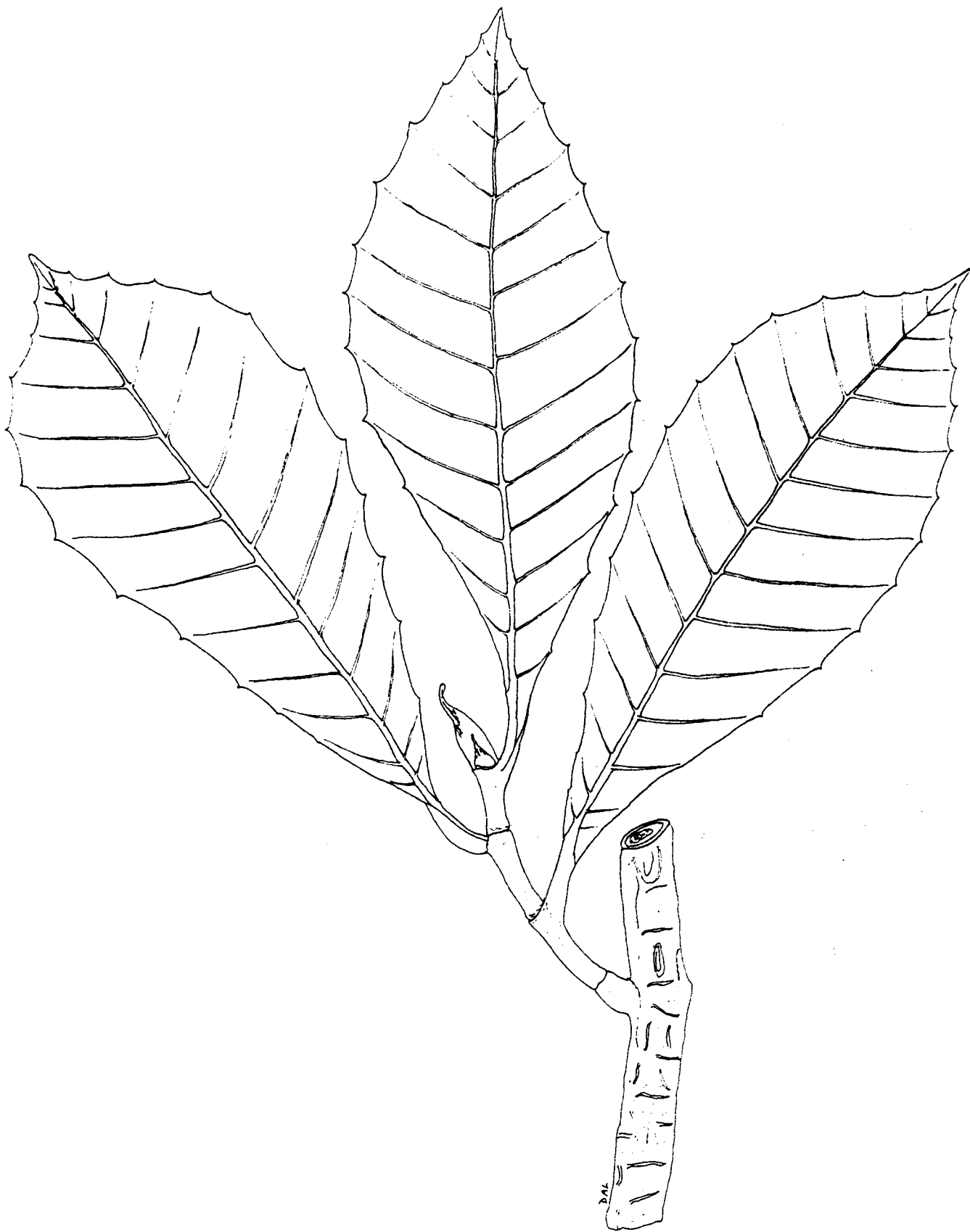
In thickets and forest. Guyana.

Medicinal Uses

The stem and bark are used generally as a tea which is said to have aphrodisiac qualities. The chopped stem and bark are also soaked in wine and the infusion drunk for the same purpose. The plant is often used as a tonic with other plants, i.e. Sarsparilla (*Philodendron fragrantissimum*, see note p. 212), Devil-doer (*Strychnos* sp.), Cockshun (*Smilax schomburgkiana*), Kupa-rope (*Clusia grandiflora*) and Monkey-ladder (*Bauhinia scala-simiae*). A liqueur is produced from these plants and sold in the market. The watery sap from a freshly cut stem is drunk for the relief of stricture or simply as a thirst-quencher.

Biodynamic Notes

Species of *Doliocarpus* are known to contain myricetin or quercetin, or both, and kaempferol. Leucoanthocyanins are also present (Kubitzki, 1968).



Eclipta alba
(Syn. *E. prostrata*)

BANGRAIA
CONGO-LANNA

(COMPOSITAE or ASTERACEAE)

Illustrated overleaf

Description

A herb of variable habit, either decumbent and trailing or erect and bushily branched to about 60 cm high. Leaves opposite in pairs, sessile, elliptic-lanceolate, to about 8 cm long and 2 cm broad, often serrulate, rough on both surfaces. Flower-heads usually solitary on long stalks, to about 1 cm across; involucre bracts leafy; outer (ray) florets numerous, white with linear ligules. Achenes usually rugose, black, without pappus.

Habitat and Distribution

Common in wet places. General in the subtropics and tropics.

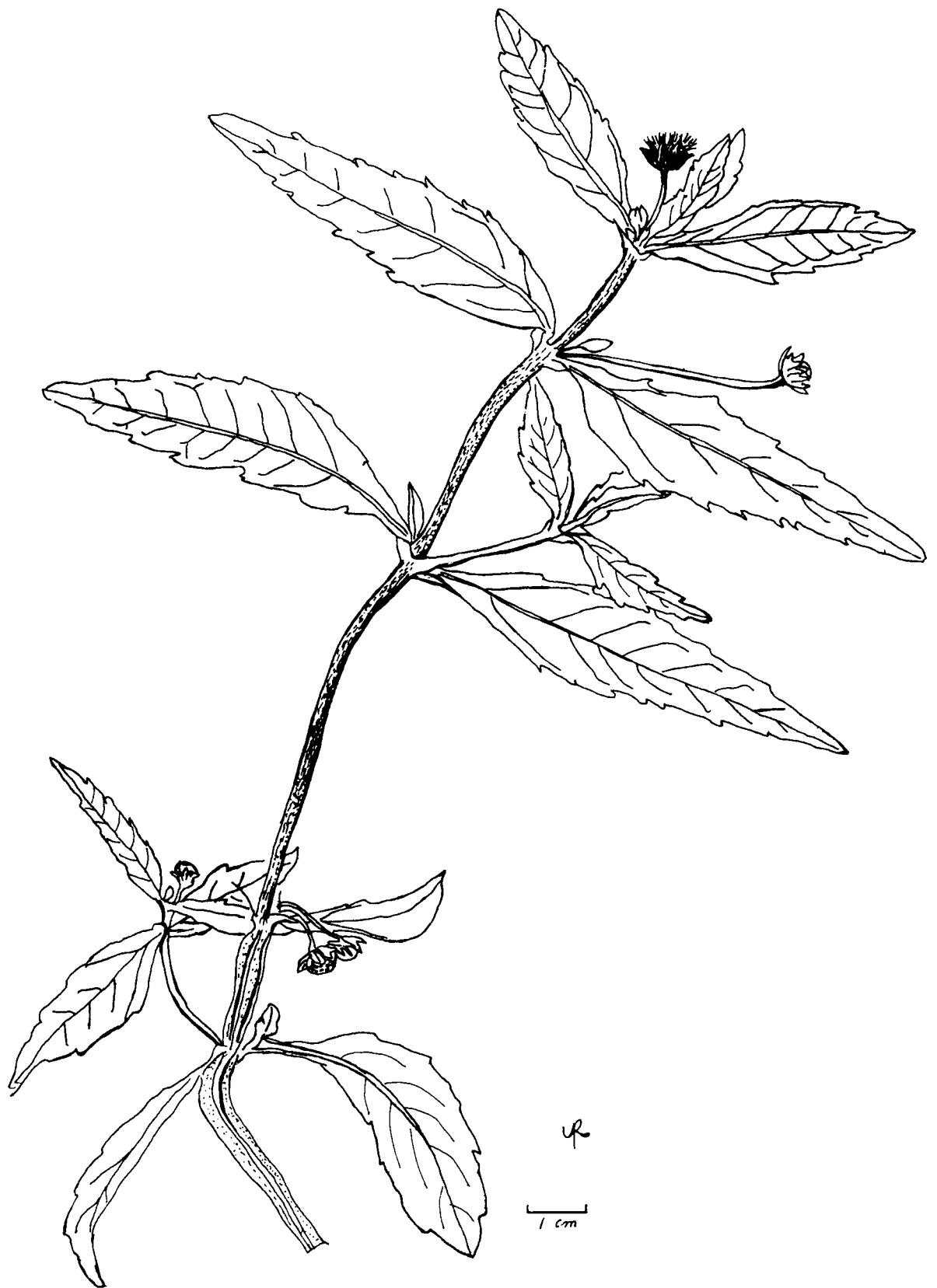
Medicinal Uses

Juice from macerated leaves together with breast milk is given to babies to cure thrush. Leaves are boiled and the extract is drunk as a cure for diarrhoea and weak bladder. The entire plant is crushed and applied externally to treat cuts, bruises and sores and to relieve pain; it stops bleeding. The macerated leaves are also used in baths to relieve fevers. A decoction of the leaves is believed to cure cancer, but the patient should abstain from consuming meat. Juice from crushed flowers is placed in the eyes to relieve 'sore eyes' or irritated eyes.

Biodynamic Notes

This plant is reported to possess moderate activity against a variety of animal cancers (Popp et al, 1967) and extracts have been used against carbon tetrachloride induced liver damage (Ma-Ma and Khin, 1978). The extract has been used as a tonic and for relief of catarrh in infants, headache and skin diseases (Bhargava and Seshadri, 1974).

Compounds which have been isolated include wedelolactone, dimethylwedelolactone, nor-wedelolactone, ecliptine, nicotine, beta-amyrin, beta-stigmasterol, alpha-terthienylmethanol and luteolin-7-O-glucoside (Bhargava et al, 1970, 1972; Bhargava and Seshadri, 1974; Sarg et al, 1981; Krishnaswamy et al, 1966).



Elephantopus pilosus
(Syn. *E. carolinianus* and *E. scaber*
of local authors)*

ELEPHANT-FOOT
GROUND-ITCH BUSH

(COMPOSITAE or ASTERACEAE)

Description

Erect bushy herb to about 1 m or more high. Leaves spirally arranged, often rather tightly so towards the base of the stem, obovate to oblanceolate, shortly winged-petioled below, sessile or subsessile above and shortly sheathing, the margin crenate-serrate, 6-18 cm long, mostly 3-5 cm broad, rather coarse-textured, with long appressed hairs on the main veins beneath and thinly scattered on the lamina. The flower-heads are glomerules about 2 cm long, subtended by broad sessile leafy bracts, of 4-flowered capitula, at the ends of unequally branched spreading peduncles. Corolla white, about 6 mm long. Achenes 10-ribbed, 2-3 mm long, with a pappus of 5 straight bristles.

Habitat and Distribution

In rough pastures and in thickets and woodland margins. Tropical South America.

Medicinal Uses

The leaves are used as a tonic or diaphoretic. Leaves are macerated between the hands and the juice applied externally to relieve itching, especially in athletes foot.

Biodynamic Notes

The sesquiterpene lactone, deoxyelephantopin, an anti-tumor principle has been isolated. Chloroform extracts of the whole plant are responsible for significant inhibitory activity against the Walker-256 carcinosarcoma in rats (Kurokawa, 1970; Lee, 1975).

*The plant common in Guyana resembles *E. carolinianus* of the southern United States but has been described as a distinct species *E. pilosus*. This is sometimes not distinguished from *E. mollis* (syn. *E. scaber*) which has numerous short silky hairs on the under-surface of the leaf. Most of the plants from northeastern South America, including Trinidad, come closest to *E. pilosus*.

Eleusine indica

GOOSE-GRASS
GOOSEFOOT GRASS
MAN-GRASS

(GRAMINEAE or POACEAE)

Description

A tufted grass with erect and spreading culms to about 30 cm high in flower, sometimes taller. The culms are very tough and are usually smooth and dark green. The leaves are strongly keeled. Spikes mostly 2-5, radiating from the apex of the peduncle, sometimes with one slightly below the others, 4-17 cm long. Spikelets in two rows along one side of the rachis, ovate, 2-6-flowered.

Habitat and Distribution

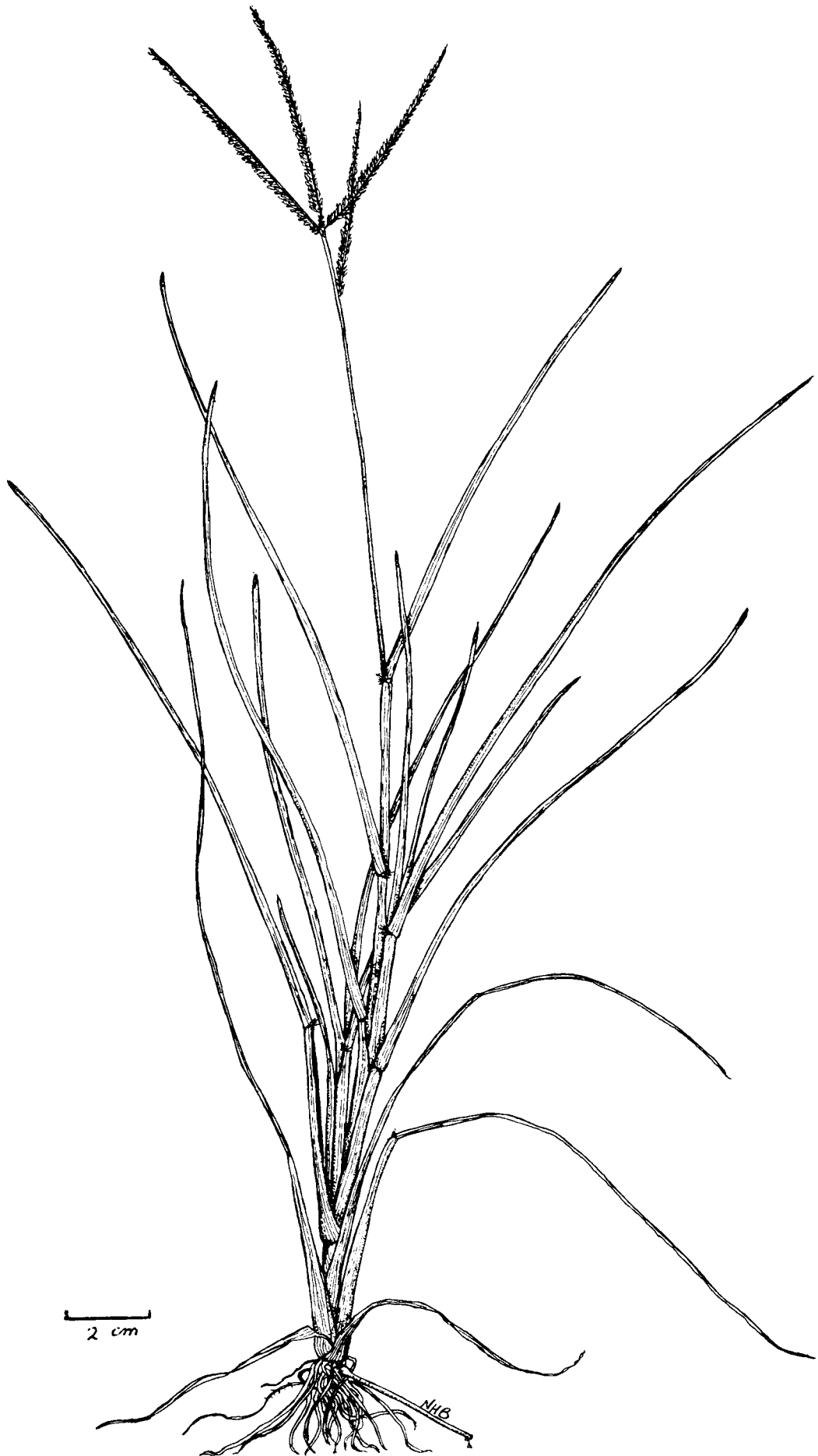
Very common in trampled and mowed places and along pathsides and roadsides, a weedy grass, mostly of non-arable sites. In all warm countries.

Medicinal Uses

The fodder grass which is also used to make a "tea" is thought to relieve the pains caused by straining the abdominal muscles. Applied to open wounds to stop bleeding. The decoction of the grass is used as a tea largely for the relief of bladder disorders, and with Ironweed (*Desmodium sp.*) as a tonic.

Footnote

A number of weedy grasses of, for example, species of *Andropogon*, *Panicum*, *Paspalum* or *Sporobolus*, are variously called Man-grass or Sour-grass or by some other name not always consistently applied. Their medicinal uses seem to be equally vaguely understood. A special study of common grasses and their properties would be useful.



Eleutheranthera ruderalis

PORTER-BUSH
TWELVE O'CLOCK

(COMPOSITAE or ASTERACEAE)

Description

An erect branched annual faintly aromatic herb to 50 cm high. Leaves opposite in pairs, ovate, serrate-dentate, to 6 cm long and 3.5 cm broad, pubescent and with scattered yellow glands beneath. Flower-heads often nodding, on axillary peduncles to 1.5 cm long; involucre bracts leafy, 5 mm long; receptacle-scales folded around the achenes, about 4 mm long; florets yellow, mostly uniform and discoid, hermaphrodite and 5-merous. Achenes obovoid, about 3 mm long, the pappus a ciliate cupule.

Habitat and Distribution

A weed of cultivations and pastures, usually in rather wet areas. General in the tropics.

Medicinal Uses

A decoction of the entire plant is taken with stout or ale to enhance the production of milk in lactating/nursing mothers. It also reputedly taken for high blood pressure.



Eryngium foetidum

FIT-WEED
NANNA-A-RUN

(UMBELLIFERAE or APIACEAE)

Description

A taprooted biennial pungently scented herb. Older leaves in a basal rosette, oblanceolate, to 30 cm long and 4 cm broad, serrate-dentate. Flowering shoot divaricately branched and bearing more deeply toothed leaves. Flower-heads cylindrical, subtended by a whorl of 5-6 unequal bracts resembling the upper leaves.

Habitat and Distribution

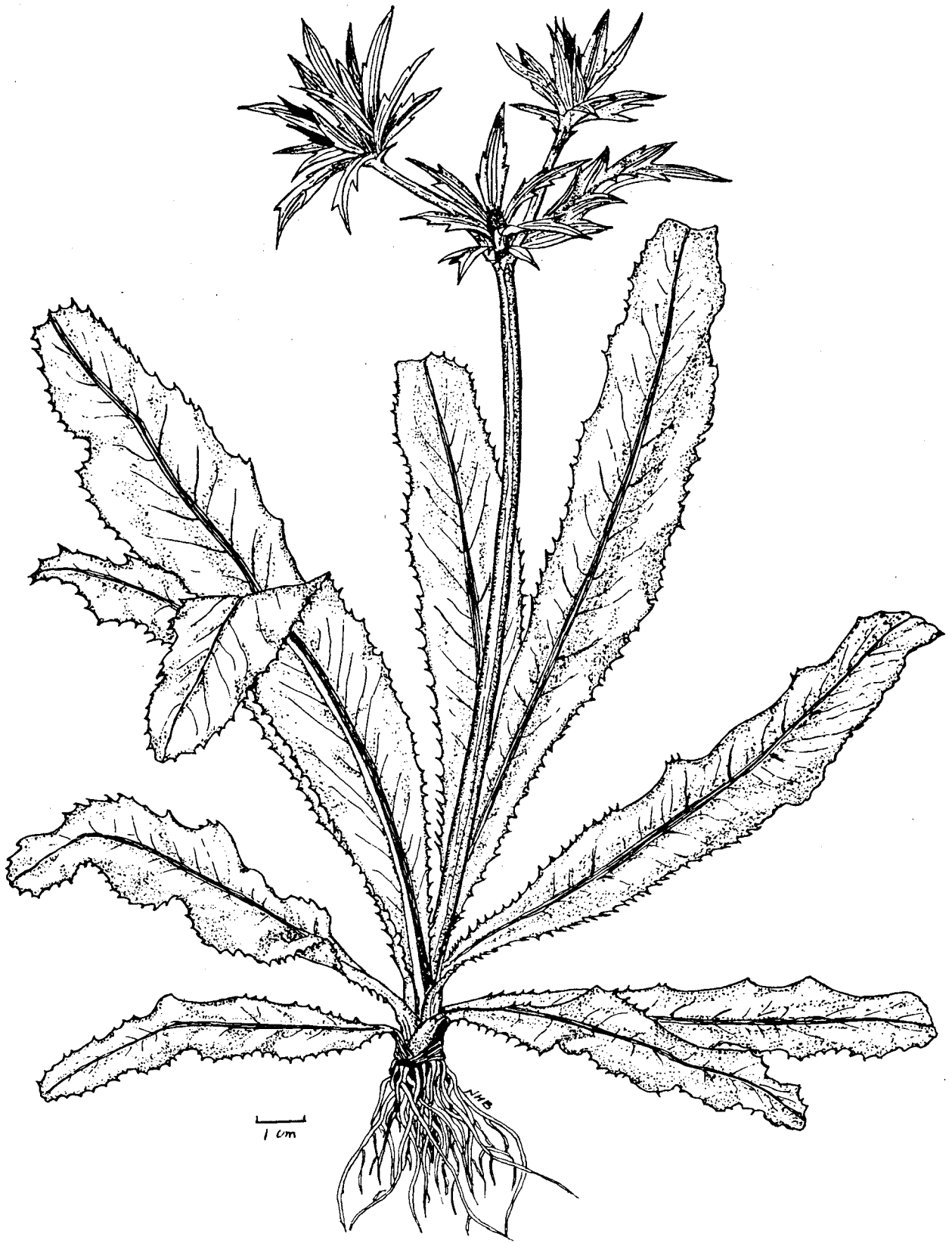
Locally common along damp or shaded trails and near cultivations especially on heavy soils. Native of continental tropical America and the West Indies; introduced and naturalized in West Africa and Uganda.

Medicinal Uses

The decoction of the leaves is popularly administered in cases of epilepsy. The leaves are crushed and placed at the nostrils for the patient to inhale. It is thought to be highly effective for child sufferers. A decoction of the plant is also used to treat children's colds.

Biodynamic Notes

A purified saponin mixture of *Eryngium planum* was shown to have antimyotic activity (Hiller and Friedrich, 1975).



Erythroxylum coca

COCA
COCAINE
COCAINE TREE

(ERYTHROXYLACEAE)

Description

A shrub 1-2.5 m high, with greyish-green rather glaucous branchlets. Leaves alternate, with membranous narrowly triangular intra-petiolar stipules ridged on the back; leaf-blade oblong or ovate-oblong to obovate, shortly acute or rounded at the apex, cuneate at the base, 2.5-8 cm long, 1-3 cm broad, thinly membranous, entire or slightly repand, the margin sometimes slightly revolute, light green. Flowers on young branches below the leaves; peduncles 4-6 mm long; bracteoles very small, triangular; calyx 5-lobed, the divisions ovate-triangular, acute, scarcely 2 mm long; corolla white, the petals scarcely 4 mm long and 1 mm broad, linear-oblong; stamens 10. Fruit ovoid, acute, red, 1 cm long, usually 1-seeded.

Habitat and Distribution

In Guyana in cultivation only. Native of the South American mountains, introduced and cultivated elsewhere.

Medicinal Uses

A decoction of the leaves is used as a tonic and powdered dried leaves are used as an hallucinogenic drug.

Biodynamic Notes

This plant has been used as a stimulant and medicine in many parts of the Andes and in the Amazon basin (Martin, 1970; Plowman, 1979).

Leaves gave positive tests for alkaloids, specifically for cocaine while negative results were obtained for stem and green ripe fruit (Pereira, 1957-58).

Alkaloids of the leaves of *E. coca* var. *novogranatensis* were identified as benzoylecgonine, cocaine, cinnamoylcocaine and tropacocaine (Espinel and Guzman, 1971).



Eucalyptus camaldulensis

EUCALYPTUS
RED RIVER GUM

(MYRTACEAE)

Description

Medium-sized to large tree, to 20 m high, with a short bole and wide-spreading branches; bark dull white, often blotched with yellow and red, rather smooth. Leaves alternate, linear-lanceolate, somewhat leathery and pale but not glaucous, the same on both surfaces, the veins oblique with the intramarginal one remote from the edge, 12-20 cm long, 8-15 mm broad, tapered at the tip. Inflorescence a shortly peduncled cymose umbel. Flower-buds with the more or less beaked operculum longer than the 4-5 mm broad floral tube; stamens numerous, white. Fruit hemispherical to globular-truncate, 7-8 mm long, 5-6 mm broad, the disc sharp and domed, the valves fully exposed, incurved.

Habitat and Distribution

Only in cultivation in Guyana. Native of E and S Australia where it occurs naturally along streams and rivers on alluvial flatland.

Medicinal Uses

An infusion of the leaves is either inhaled or, mixed with that of other aromatic herbs, drunk as "tea" for the relief of colds and congestion. The infusion is also, and less commonly, taken in diabetes.

Biodynamic Notes

Eucalyptus oil is used in medical preparations as a decongestant, anti-inflammatory, vasoconstricting and local antiseptic drug (Hociota and Motocescu, 1982; Takeda Chem. Ind., 1981; Szejtli et al, 1983). Extracts of some species of **Eucalyptus** were found to be hypotensive in laboratory animals (Read et al, 1964).

Eucalyptus globulus yielded gallic acid, caffeic acid, ferulic acid, gentisic acid and protocatechuic acid; elemol and beta-eudesmol were isolated from **E. helioscopia**; and isosakurantin and leucopelargonidin glucopyranoside were obtained from **E. maculata** (Boukef et al, 1976; Baghlaf et al, 1983; Mishra and Mishra, 1980).



Eugenia uniflora

BARKA-TREE
SURINAM-CHERRY

(MYRTACEAE)

Description

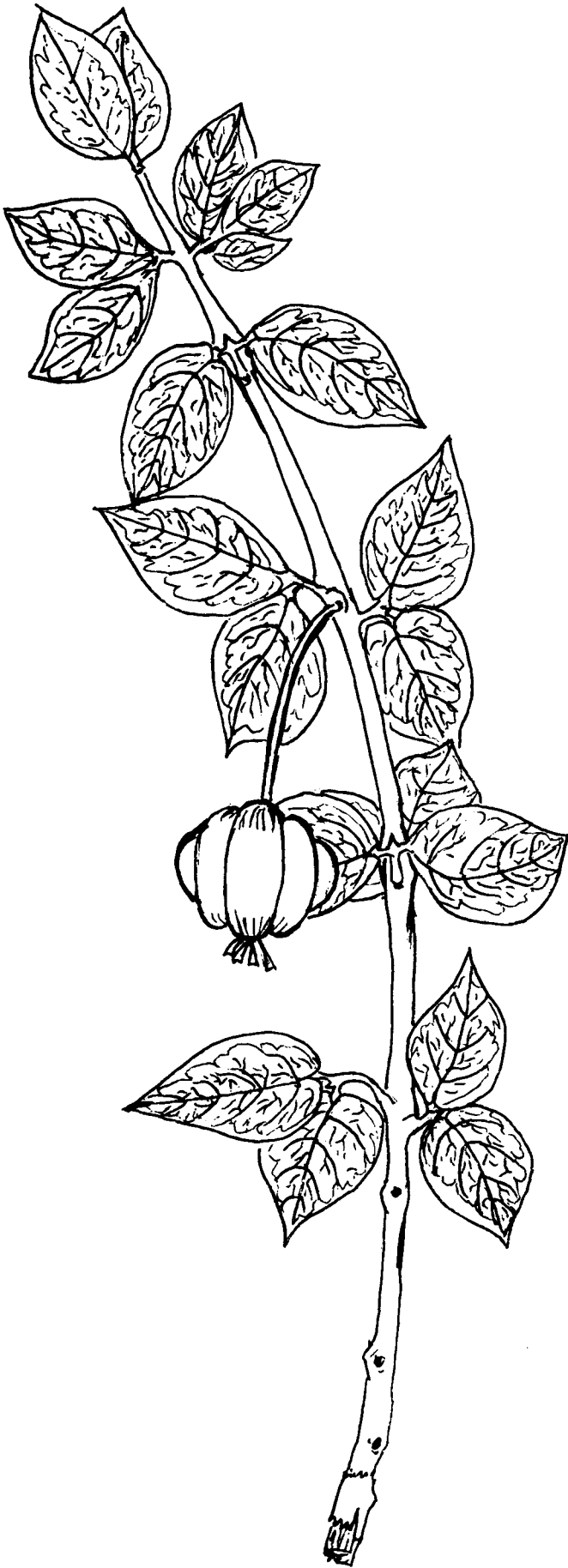
A shrub or small tree 3-10 m high. Leaves opposite in pairs, ovate to ovate-lanceolate, 2.5-6 cm long, 1.5-3.5 cm broad, shortly acuminate at the apex, obtuse to rounded or subcordate at the base, glabrous, shortly stalked. Flowers solitary or in clusters of up to eight together in the axils of bracts at the bases of young branches, slender-pedicelled; sepals 4, glabrous except the ciliate margins, to 4 mm long; petals obovate, clawed, white, 8-12 mm long. Fruit a depressed-globose 8-ribbed berry, 2.5-3 cm in diameter, red when ripe, with one seed.

Habitat and Distribution

Cultivated widely in the subtropics and tropics. Native of tropical America.

Medicinal Uses

The fruit are used to make a syrup and the leaves a decoction, both taken orally, for influenza. A decoction of the leaves is also used as a bitter tonic and for relief of chest colds and coughs.



Euphorbia hirta

DOVE-WEED
MILKWEED

(EUPHORBIACEAE)

Description

A herb to about 20-30 cm with more or less erect branches, spreading from near the base, bearing yellowish hairs. Plant often reddish, with milky sap. Leaves opposite in pairs from slightly swollen nodes, ovate or rhomboid, unequal-sided at the base, to 4.5 cm long and 1.6 cm broad, serrulate. Inflorescences about 1 cm in diameter, of globose clusters of cyathia. Fruit a minute 3-seeded capsule.

Habitat and Distribution

A very common weed of inhabited places and open ground, general throughout the subtropics and tropics.

Medicinal Uses

An infusion of the plant is taken orally for the relief of colds and flatulence (stomach burns). As a treatment for filaria, the plant is warmed, mixed with ghee, and applied as a poultice to the affected area; it is used in the same fashion for rheumatism.

Biodynamic Notes

Terpenes, anthocyanins, alcohols and sterols have been isolated from *E. hirta* (Baslas and Agarwal, 1980a).

Euphorbia pilulifera (probably the same or closely related species) has been used as an anthelmintic and for the treatment of coughs, asthma, bronchitis, hay fever and other respiratory conditions (El-Naggar et al, 1978; Baslas and Agarwal, 1980b). An ethanolic extract of the aerial parts of the plant showed relaxing and contracting effects when tested on guinea pig ileum (El-Naggar et al, 1978). The extract yielded shikimic acid (relaxing principle), choline (contracting principle), L-inositol, glucose, fructose, sucrose (El-Naggar et al, 1978), cycloartenol, euphorol, beta-sitosterol, beta-amyrin acetate and ingenol triacetate (Baslas and Agarwal, 1980b). Rao et al, 1983, reported that in addition to rutin, quercetin rhamnoside, n-octacosanol and beta-sitosterol, a hygroscopic crystalline water-soluble base which showed antimicrobial activity, was isolated from *E. pilulifera*; the drug showed antidysenteric activity without any toxic side effects. Other compounds identified in this species were taraxerol, taraxerone, alpha- and beta-amyrin, campesterol, stigmasterol and sitosterol (Atallah and Nicholas, 1972).

Several species of *Euphorbia* were reported to show mild skin irritant effects attributable to the presence of short-chain fatty acid esters of ingenol which can cause cancer (Upadhyay et al, 1983).

Kaemferide and quercetin glycosides were found in *E. humifusa* (Li et al, 1983).



(EUPHORBIACEAE)

Description

A shrub or ascending-branched tree 2-10 m high, with thick 5-angled or subterete succulent spiny branches; sap copious, milky. Leaves spiral on the developing shoots, subtended by paired stipular spines, oblong-oblong-oblanceolate, apiculate, to about 15 cm long and 4 cm broad, fleshy, glabrous, the midrib sharply prominent beneath. Peduncles borne at prominent nodes on the stem-angles, short and thick; bracts inconspicuous, green, with shiny yellow glands, soon withering.

Habitat and Distribution

Sporadic in cultivation. Native of south-east tropical Asia.

Medicinal Uses

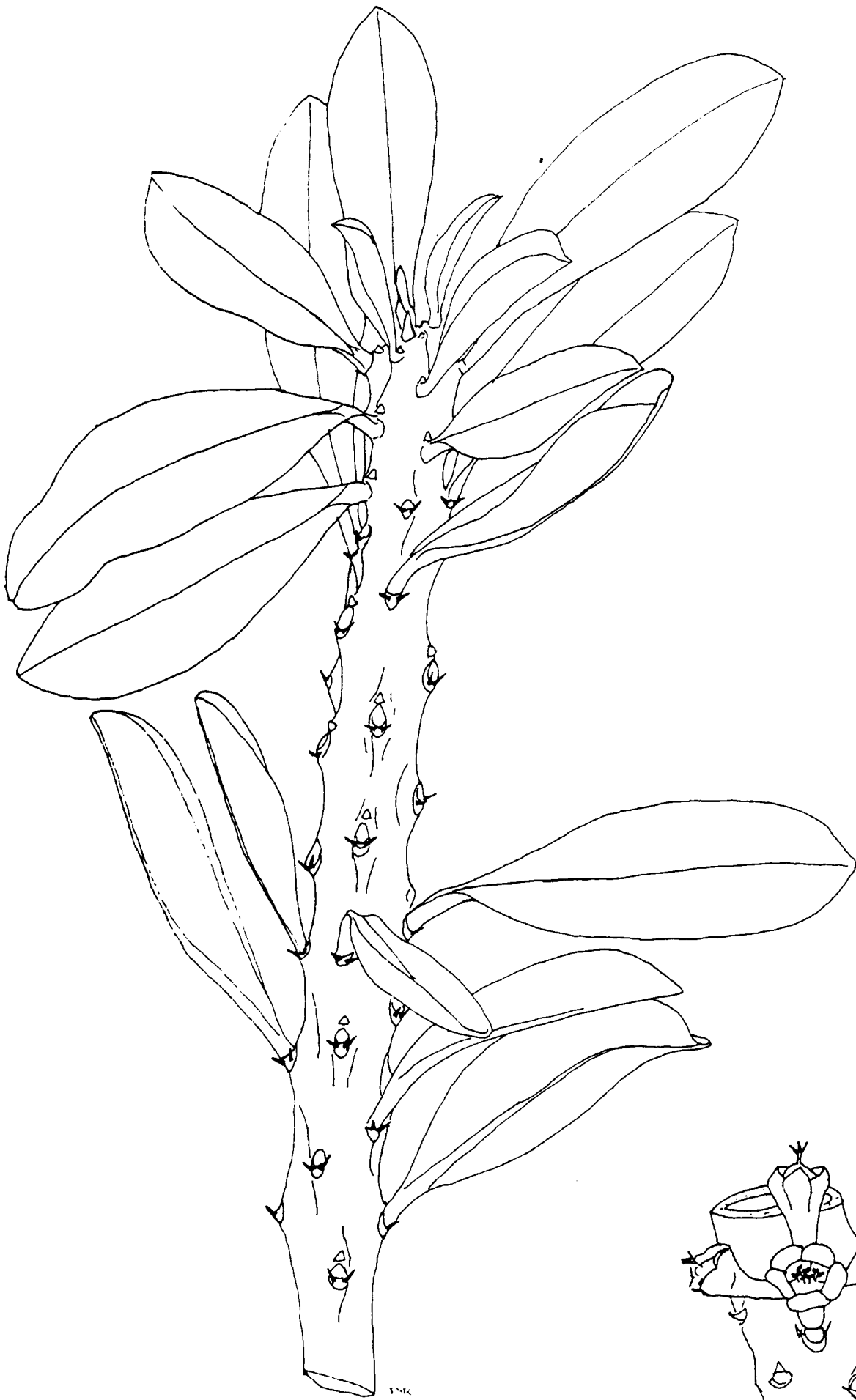
The leaves are heated and squeezed to extract the sap which is taken, with a pinch of salt, for the relief of colds and stomach upsets and wheezing in babies.

Biodynamic Notes

Terpenes, anthocyanins, alcohols and steroids were reported in this species (Baslas and Agarwal, 1980a). Euphol, euphorbol hexacosanate, n-hexacosanol and 24-methylene cycloartenol were isolated from the petroleum ether extract of the bark (Baslas and Agarwal, 1980c).

Pronounced antiviral activity was observed for extracts of *E. grantii* and was attributed to 3-methoxy flavones (Van Hoof et al, 1984).

A toxic and skin irritant factor, 3-O-angeloylgingerol, was isolated from the latex of *E. antiquorum* (Adolf et al, 1983). Quinic acid, hydroxyglutaric acid, myo-inositol and inositol were obtained from the dried latex of *E. resinifera* (Boe et al, 1969). Beta-sitosterol, heptacosane and several fatty acids were isolated from *E. helioscopia* (Nazir et al, 1977). Extracts of the aerial parts of *E. terracina* yielded beta-amyrin, beta-sitosterol, quercetin, quercetin 3-glucoside, quercetin 3-galactoside and a highly hydroxylated triterpene (Khafagy et al, 1977).



(RUTACEAE)

Description

A slender tree to 30 m or more high with spiny branches. Leaves alternate, pinnate, to about 40 cm long, the rachis sometimes with a few very small prickles; leaflets in 4-6 opposite or subopposite pairs, oblong or obovate, obtuse and rounded or with a short broad cusp at the tip, the base mostly unequally cuneate, the proximal 3.5-5 cm long and 2-3 cm broad, the distal 6.5-12 cm long and 3.7-5.8 cm broad, leathery, punctulate beneath. Inflorescences axillary or pseudo-terminal, pyramidal, paniculate, to 26 cm long and 18 cm broad, with pubescent branches. Flowers greenish-white, subsessile in clusters, 5-merous; sepals broadly suborbicular; petals ovate-elliptic, 1.5-2.5 mm long and about 1 mm broad.

Habitat and Distribution

In forests. Guyana.

Medicinal Uses

The sap of fresh inner bark is used to relieve toothache.

Biodynamic Notes

The bark of *Fagara monophylla* kills Paramecium and Daphnia. It is also toxic to fish and subcutaneous injection kills mice and causes hypertension in dogs (Morita et al, 1968).



Gossypium spp.

BLACK COTTON
BUCK-COTTON
COTTON
COTTON-BUSH

(MALVACEAE)

Description

Shrubs to about 5 m high. Leaves alternate, distinctly lobed, long-stalked, with leafy stipules. Flowers solitary, pedicellate in the leaf-axils, subtended by three broad leafy toothed bracteoles; corollas 5-merous, the petals contorted, usually light yellow turning pinkish. Capsules ovoid, pointed, dehiscent to expose seeds embedded in copious white lint.

The classification of cottons is very difficult. The two main groups of cultivated and sometime naturalized plants belong to **G. barbadense**, Long-staple or Sea-island Cotton and **G. hirsutum**, Short-staple or Upland Cotton.

Habitat and Distribution

The species are native of tropical America, **G. barbadense** of the South American mainland, and **G. hirsutum** of subtropical North and Central America and some of the Caribbean Islands. Often established in waste places and near habitations, especially in coastal areas.

Medicinal Uses

The leaves are boiled with Bloodwood (**Vismia spp.**) and Ant's Bush (**Struchium sparganophora**) and administered for the relief of backache. The juice of the leaves and the young unopened pods, mixed with a pinch of salt, or a decoction of the leaves mixed with that of Ant's Bush and given orally is thought to be a remedy for 'thrush', dysentery and gastro-enteritis, or young leaves may be warmed, crushed and applied with coconut oil on the affected area to cure thrush and sores. The juice from roasted young buds is squeezed into the ear for the relief of earache.

Biodynamic Notes

Gossypol, a toxic polyphenolic bisessquiterpene, has been isolated from Cotton, including **G. hirsutum** (Merck Index, 1976; Bernardi and Goldblatt, 1969). Gossypol is said to have antifertility activity (Waller et al, 1985), and also antiviral activity (Dorsett et al, 1975).

The immature flower buds of **G. hirsutum** also yielded a diglycosylated flavanol, sexangularetin-3-glucoside-7-rhamnoside (Elliger, 1984).



Guarea guidonia
(Syns. *G. guara*, *G. trichilioides*)

(MELIACEAE)

BASTARD CRABWOOD
BUCK-PUKE
BUCK-VOMIT
KARABA-BALLI

Description

A small or medium-sized tree to 20 m high, often branched near the base; bark brown, smooth at first, fissured later; young branches pubescent, brown. Leaves pinnate with a terminal bud; leaflets opposite or subopposite in up to about 9 pairs, usually elliptic or oblong, acuminate, usually cuneate at the base, mostly 12-25 cm long and 4-7 cm broad, glabrous or with a few hairs on the midrib beneath. Plants dioecious, the inflorescences narrowly paniculate. Flowers unisexual, 6-9 mm long, mostly tetramerous; petals white or cream-coloured, sometimes greenish. Capsule globose to fig-shaped, 4-valved, 1.5-2.5 cm in diameter, usually abruptly contracted into a short stout stipe, nearly always with pustular lenticels. Seeds ovoid, 4, about 1 cm long, covered with a thin orange sarcotesta.

Habitat and Distribution

Characteristically occurs along riverbanks. From the Greater Antilles (except Jamaica) to Trinidad, and through Central and South America.

Medicinal Uses

The bark is boiled and the extract used for the treatment of thrush in babies and also as a purgative and emetic.

Biodynamic Notes

A tetranotriterpenoid, angustinolide, was isolated from the seeds and minor amounts of beta-sitosterol from the bark and wood extracts (Zebрук and Rosito, 1971). Dregeanin was isolated from *Guarea* spp. (Ritchie and Steele, 1966).

Guarea pubescens
(Syn. *G. davisii*)

KUFI-BALLI

This is a usually small under-storey tree 3-5 m high; the young branches usually yellowish-pubescent. Leaves pinnate with a terminal bud, the rachis (in our subspecies **pubescens**) without a wing; leaflets opposite, 2-7 pairs, elliptic or oblanceolate, to 25 cm long and 10 cm broad, acuminate at the tip, cuneate at the base, sparsely to moderately pubescent beneath. Inflorescences axillary on branchlets below the leaves, comprising few-flowered racemes often with short branches at the base. Flowers unisexual or bisexual, 7-9 mm long, mostly tetramerous; calyx red or pink; petals cream or white. Capsule often globose and minutely tuberculate, 1.2-2 cm in diameter, 4-valved and often 3-4-ribbed, reddish or purple. Seeds shaped like a 'peg' of orange, 8-15 mm long, with a thin orange sarcotesta.

It grows in non-flooding lowland forest in northern South America.

A decoction of the root is used as a douche, and a decoction of the stem and root serves as an emetic.



Heliotropium indicum

WHITE-CLARY
WILD-CLARY

(BORAGINACEAE)

Description

Annual erect taprooted hispid herb to 1 m or more high. Leaves alternate, broadly ovate, more or less truncate-subcordate at the junction with the long winged petiole, irregularly sinuate-margined, to 15 cm long and 6 (-10) cm broad. Cymes terminal, simple, uncoiling from the tip in development, to 15 cm or more long in fruit. Flowers unilateral; corolla light violet with a yellow eye, rarely white, about 8 mm long. Fruit dry, glabrous, the pointed nutlets separating, nearly 3 mm long.

Habitat and Distribution

A common pantropical weed of pastures, cultivated ground and waste places near dwellings; often conspicuous because avoided by goats.

Medicinal Uses

The juice and the decoction of the leaves are variously used for medicinal purposes, although the plant is reputed to have haemorrhagic and other harmful properties. The juice is used for the relief of inflammation in the eye as well as the relief of diarrhoea.

Juice from macerated leaves is used as a treatment for infected eyes or squeezed directly on cuts and bruises to enable effective healing.

Juice is also taken with salt for the relief of colds. A decoction of the entire plant is taken for thrush, diarrhoea and frequent excretion of urine.

Leaves are boiled with leaves of Bitter-tally (**Mikania micrantha**) and the liquid drunk for stomach upsets. The entire plant is boiled with Ironweed (**Desmodium spp.**) and the decoction drunk as a purgative of the reproductive system as a cleanout for men and women.

Biodynamic Notes

Heliotropium indicum is employed as a medicinal plant in Southern India, chiefly for liver disorders, however, extracts showed significant activity against several experimental tumor systems and the active principle isolated was indicine (Kugelman et al, 1976). Indicine is the major alkaloid of this species along with acetyl indicine and indicinine (Mattock et al, 1961; Mattock, 1967), and indicine-N-oxide has been recovered (Boettner, 1984).

The pyrrolizidine alkaloids trachelanthamidine, supinidine and retronecine were found in leaves, inflorescences, roots and seedlings (Catalfamo et al, 1982), putrescine, spermidine and spermine were later reported in the leaves and inflorescence, and homospermidine in the inflorescence-axes and youngest leaves (Birecka et al, 1984). Hoque et al, 1976, reported indicine, echinatine, supinine, heleurine, heliotrine, lasiocarpine and lasiocarpine N-oxide.



Hibiscus rosa-sinensis

DOUBLE ROSE-HIBISCUS
HIBISCUS

(MALVACEAE)

Description

A shrub with long slender branches to about 6 m high. Leaves spiral, the blades ovate, to about 15 cm long and 12 cm broad, with long straight stalks. Flowers borne singly in the axils of upper leaves; epicalyx of 5-7 bracteoles about 1 cm long; calyx cupular, about 2.5 cm long; corolla short-lived, of 5 very showy contorted-overlapping petals joined at the base. Fruit is very rarely formed and consists of a capsule about 3 cm long. Many varieties, differing in size and colour of petals and of single and double forms, exist; some of these are hybrids resulting from crosses with the African *H. schizopetalus*.

Habitat and Distribution

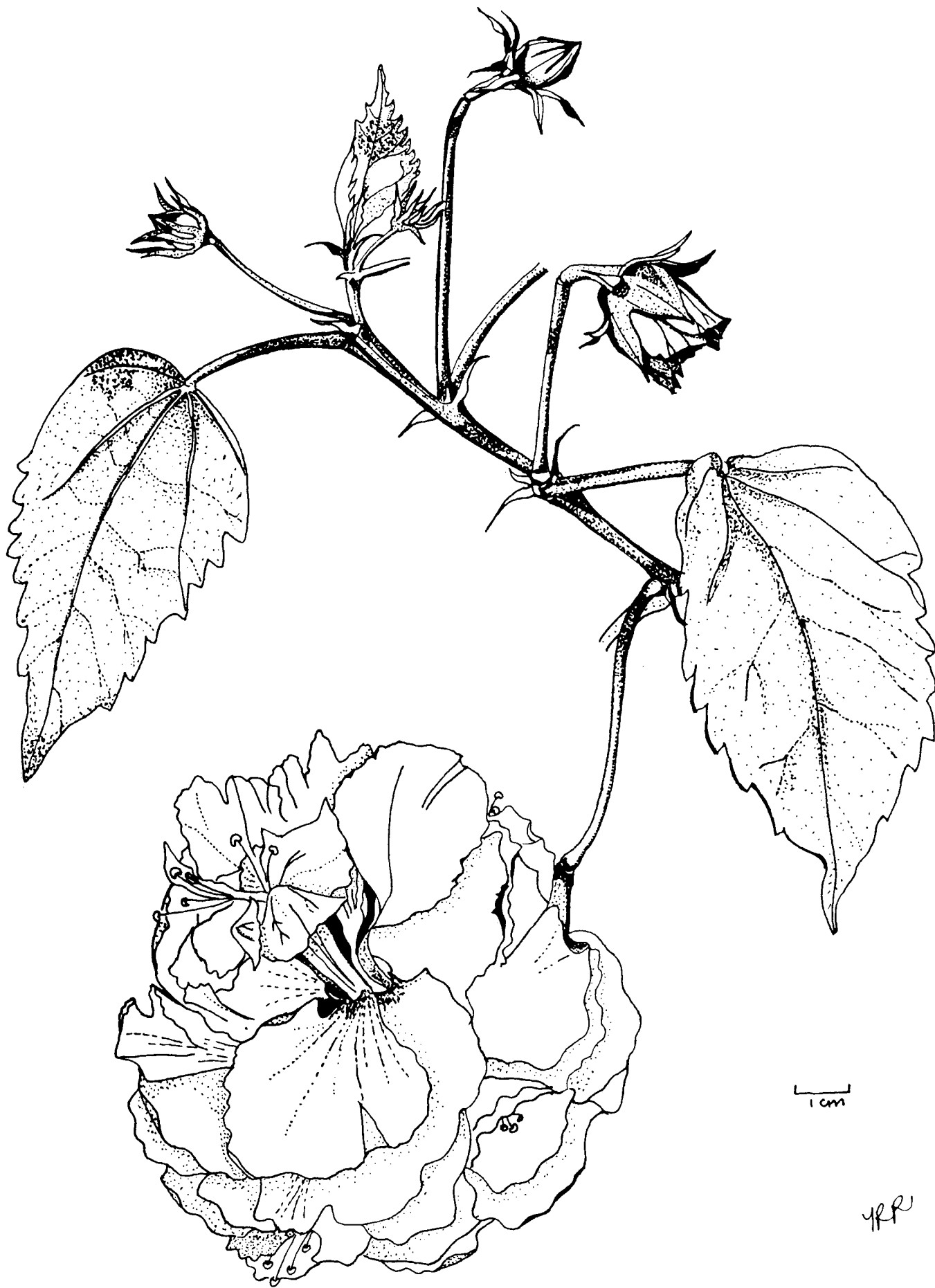
Very common and universally cultivated in warm countries; probably native of tropical Asia.

Medicinal Uses

Two or three flowers are boiled in water and the extract drunk for delayed menses and as an abortifacient.

Biodynamic Notes

A benzene extract of the flowers has shown significant anti-implantation activity in rats (Batta and Santhakumari, 1971; Khohlkute et al, 1976; Khohlkute and Udupa, 1976). The red pigments are reported to include cyanidin glycosides (Shrivastava, 1976).



(EUPHORBIACEAE)

Description

Tree, often of great girth with a usually spiny cylindrical trunk, up to 30 m or more high; the sap turbid. Leaves alternate, petiolate, the lamina with 2 glands at the base, orbicular or broadly ovate, cordate at the base, often sinuate-toothed, abruptly acuminate at the tip, to 20 cm long and 15 cm broad, sometimes larger. Male flowers crimson in spikes 3-6 cm long, at the ends of branches, each flower enclosed in its own bract in bud. Female flowers solitary in axils or at the base of male spikes, on 2 cm long peduncles; calyx 1 cm long; style to about 5 cm long, a fleshy column with a radially lobed stigmatic limb about 2 cm across. Capsule explosively dehiscent when mature, flattened globose, 3-4 cm high, 6-8 cm broad; seed within each oblique coccus discoid, about 2 cm in diameter.

Habitat and Distribution

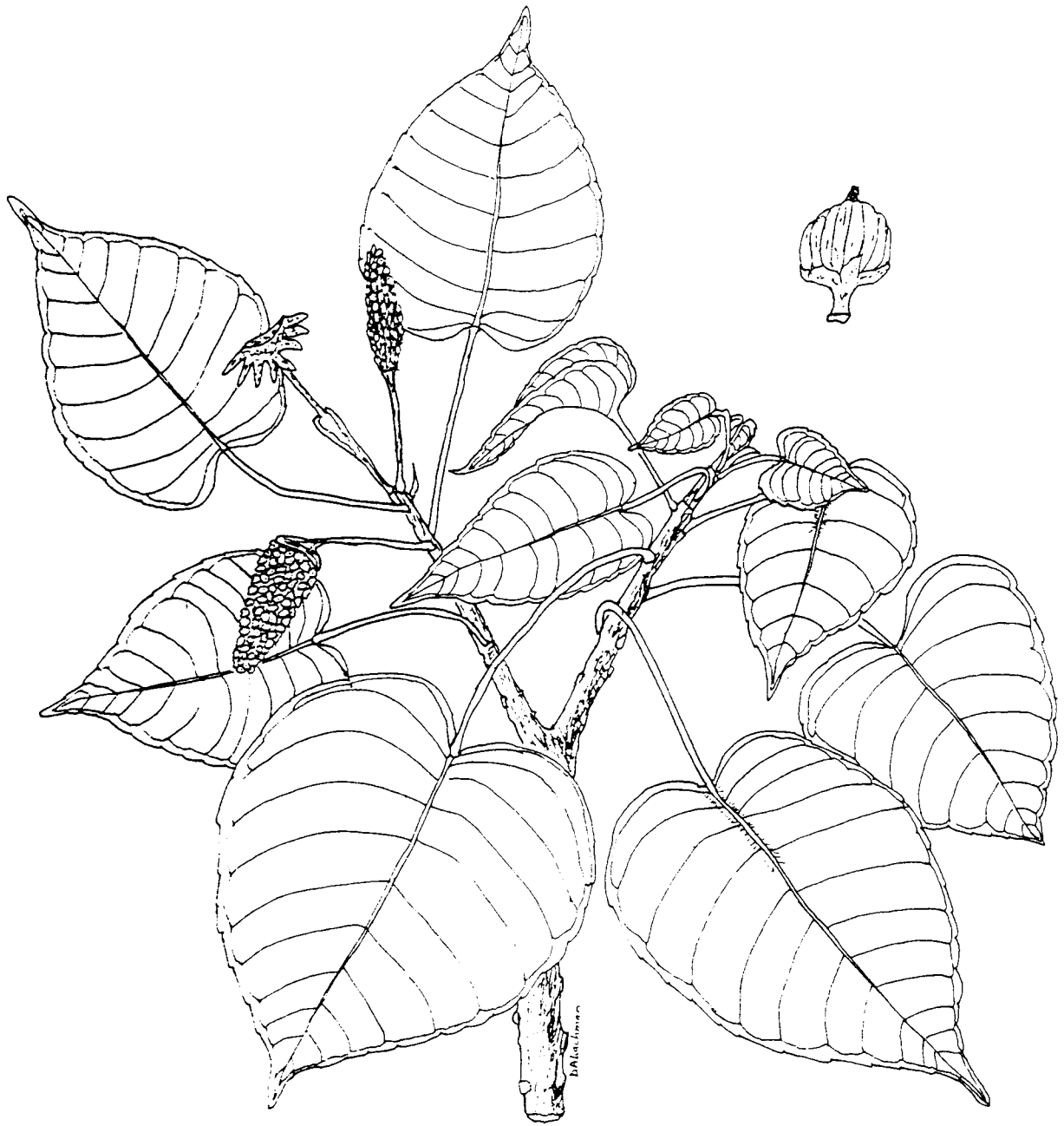
Native in open forests and woodlands from Costa Rica to Peru and Brazil and in the West Indies; often planted, and introduced into the southern United States and the Old World tropics.

Medicinal Uses

A decoction of the of the bark is used as a purgative and emetic.

Biodynamic Notes

Crepitin, a phytohaemagglutinin was isolated (Jaffe and Seidl, 1969). A glucosamine lectin from the seeds of **H. crepitans** exhibited mitogenic and haemagglutinating properties (Falasca et al, 1980).



Hymenaea courbaril

ALIKUYA
KANAWARI
K'WANARRI
LOCUST
SIMIRI
STINKING-TOE

(LEGUMINOSAE - CAESALPINIOIDEAE)

Description

Tree 10-25 m high with smooth grey bark. Leaves alternate, the stipules boat-shaped and 3-3.5 cm long; the leaflets 2, oblong to ovate, curved inwards, shortly acuminate, 6-9 cm long, 2-4 cm broad, glabrescent. Inflorescence terminal, compactly corymbose-paniculate, with shortly stalked white flowers; calyx 4-lobed, the sepals softly silky-hairy, about 15 mm long; petals 5, about 17 mm long, with pellucid glands; stamens 10, 2.5-3.5 cm long, inflexed in bud. Fruit woody, indehiscent, rough, reddish-chestnut to dark brown, to 10 cm long but not as broad; seeds 2-6, oblong-ovoid, about 2 cm long, embedded in an unpleasant-smelling pulp.

Medicinal Uses

The decoction of the bark is used as a tea generally. The bark is also boiled with those of Guava (*Psidium guajava*), Jamoon (*Syzygium cumini*) and Star-apple (*Chrysophyllum cainito*), the skin of the Pomegranate (*Punica granatum*) and orange-rind, and one schnapp glass administered thrice daily for the relief of 'bilious diarrhoea'.

A decoction of the bark is used by itself or mixed with Kapadula (*Doliocarpus dentatus*) bark, root of Sarsparilla (*Philodendron fragrantissimum*), Devil-doer rope (*Strychnos spp.*) and Cockshun (*Smilax schomburgkiana*) as an aphrodisiac.

Biodynamic Notes

The diterpenes eperua-7, 13-dien-15-oic acid, lab-13-en-8 beta-ol-15-oic acid and labdan-8 beta-ol-15-oic acid were extracted from the bark of *H. courbaril* (Marsioli et al, 1975).



Hyptis pectinata

WOMAN-PIABA

(LABIATAE or LAMIACEAE)

Description

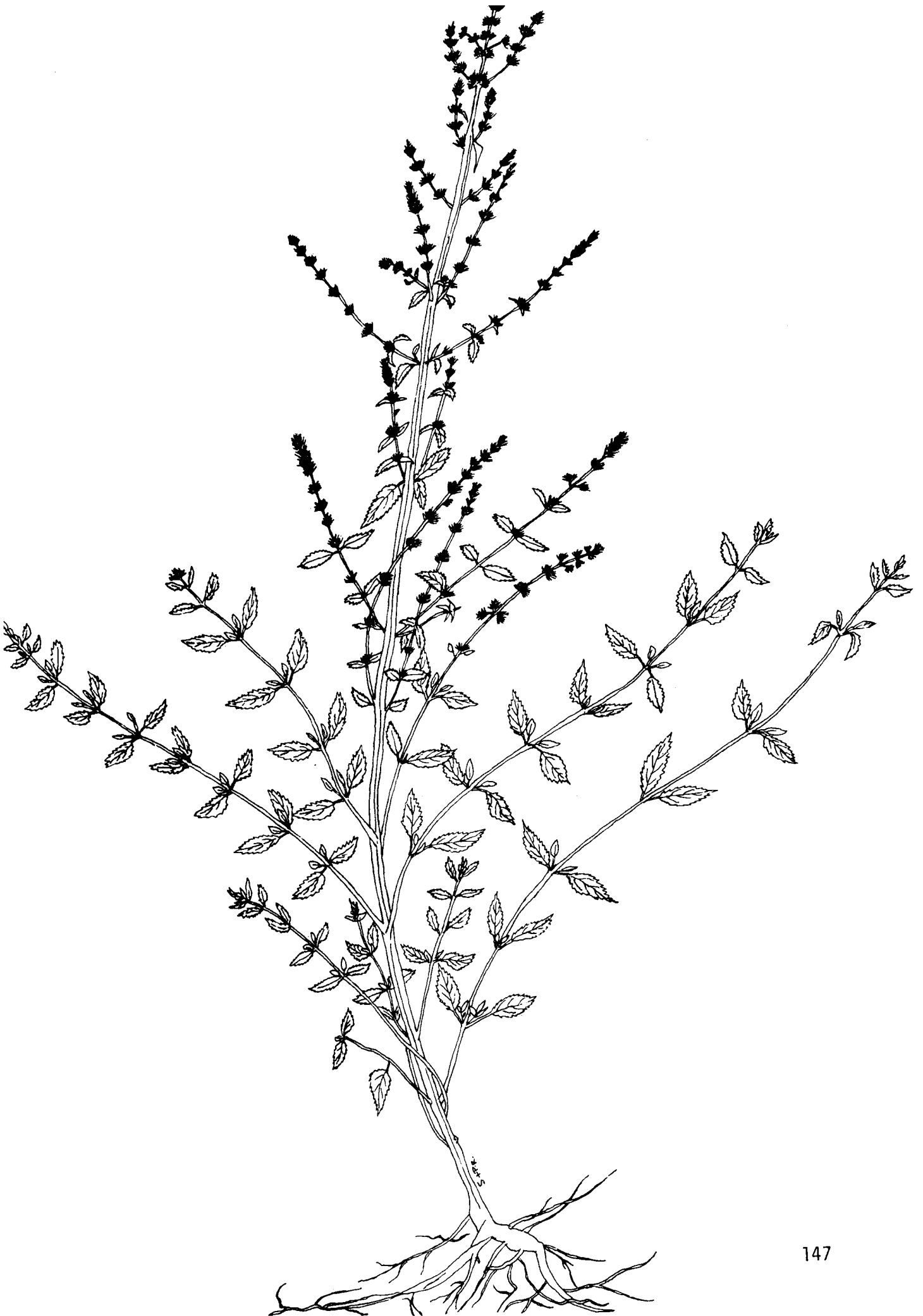
Erect or straggling shortly pubescent herb 1-3 m high, weakly aromatic. Leaves opposite in pairs with slender petioles to 5 cm long; leaf-blade broadly ovate, acute, serrate-dentate, to 11 cm long and 6.5 cm broad, shortly pubescent beneath. Inflorescence paniculate of unilateral pectinate subsessile, commonly forked, cymes. Flowers small and very numerous; calyx regular, the teeth subulate with tufts of whitish hairs between them, the tube to 2.5 mm long in fruit; corolla with the lip bent abruptly downwards, white or tinged pink, the tube about 1.5 mm long. Nutlets 4, black, smooth.

Habitat and Distribution

Common along roadsides and on waste disturbed land. General in the tropics.

Medicinal Uses

A decoction of bark is drunk for the relief of menstrual problems and leucorrhoea, and a decoction of leaves is used to treat thrush. The ground up plant is also brewed and the tea drunk for diarrhoea. The decoction of the plant is also drunk by men to build stamina (aphrodisiac).



Inga lateriflora

SHIRADA

(LEGUMINOSAE - MIMOSOIDEAE)

Description

A small tree with glabrous branches. Leaves alternate, pinnate with (1-)2-3(-5) pairs of leaflets and a narrowly winged rachis with orbicular sessile glands; leaflets to 5-7 cm long and 1.5-2.5 cm broad, rather leathery, glabrous. Inflorescence an axillary panicle of umbels with peduncles to 8 mm long. Flowers yellow; pedicels (1-)2-3 mm long; calyx minute; stamens 20-25 with a tube to 6-8 mm long, much longer than the corolla. Pod to 15 cm long and 12 mm broad, stipitate, glabrous.

Habitat and Distribution

In woodlands; the Guianas and northern Brazil.

Medicinal Uses

An infusion of the bark is used, with a pinch of salt, to bathe sores.

Inga setifera

WAIKI
WHITEE

Description

A tree with reddish-pubescent branches. Leaves alternate, pinnate, with usually 2 pairs of leaflets on a shortly but broadly winged rachis with large glands and terminating in a bristle. Leaflets elliptic, caudate-acuminate, to 20 cm long and 10 cm broad, leathery, reddish-pubescent at least beneath. Flower-spikes solitary or fascicled with peduncles to 6 cm long. Flowers yellow, sessile; calyx 8 mm long; corolla 16 mm long. Pod flat, about 12 cm long and 2.5-4 cm broad, with a thick margin, glabrescent; commonly eaten by children.

Habitat and Distribution

Forests in wet areas. Trinidad, the Guianas and Brazil.

Medicinal Uses

Scrapings from the inner bark are used for the relief of toothache and applied with a pinch of salt as a poultice for abscesses. A decoction of bark is used for dysentery.



(EUPHORBIACEAE)

Description

A shrub or small tree to 4 m or more high with viscid milky or reddish sap. Leaves alternate, broadly ovate, entire or shallowly lobed, to 15 cm long and broad, openly cordate at the base, acuminate at the tip. Inflorescences of corymbose cymes. Flowers green, the male and female borne at different times in the same inflorescence; petals 6-7 mm long. Capsule subspherical, 2.5-4 cm long. Seeds about 2 cm long, blackish.

Habitat and Distribution

Rather common, mostly in cultivation and particularly near habitations. Native of tropical America, now widespread.

Medicinal Uses

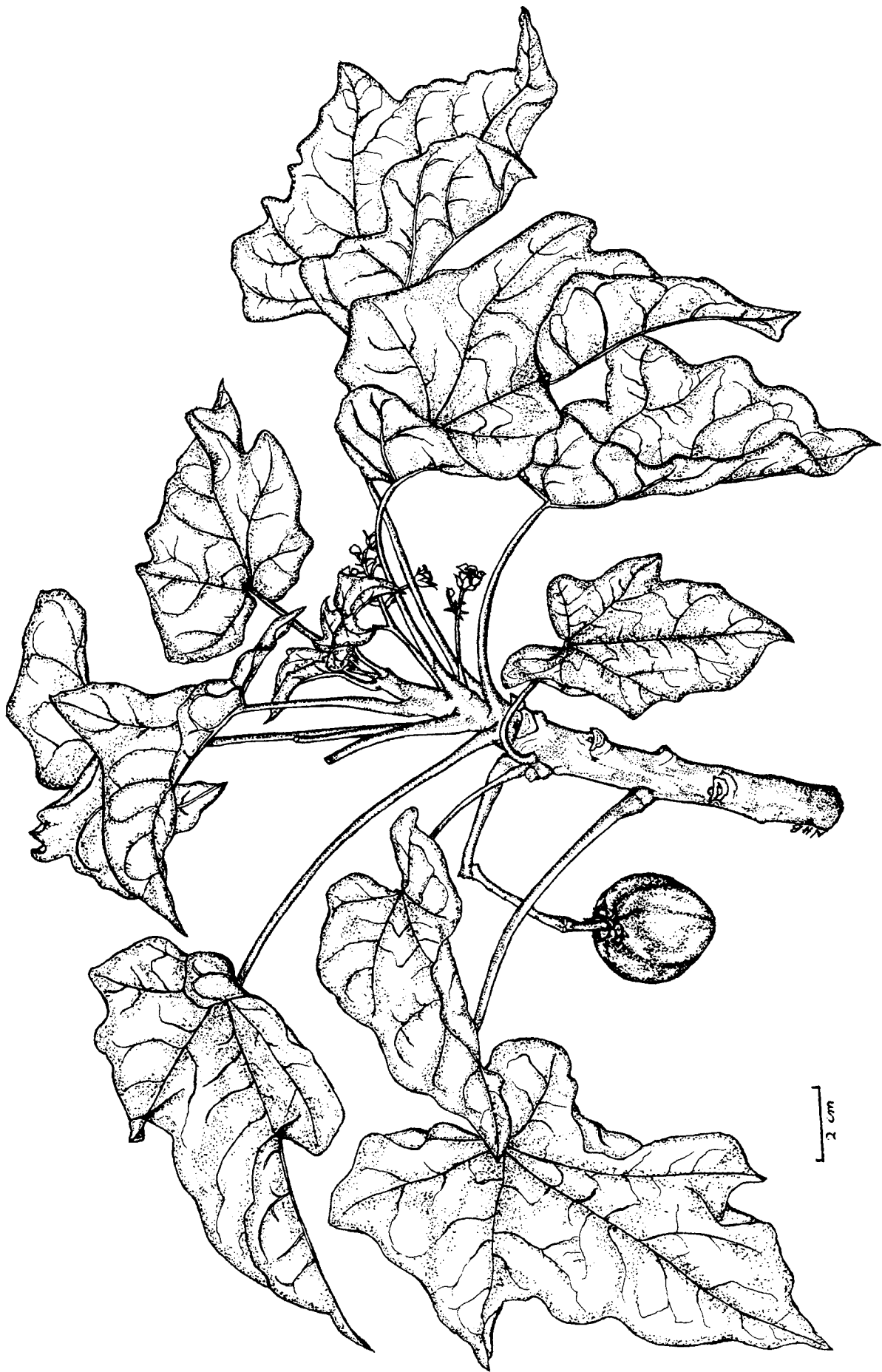
A decoction of parched seeds and leaves, with Ginger (*Zingiber officinale*) rhizome and leaves, is taken orally for the relief of menstrual pains. The seeds also act as an emetic and grated seed is applied on abscesses as a poultice. The leaves are warmed gently and tied around the head for the relief of headaches.

The decoction of the fruits is given orally for the relief of abdominal disorders or used to bathe areas affected with rheumatism or ulcers. The leaves are applied locally to painful or swollen areas, and in fever. The nuts are thought to be poisonous by some people.

Biodynamic Notes

Seeds and seed oil of *Jatropha curcas* are frequently used as purgatives in tropical countries and may cause strong irritation and poisoning (Watt and Breyer-Brandwijk, 1962; Kingsbury, 1964; Morton 1981) and the irritant factor, a diterpenoid, 12-deoxy-16-hydroxy-phorbol was isolated. High toxicity of the seeds to mice and goats has also been reported (Adam, 1974; Adam and Magzoub, 1975) and saponins and tannins were found (Odebiyi and Sofowora, 1975).

The amide alkaloid tetramethyl pyrazine was identified in the methanolic extract of the stem of *Jatropha podagrica*. This extract was shown to have antibacterial activity against gram positive microorganisms (Odebiyi, 1980).



Jatropha gossypifolia

BELLY-ACHE BUSH
JUMBIE-BABY
WILD CASTOR-OIL

(EUPHORBIACEAE)

Description

Undershrub to 1.5 m high with spreading tortuous branches sparingly furnished with long glandular hairs; sap turbid and yellowish. Leaves alternate, palmately 3-5-lobed, cordate at base, the lobes obovate-elliptic, pointed at apex, usually pubescent on both surfaces, to about 15 cm long and broad; stipules divided into glandular thread-like segments. Inflorescence pedunculate, terminal, cymose with the female flowers developed centrally before the lateral male flowers. Flowers pentamerous, petals 4-7 mm long, deep purplish-red; stamens 8-12; styles 3, bifid. Capsule about 1 cm long, 3-lobed, dehiscent, releasing 3 greyish-brown mottled seeds 7-8 mm long.

Habitat and Distribution

Common on sandy or gravelly waste open ground, especially near the sea; often planted in villages. General in the subtropics and tropics.

Medicinal Uses

Pods with seeds are boiled and the liquid taken for bellyache. A decoction of the leaves is used to relieve pain and swelling. Crushed leaves may be mixed with soft-grease and oil and applied externally on cuts, ulcers and sore feet.

Biodynamic Notes

The use of *Jatropha gossypifolia* as a tea plant has been related to high incidence rates of oesophageal cancer in Curacao (Hecker et al, 1983). However, extracts have also been reportedly used to treat cancerous growth (Hartwell, 1969) and diterpenes responsible for antitumor activities were detected (Torrance et al, 1976; Wiedhopf et al, 1973).

Jatrophone, an antileukemic diterpenoid, was isolated from the roots (Kupchan et al, 1970, 1976) and vitexin, isovitexin and apigenin were isolated from the leaves (Subramaniam et al, 1971).

Species of *Jatropha* are known to be toxic and an irritant diterpenoid, 12-deoxy-16-hydroxy-phorbol has been isolated from *J. gossypifolia* (Kingsbury, 1964; Morton, 1981; Watt and Breyer-Brandwijk, 1962). Other compounds that have been isolated include gossypibetiline, tetrahydrogossypibetiline (Yartzoff, 1970) and gadain (Banerji et al, 1984).



(ACANTHACEAE)

Description

A perennial low herb with slender branches rooting sparingly from the nodes, pleasantly aromatic when crushed. Leaves opposite in pairs, linear to lanceolate, mostly long-acute at the tip, 3-8 cm long, 5-30 mm broad. Flowering branches ascending to 30 cm or more high. Flowers unilateral in terminal simple or slightly branched racemes, rather small; calyx with glandular hairs; corolla bright pink with white markings resembling a rib-cage, 7-8 mm long. Capsule dehiscent elastically.

Habitat and Distribution

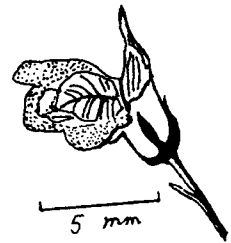
In low open thickets and grassy places. Mexico to northern South America and the West Indies. Not in West Africa as some early reports suggested.

Medicinal Uses

The decoction is very widely used as a 'tea' especially in influenza, fever and whooping cough. It is also given for fits, and is said to be an effective anti-emetic.

Biodynamic Notes

A possible antifertility agent, justicisaponin, was isolated from **Justicia simplex** and has shown significant sperm acrosomal membrane stabilizing action (Ghosal et al, 1981) and an antiarrhythmic compound, neojustin, was identified in **J. procumbens** (Jin et al, 1982).



103

(ACANTHACEAE)

Description

A shrubby straggling herb to about 3 m high. Leaves opposite in pairs on slender petioles, ovate-lanceolate, acuminate at the tip, obtuse at the base, to 15 cm long and 5 cm broad, thin-textured. Flowers on short stalks, subtended by small bracts, in narrow terminal panicles; corolla deeply 2-lipped, the lower slightly longer, about 4 cm long, dull purplish-red. Capsule about 1 cm long.

Habitat and Distribution

On roadside banks and in thickets in sheltered places. Lesser Antilles and northern South America.

Medicinal Uses

A decoction of the entire plant is used for menstrual pains, abortion and dilation and curettage after miscarriages. It is often used for the above conditions mixed with Gully-root (*Petiveria alliacea*), Minnie-root (*Ruellia tuberosa*), White-clary (*Heliotropium indicum*), Inflammation-bush (*Vernonia cinerea*) and Physic-nut (*Jatropha curcas*).



NHB

1 cm

Lantana camara

SEMEHEYU-BALLI
SWEET-SAGE
WILD SAGE

(VERBENACEAE)

Description

A loosely erect or scrambling aromatic shrub with rough angular or sometimes prickly stems to 6 m or more high. Leaves opposite in pairs, ovate, to about 12 cm long and 5.5 cm broad, acuminate, toothed. Flowers in stalked heads in the axils of upper leaves; corollas small, yellow, turning orange or red. Fruit a blackish drupe, about 4 mm in diameter.

Habitat and Distribution

Very common in hedges, rough pastures and thickets. General in the tropics.

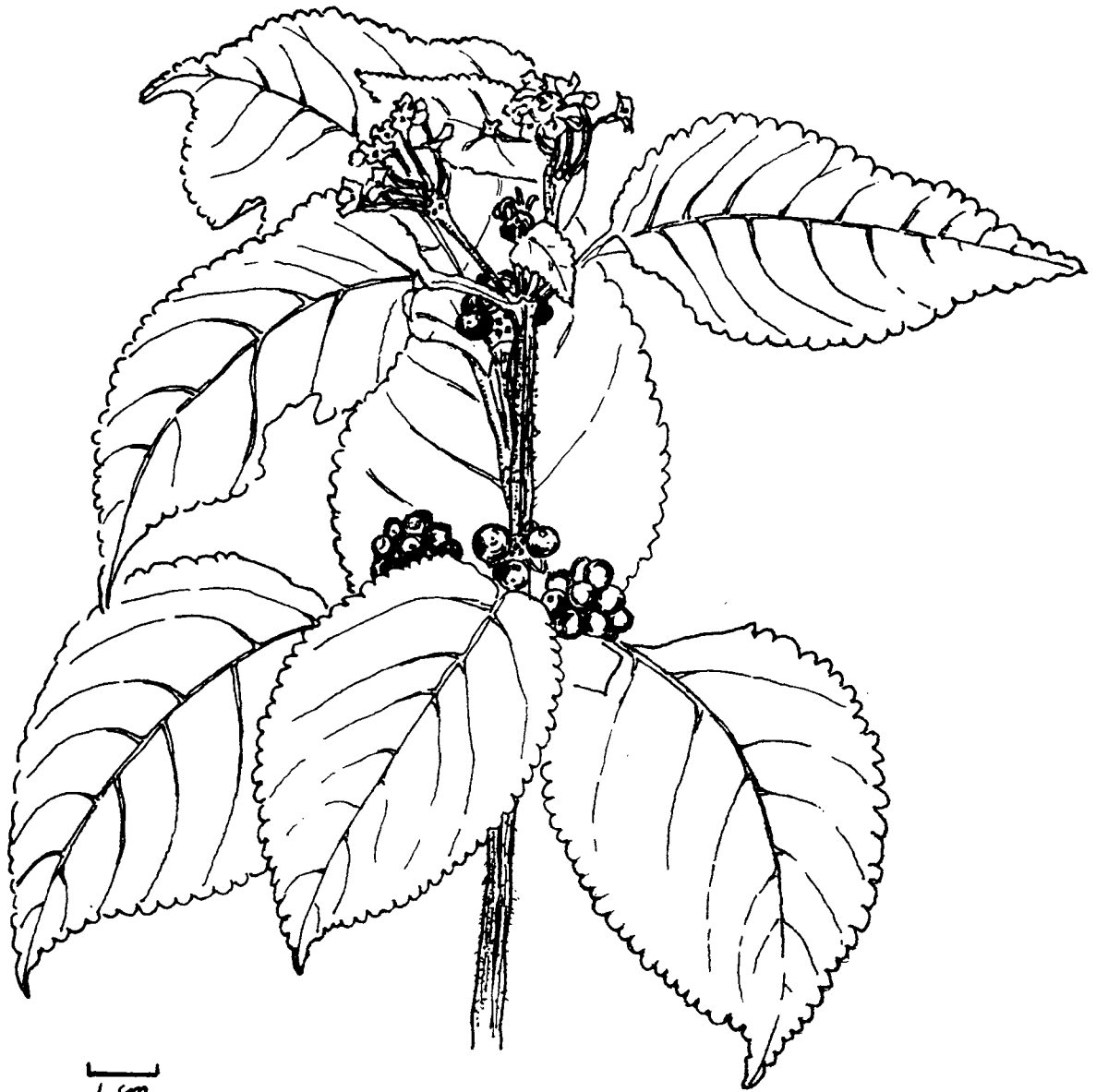
Medicinal Uses

The aerial portion of the plant is dried and used as a tea generally and with Lemon-grass (*Cymbopogon citratus*) for colds. Sweet-sage tea is also used as a treatment for hypertension and malarial fever. The Prickly Sweet-sage (*L. camara* var. *aculeata*) is used as a cold and cough remedy.

Biodynamic Notes

Lantana camara is toxic to cattle, buffalo, sheep and goats (Sharma et al, 1979). The plant was shown to produce liver diseases in cattle. The toxic principle, lantadine A (22 beta-angeloyloxyoleanolic acid), apparently inhibits active secretion of bile salts into the canaliculi (Hunt and McKosker, 1970). Gall bladder paralysis, which apparently occurs during *Lantana* poisoning may be due to the accumulation of bile acids (Pass and Heath, 1977). The plant also has the ability to release volatile mercury (Kania et al, 1980). On administering lantadene A to rats, intoxication was characterised by jaundice, anorexia, constipation, polyuria, polydipsia and accumulation of conjugated bilirubin in the serum. Intrahepatic cholestasis was noted in the liver lesion and it was characterised by swelling of hepatocytes, individual cell necrosis and biliary ductular hyperplasia. Degeneration and necrosis of the proximal tubules in the kidneys were also detected. The clinical syndrome and pathological changes in the liver were similar to *Lantana* poisoning in ruminants (Pass et al, 1979). No lantadene A was found in the flowers, fruits and shoots of *L. camara*; only leaves contained toxic lantadenes which apart from causing *Lantana* poisoning are also skin photosensitizers (Sharma et al, 1980). The flowers of *L. camara* var. *aculeata* contain an anthelmintic oil (Avadhoot et al, 1980; Manalram 1980).

Activated charcoal when given orally with toxic *Lantana camara* protected sheep against intoxication; a solution of activated charcoal given orally after the onset of *Lantana* poisoning also resulted in complete recovery from intoxication (Pass and Stewart, 1984).



1 cm

(URTICACEAE)

Description

An erect branched herb to about 120 cm high. Leaves spiral, stalked, ovate, toothed, to 15 cm long and 12 cm broad or larger, with bristly hairs from which some people experience a stinging sensation and others do not. Flowers very small and numerous in often flat-topped divaricately branched axillary cymose panicles. Stamens in male flowers usually 4, the filaments inflexed in bud, springing outwards elastically at anthesis. Fruit about 1 mm long with a residual hooked stigma.

Habitat and Distribution

A common weed of waste places, throughout the tropics.

Medicinal Uses

The leaves cause urticaria, but their decoction is used medicinally.

A decoction of the aerial parts is used as a diuretic and laxative. The juice from the crushed leaves can be used as an eye-wash for 'sore eyes'.



Leonotis nepetifolia

LION-BUSH
MAN-PIABA

(LABIATAE or LAMIACEAE)

Description

Erect short-lived herb to 1 m or more high. Leaves opposite in pairs, broadly ovate, toothed, hairy, the blade tapering to the stalk. Flowers in globose clusters, well separated at the upper nodes; calyces green, with sharply pointed lobes; corollas tubular, projecting, round-hooded, about 2 cm long, dark orange, hairy.

Habitat and Distribution

A common weed of fields, roadsides and waste places. Native of tropical Africa, now widespread in warm countries.

Medicinal Uses

A decoction of the entire plant is used as a uterine 'cleanout' for women, as a diuretic, and also as a tonic to strengthen the back.

The juice of the leaves is mixed with those of Bird-vine (*Phthirusa adunca*), Bloodwood (*Vismia angusta*) and Cotton-bush (*Gossypium spp.*) and given for nine consecutive days to cure thrush in children. The decoction of the plant and Wild-clary (*Heliotropium indicum*) "helps young, apparently incurable, bed-wetters to control themselves".

Man-piaba, Woman-piaba (*Hyptis pectinata*), Bitter-tally (*Mikania micrantha*) and Caryl (*Momordica charantia*) are boiled together and the resulting liquid is used as a wash for piles to bring relief.

Biodynamic Notes

Ethanollic extract of the plant exhibited anti-tumor activity (Manchand and Blount, 1980).



Licania alba
(Syn. *L.venosa*)

COUNTA
KAUTA-BALLI

(CHRYSOBALANACEAE)

Description

A tree to 35 m high, the young branches becoming glabrous. Leaves alternate, oblong-elliptic, acuminate, rounded at the base, 9-27 cm long, 4-10 cm broad, leathery, glabrous on the upper surface, densely white-woolly beneath; stipules elliptic, to 7 mm long, rather persistent. Inflorescence paniculate, the branches pubescent. Flowers sessile in racemes, 2.5-3 mm long, the receptacle campanulate; petals wanting; stamens 6-8. Fruit pear-shaped, rusty-powdery, to 9 cm long including the 15 mm stipe.

Habitat and Distribution

In primary forest in the Guianas, Venezuela and Brazil.

Medicinal Uses

The powdered outer bark is used to treat ulcers and sores. A wine-glass full of the decoction of the inner bark is drunk as a remedy for Morabana snake bites.

Licania cuprea

ARAUDANNI
COUNTA
KONOKO
MURI KAUTA-BALLI
UNIKIAKIA

Description

A tree to 20 m high, the young branches densely yellowish-woolly. Leaves alternate, elliptic to oblong-lanceolate, acute or acuminate at the tip, rounded at the base, 3.5-16 cm long, 2-6.5 cm broad, leathery, glabrous on the upper surface, densely rusty-pubescent beneath; stipules linear, about 5 mm long, persistent being adnate to the extreme base of the petiole. Inflorescence paniculate, the branches densely rusty-pubescent. Flowers solitary or in small clusters on long slender branches, shortly stalked, about 2 mm long; receptacle campanulate; petals wanting; stamens 3. Fruit globose, densely rusty-velvety, 1.5-2 cm in diameter, long-stipitate.

Habitat and Distribution

Known only from Guyana in the Wallaba forest and the savanna margins.

Medicinal Uses

A decoction of the bark is used for tuberculosis.

Licania heteromorpha var. **perplexans**
(Syn. *L.perplexans*)

COUNTA
KAIRI-BALLI

(CHRYSOBALANACEAE)

Description

A tree to 30 m high, occasionally slightly buttressed, the young branches soon becoming glabrous. Leaves alternate, ovate-elliptic, mostly rather rounded or obtuse at the apex and the base, to 20 cm long and 10 cm broad, leathery, glabrous on both surfaces, the lower with a lax vein-reticulation; stipules linear, membranous, 1.5-3.5 mm long. Inflorescence paniculate, the branches puberulous. Flowers sessile or nearly so in clusters along the branches, 1.5-3 mm long; receptacle campanulate; petals 5, pubescent; stamens 5-7. Fruit globose, smooth.

Habitat and Distribution

Apart from one report from French Guiana, confined to the forests of Guyana.

Medicinal Uses

An infusion of the bark is used to treat diarrhoea. The sap is applied externally to sores and skin blemishes such as lotta. The powdered outer bark is sprinkled on wounds to keep them clean and dry thus enabling healing.

Lippia alba

TEASAM

(VERBENACEAE)

Description

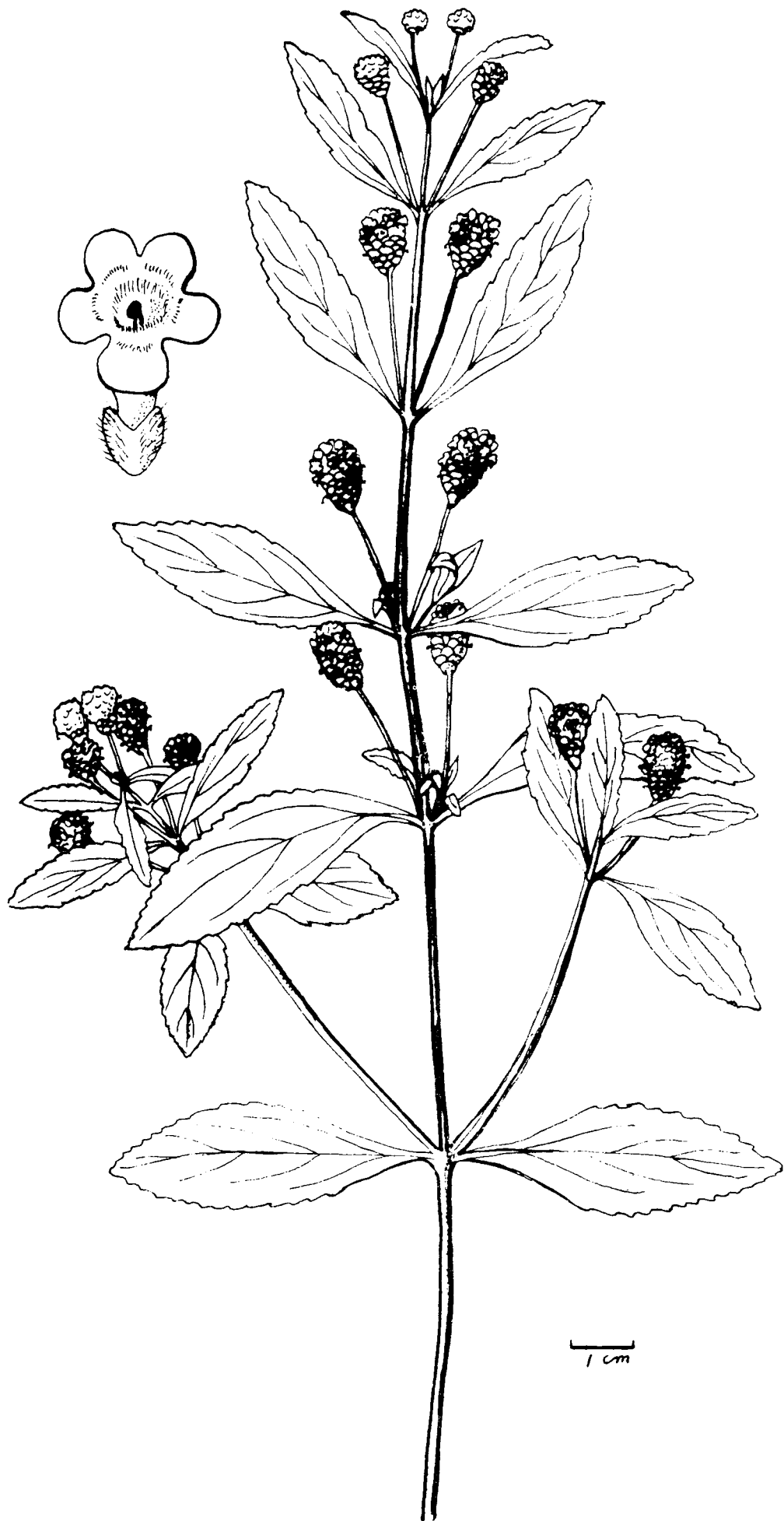
An aromatic shrub to about 1.5 m high, with long straggling slender branches. Leaves opposite in pairs or threes, oblong-elliptic, blunt or pointed at the tip, cuneate at the base, mostly to about 3 cm long, sometimes longer, finely serrate, greyish-pubescent beneath. Flower-heads in the leaf-axils, 1-2 cm long, on stalks about the same length, often accompanied by stipule-like leaves on arrested axillary shoots. Flowers very small, white, pink or light purple.

Habitat and Distribution

In thickets and on stony open ground. Widely distributed in the American subtropics and tropics.

Medicinal Uses

A decoction of the leaves is made into a tea normally given for influenza.



Lippia micromera

FINELEAF THYME
FINE PODINA
SPANISH THYME
THYME

(VERBENACEAE)

Description

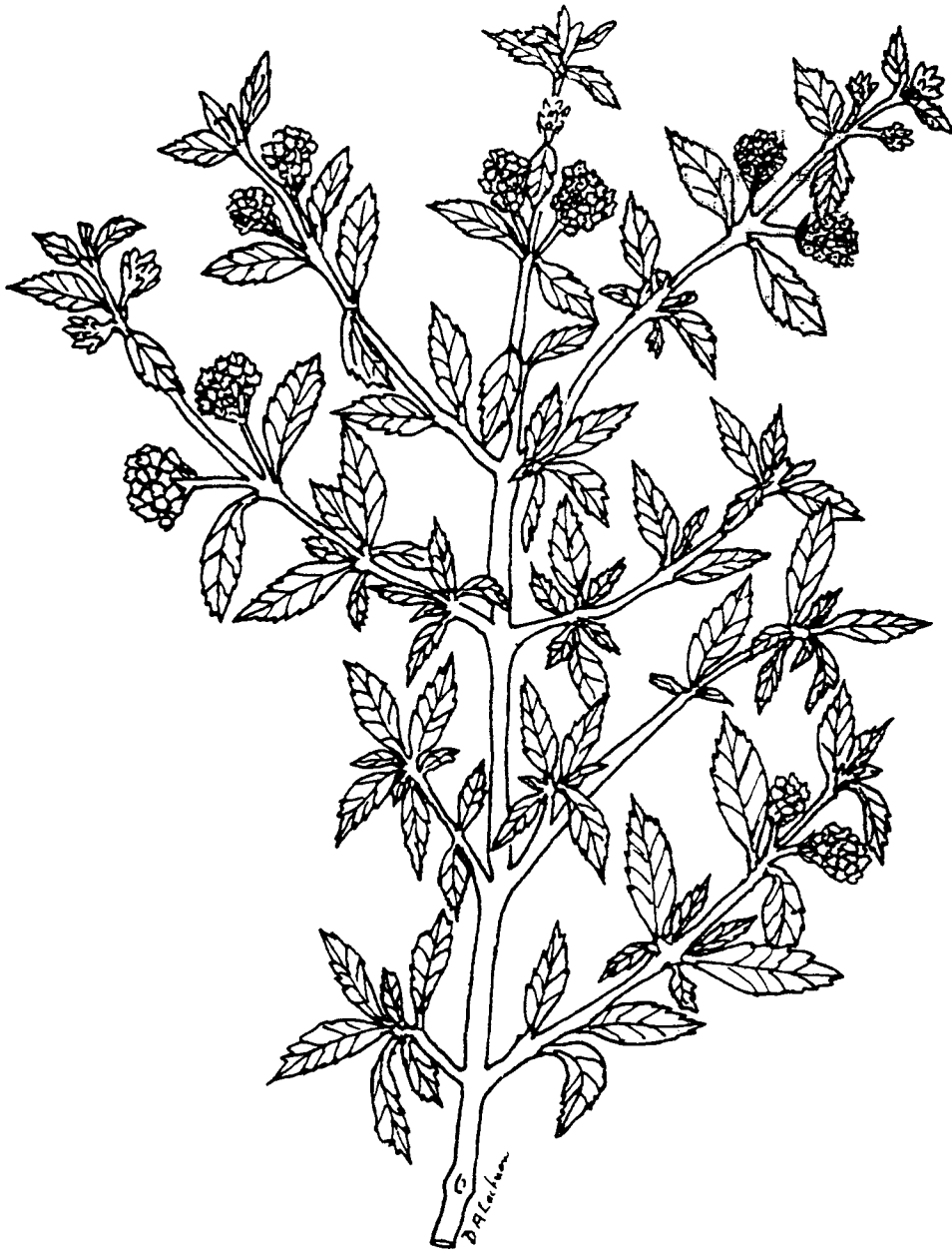
A shrub 1-3 m high with numerous slender woody glandular-aromatic pubescent branches. Leaves opposite, crowded on the twigs, the blades obovate-elliptic, more or less pointed at both ends, 6-15 mm long, 3-7 mm broad, entire or crenate-serrate near the apex, revolute-margined, the midrib and lateral nerves often impressed above. Inflorescences capitate, shortly pedunculate in the upper leaf-axils, about equal to the leaves. Flowers subtended by loosely imbricate elliptic, 3-5-nerved bracts; calyx about 2 mm long, long-villous; corolla white with a yellowish throat, about twice as long as the calyx. Fruit small, dry, 2-pyrened.

Habitat and Distribution

Cultivated and sometimes escaping. Trinidad and northern South America, introduced elsewhere.

Medicinal Uses

An infusion is taken orally as an anti-emetic.



Lisianthus grandiflorus

WILD TOBACCO
YURI-BALLI

(GENTIANACEAE)

Description

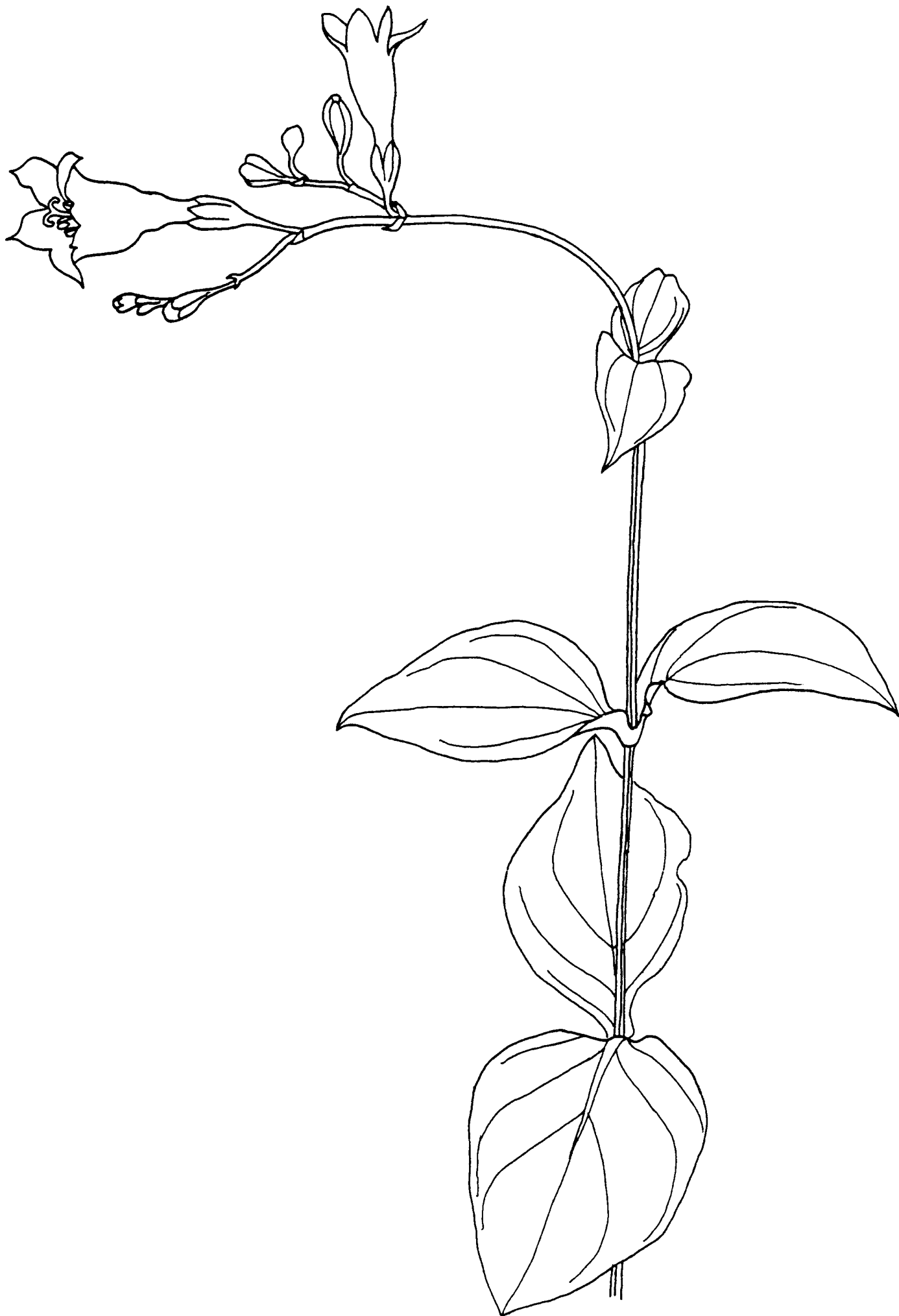
An erect little branched herb to 1 m or more high, with the stem quadrangular below, terete above, glabrous. Leaves opposite in pairs, sessile or shortly stalked, elliptic or oblong, acute at the tip, abruptly narrowed at the base, to about 8 cm long and 7 cm broad, smooth, with few pairs of strong lateral nerves. Flowers in terminal dichasial cymes, showy, yellowish-green, 5-merous; calyx campanulate, small; corolla obliquely campanulate, long-tubed, shortly spreading-lobed, 3-5 cm long. Capsule ovoid, pointed. Seeds very small.

Habitat and Distribution

In open sparsely vegetated places. The Guianas and Brazil.

Medicinal Uses

A decoction of the leaves is used to bathe sores and drunk for colds and jaundice.



Lonchocarpus chrysophyllus

BLACK-HIARI
WAKURU-KUDA

(LEGUMINOSAE - PAPILIONATAE)

Description

A woody climber with the young branchlets golden-yellowish-tomentose. Leaves alternate, imparipinnate; leaflets opposite, in usually 3 pairs, oblong or ovate-oblong, long-acuminate at the tip, 8-20 cm long and 3-8 cm broad, golden-yellow-pubescent when young, glabrescent; stipules small, deciduous. Flowers pea-like, violaceous, clustered on elongated, often branched, racemes; pedicels about 3 mm long; calyx campanulate, about 6 mm long, silky-hairy; standard-petal about 13 mm long and 10 mm broad, emarginate; wing-petals and keel about 12 mm long. Fruit a pod.

Habitat and Distribution

In forests. Guyana and Suriname.

Medicinal Uses

The bark is used to treat snake bites (Labaria), scorpion stings and as a fish poison by Amerindians. The bark is boiled with Congo-cane (*Costus scaber*) and Toyeau (*Justicia pectoralis*) and a little alum and used as an astringent for severe coughs. An infusion of pounded bark and leaves is used as a bath.

Biodynamic Notes

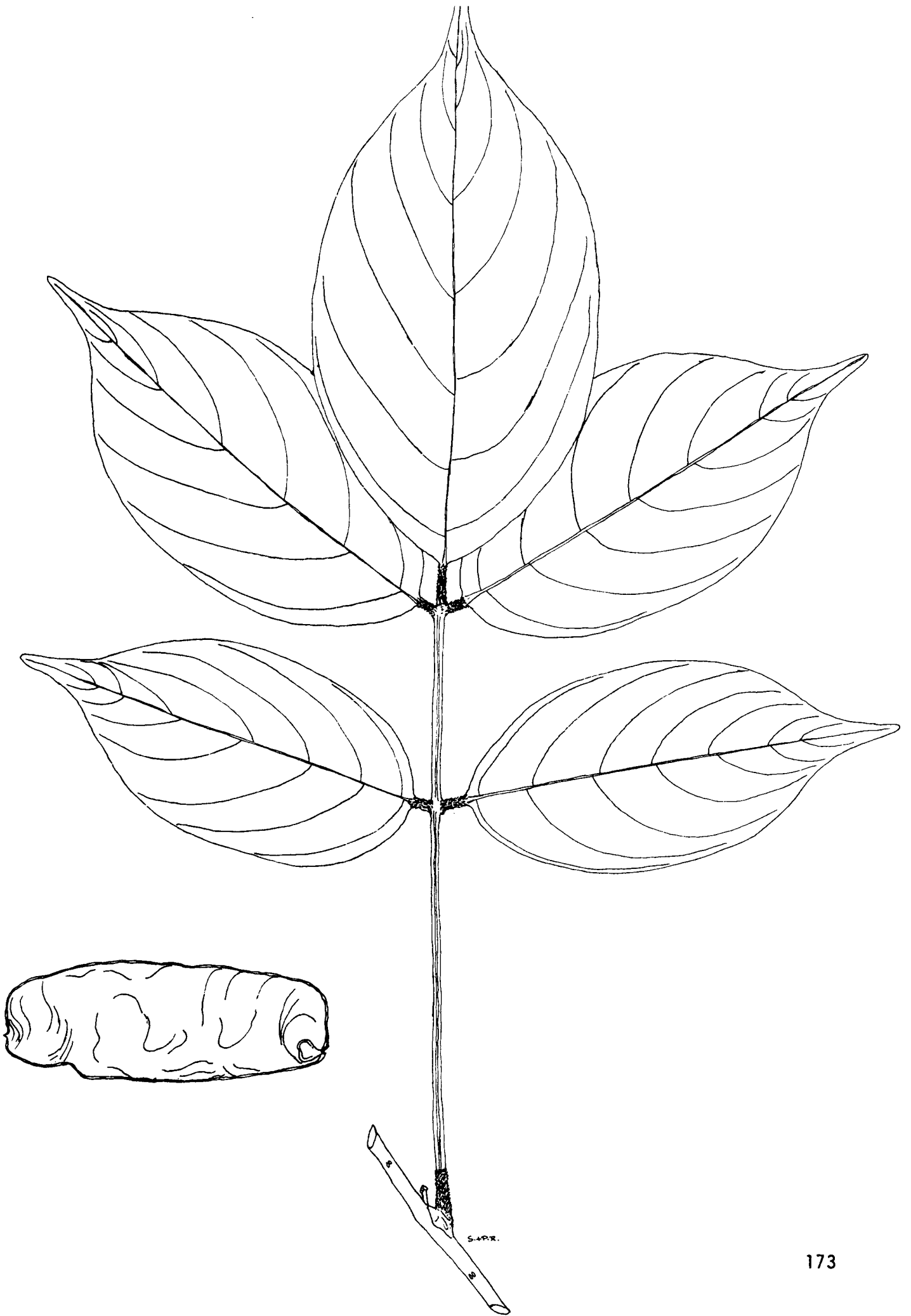
Lonchocarpus contains substances toxic to fish (Francois and Boquel, 1947). Seeds of *L. sericeus*, a tree of coastal tropical America and West Africa, contain 3-(2-amino-2-imidazolin-4(5)-yl) alanine and 2-(2-amino-2-imidazolin-4(5)-yl) acetic acid (Fellows et al, 1977). *Lonchocarpus violaceus*, a small tree of the American tropics, yielded prenylated stilbenes and longistylins A, B, C and D (Delle et al, 1977). Roots of *L. cyanescens*, the Yoruba Indigo, native of West Africa and cultivated in Jamaica and elsewhere, yielded anti-arthritic triterpenoids, and chloroformic extracts contain glycyrrhetic acid, rotenone and lonchoterpene; methanolic extracts contain oleanolic and ursolic acids (Iwu and Ohiri, 1980).

Other species of *Lonchocarpus*, their roots containing varying quantities of rotenone, are used widely as fish poisons. One of these, *L. rariflorus*, is used to exterminate sauba ants (Krukoff and Smith, 1937) and, known in Guyana as Faifaya-Noroko, is mentioned as having its bark used as a fish poison (Haynes, 1969).

Lonchocarpus martynii

WHITE-HIARIA

This is another large scandent shrub with 5-9 caudate-acuminate leaflets which are glabrous above and much paler and thinly appressed-pilose beneath. It is found in Guyana in forests on red soil and at borders of savannas. The bark is said, by Amerindians, to be more effective as a fish poison than Black-hiari. A decoction of bark is used as a tranquilizer and a decoction of root is used to treat venereal diseases. The stem and roots are roasted, ground and mixed with oil and applied externally for the relief of pain.



Manihot esculenta

(EUPHORBIACEAE)

BITTER CASSAVA
CASSAVA
PUTAGEE-CASSAVA
SEBAYU CASSAVA

Description

A perennial shrub usually growing to about 3 m high, with slender little branched erect nodose stems arising from a stock bearing thick tuberous roots. Leaves spiral, long-stalked to a blade deeply divided into 3-7 linear to elliptic-lanceolate lobes 10-15 cm long and 2-4 cm broad, exuding a milky sap when broken. Flowers not often formed because plants are harvested before flowering occurs; in loose panicles; unisexual. Fruit a small capsule. Seeds mottled, about 12 mm long.

Habitat and Distribution

Widely cultivated and occasionally relict from abandoned farms and gardens. Probably native of Brazil, now widespread in the tropics.

Medicinal Uses

The freshly grated root is applied directly to cuts and bruises to stop bleeding or applied with coconut or olive oil as a poultice for sores and ulcers. Grated Bitter Cassava and Sebayu Cassava* are mixed with macerated Bitter-tally (*Mikania micrantha*), crab oil (from *Carapa guianensis*) and sulphur powder as an ointment for treatment of Tete.

Biodynamic Notes

Cassava contains potentially toxic cyano-substituted glycosides, namely linamarin (2-hydroxy-isobutyronitrile-beta-D-glycoside) and lotaustralin (a methyl derivative of linamarin). Both these substances can be hydrolysed by an enzyme, present in Cassava, to release hydrocyanic acid which is toxic (Butler, 1965; Conn, 1969; Bourdoux et al, 1980). Toxic principles are usually destroyed in processing but if eaten raw or not properly processed danger due to high residual presence of toxic elements remains (Rao and Hahn, 1984).

* Footnote

Sebayu Cassava is the name given to a particularly bitter variety.



(EUPHORBIACEAE)

Description

Evergreen monoecious tree to 20 m high. Leaves alternate, simple, entire, ovate or elliptic, acuminate at the tip, cuneate at the base, 2-4.5 cm long, 1-2.5 cm broad, glabrous; petioles to 15 mm long; stipules small, triangular. Inflorescence terminal on short branchlets, about 1 cm long. Flowers small, without petals; male calyx with 2-3 irregular lobes less than 1 mm long; stamens 2; female calyx 3-lobed. Fruit a subglobose capsule 4-5 mm long, splitting into 3 2-valved cocci, the pedicel to 7 mm long; seeds with a large caruncle, dark brown.

Habitat and Distribution

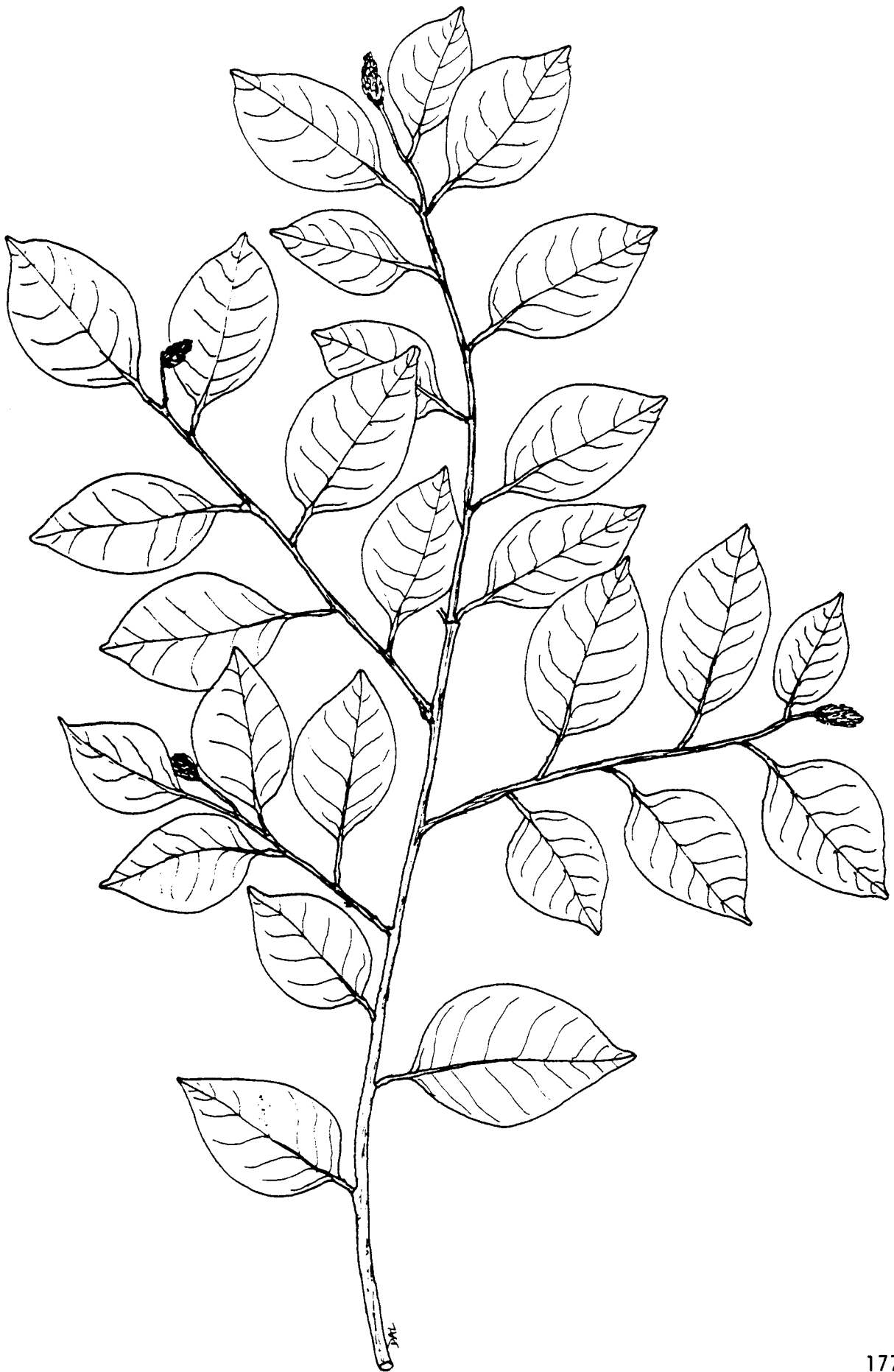
In woodland margins and thickets and forest in wet areas in north-eastern South America and Trinidad.

Medicinal Uses

A decoction of leaves is used to bathe a patient infected with measles, and as a douche for mothers after childbirth.

Biodynamic Notes

Related species, *M. africana* (trunk-bark) and *M. membranacea* (root-bark), were toxic to mice. *Maprounea membranacea* contained traces of cucurbitacin A and 23, 24-dihydrocucurbitacin, whereas *M. africana* contained only cucurbitacin A (Tessier and Paris, 1979).



(BIGNONIACEAE)

Description

A woody tendril-climber with finely ribbed branches, the young parts with minute gland-tipped hairs. Leaves opposite, simple and broadly ovate at the base of the plant, compound above with 2 ovate or ovate-lanceolate attenuate-acuminate leaflets and a central tendril; the leaf-blade to about 15 cm long and 10 cm broad, glabrous but with several scattered plate-like glands on the underside. Inflorescences axillary, racemose. Flowers showy; calyx campanulate and 2-3-lobed; corolla funnel-shaped, 4-7 cm long, the tube whitish, the limb pink or wine-red. Capsule linear, to 1 m or more long and nearly 2 cm broad. Seeds broadly winged.

Habitat and Distribution

Probably mostly in riverside thickets and forests. Through continental tropical America from Belize to Bolivia and Brazil.

Medicinal Uses

The sap exuding from freshly cut tuberous roots is used as an eyedrop against infection of the eye. The leaves are boiled and used for colds.



Microtea debilis

FLAT-OF-THE-EARTH

(PHYTOLACCACEAE)

Description

An annual herb 15-45 cm high, with lax branches. Leaves spiral, obovate to oblanceolate, acute or obtuse at the tip, tapered at the base, to 7 cm long and 3.5 cm broad, thin, light green. Flowers small, white, in lax terminal, spike-like racemes to 3 cm long; perianth-segments 5, 1-2 mm long, persistent and becoming greenish in fruit. Fruit indehiscent, globose, 1.5 mm long, covered with spine-like tubercles in a network.

Habitat and Distribution

A low weedy herb in pastures, lawns and on sandy roadsides and open ground near the sea. Sporadic throughout continental tropical America and the West Indies, common in some areas, rare in others, perhaps overlooked on account of its inconspicuous appearance.

Medicinal Uses

The entire plant is used to make a tea which is used for palpitating heart conditions and to effect 'cooling' of inflamed areas. The plant may be used with others, such as St Johns-bush (**Justicia secunda**) and Inflammation-bush (**Vernonia cinerea**) as an abortifacient. Haynes, 1969, reports that it may be used as a lotion for ulcers, or, mixed with Muniri-dan (**Siparuna guianensis**) and taken orally, in treating diabetes.



(COMPOSITAE or ASTERACEAE)

Description

A much branched extensively scrambling and twining slender-stemmed vine. Leaves opposite in pairs, ovate, acute or shortly acuminate at the tip, shortly cordate at the base, to 12 cm long and 8 cm broad, shallowly or coarsely toothed, 3-nerved, thin-textured, glabrous or thinly hairy. Inflorescence a rather broad corymb, the capitula sessile or subsessile in clusters at the ends of the branches. Florets white or greenish, fragrant; corolla 2.5-3 mm long. Achenes glandular, 1.2-1.8 mm long.

Habitat and Distribution

Common in wet places throughout the American tropics.

Medicinal Uses

The plant is used as an antimalarial drug. It is often boiled with Neem (*Azadirachta indica*) leaves, Caryla (*Momordica charantia*) and Sand-bitters (*Unxia camphorata*) as a bitter tonic for this purpose. It causes sweating and thereby reduces fever. Juice from the leaves is used for bathing external ulcers and the relief of itching. The tea is drunk for the relief of bellyache and cleaning out the uterus (dilation and curettage). An infusion of young leaves is used as an antidote for snake bites and for treating syphilis. Young leaves are pounded with salt and the liquid is given orally to children affected with thrush, while the bruised leaves are applied with salt to the affected areas.

Biodynamic Notes

Mikanin, epifriedelinol, stigmasterol and friedelin were isolated from the roots of *Mikania cordata*, while mikanolide and dihydromikanolide were isolated from the stems and leaves of the same plant (Kiang et al, 1968). Isolation of cinnamyl-grandifloric acid from *M. oblongifolia* was also reported (Vichnewski et al, 1977)



(LEGUMINOSAE - MIMOSOIDEAE)

Description

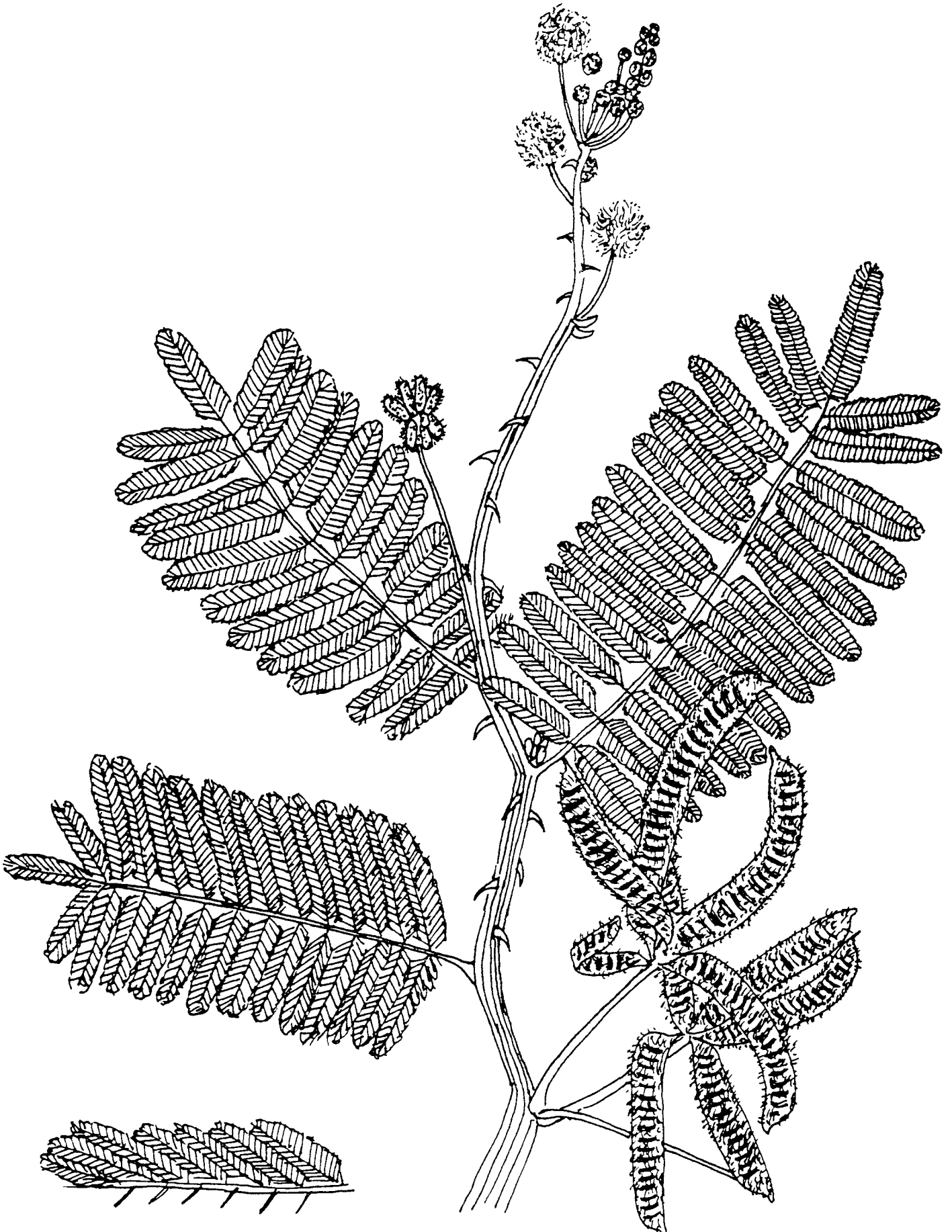
A shrub with straggling branches to 2 m or more high, with setose and hooked prickles. Leaves alternate, bipinnate, with 7-15 pairs of pinnae, the rachis often with paired hooks and spines between the pinnae; leaflets many, 5-8 mm long, about 1 mm broad, pubescent. Peduncles axillary and terminally on the main stem, solitary or paired, to 5 cm long. Flower-heads spherical light rosy-lilac; stamens 8 or 10, twice as many as the petals. Fruits often several together, 10-13 or more jointed, 3-9 cm long, 10-12 mm broad, hispid.

Habitat and Distribution

In ditches and along riverbanks, throughout the tropics.

Medicinal Uses

A decoction of the aerial parts is used to treat thrush in babies and also to allay bed-wetting in children.



Momordica charantia

BAAN-CARYLA
CARAILLI
CARYLA
WILD CARYLA

(CUCURBITACEAE)

Description

A slender-stemmed tendril climber, the older stem often flattened and fluted, to 6 m or more long. Leaves alternate, cut into 5-7 narrow-based lobes, the lobes mostly obtuse with small marginal points, to about 12 cm long and as broad, very thin-textured and characteristically pungent-aromatic; tendrils laterally inserted at the petiole-base. Plants monoecious. Flowers yellow, the female on short peduncles, the male on longer ones, short-lived. Fruit narrowed to both ends, 8-15 cm long, with prominent tubercles on the ribs, opening when ripe, becoming softly fleshy and revealing pendulous seeds covered with red pulp.

Habitat and Distribution

Common on fences and in thickets, in the subtropics and tropics of both hemispheres.

Medicinal Uses

A decoction of the stem, leaves and fruit is drunk as a treatment for diabetes and taken as a bitter tonic generally. It is also reputedly used for treating cancer and bathing external ulcers and sores. Haynes, 1969, reports that a tablespoonful of the juice of the leaves, though very bitter, is taken three times daily to combat malaria and other fevers, as well as biliousness.

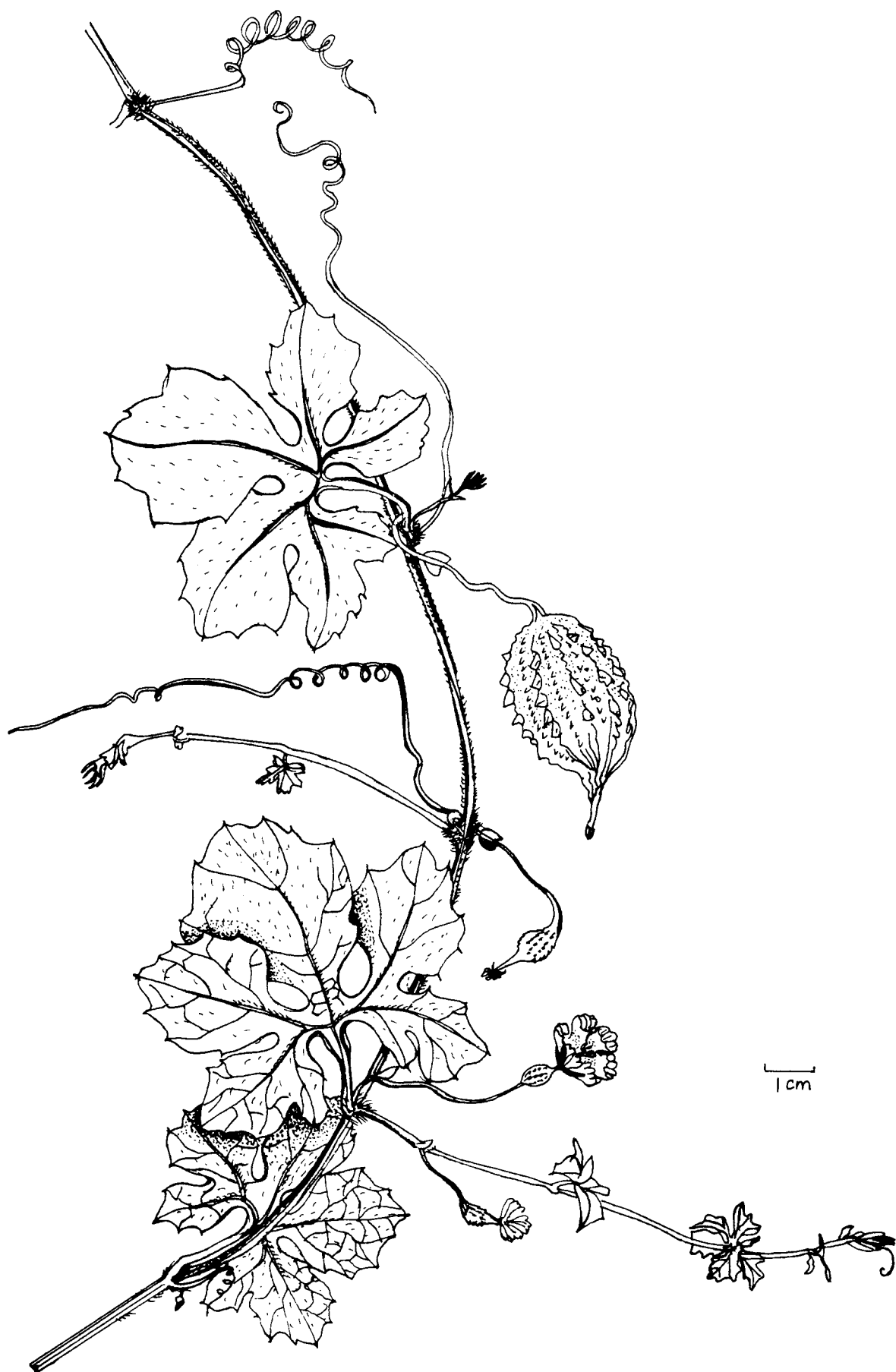
Biodynamic Notes

In folk medicine the fruit and leaves of this plant have reportedly been used as hypoglycemic agents, purgatives, emetics and abortifacients (Sharma et al, 1960; Morton, 1967) and the seeds against diabetes mellitus (Rivera, 1941; Pons and Stevenson, 1943). The insulin-like hypoglycemic activity in the seeds was attributed to charantin, a steroidal mixture of sitosteroyl-3 beta-D-glucoside and 5, 25-stigmastadien- 3 beta-ol D-glucoside (Sucrow, 1966; Lotlikar and Rao, 1966, 1967; Olaniyi, 1975). The leaves yielded 7-stigmasten-3-ol, 7,25-stigmastadien-3 beta-ol and 2,25-stigmastadien-3 beta-ol glucoside, along with n-octacosan and triacontanol (Ulubelen and Sankawa, 1979). Antileukemic agents were found in this plant (Licastro et al, 1979).

Crude aqueous extract of **M. charantia** was shown to have both cytostatic and cytotoxic activities and is a competitive inhibitor of guanylate cyclase activity (Takemoto et al, 1980; Takemoto et al, 1982a, 1982b). It was later reported that the crude aqueous extract yielded a cytostatic factor which also exhibited antiviral activity (Takemoto et al, 1983).

An oncostatic drug, momordin, was obtained from the aqueous extract of **M. charantia** seeds. It inhibited protein synthesis of Ehrlich ascite tumor cells (Tun and Rin, 1976; Lin et al, 1978).

Anthelmintic activity has also been reported for this plant (Lal et al, 1976), and the fruit exhibited antifertility properties (Dixit et al, 1978).



Montrichardia arborescens
(Syn. *Pleurospora arborescens*)

MOCO-MOCO
MOKA-MOKA

(ARACEAE)

Description

An erect little-branched arborescent herb to 3 m high, the stem with numerous nodes and sometimes prickly. Leaves spiral, the blade sagittate, leathery, the midrib to 20 cm long, the tip cuspidate; the basal lobes ovate, to 15 cm broad, acuminate; petiole terete, 20-30 cm long; leaf-sheath 11-27 cm long. Inflorescence axillary; spathe broadly ovate, cuspidate, green outside, whitish or yellowish within, 10-15 cm long; spadix with a basal female part about 2 cm long and 1 cm broad, the flowers with a pistil about 3.5 mm long and 2.5 mm broad; male part distal, deciduous, 7-9 cm long and 1.5 cm broad, the flowers with 4-7 stamens. Fruit compound, broadly cone-line, to 13 cm long and 9 cm broad, comprising single-seeded carpels about 3 cm long and 2.5 cm broad.

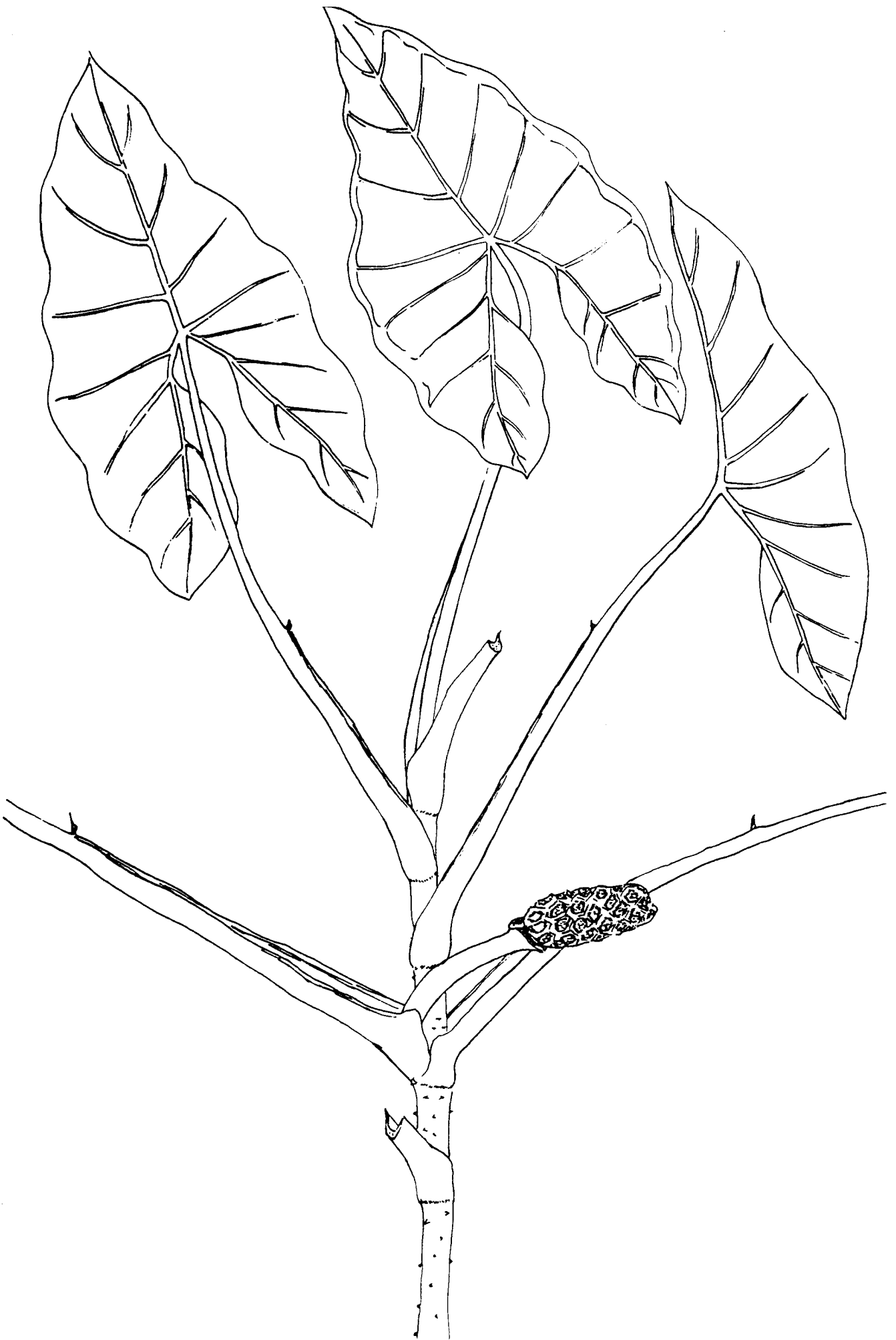
Habitat and Distribution

Forming pure stands in swamps and along riverbanks in tropical South America and Trinidad.

Medicinal Uses

The succulent stem is pounded and made into a poultice which is applied to cuts and bruises to stop bleeding. The stem is roasted and the juice extracted; this is mixed with salt and is used, both internally and externally, as a treatment for thrush, and for cold in infants. Juice from the fresh stem is used for sore eyes. A decoction of dried roots and leaves is taken daily to relieve hypertension.

The freshly cut stem is roasted over an open fire and the juice is squeezed out and taken orally with a pinch of salt as a cure for tuberculosis.



Mora excelsa

BLACK MORA
RED MORA
SAND MORA

(LEGUMINOSAE - CAESALPINIOIDEAE)

Description

Tree with a conspicuously buttressed trunk, to 40 m high. Leaves alternate, abruptly pinnate, rarely with an odd terminal leaflet. Leaflets 3-4 pairs, varying from oblong-lanceolate with a long acuminate tip on saplings and young trees, to oblong with an acute or obtuse apex, or elliptic or oblong-elliptic with a rounded or notched apex, 8-25 cm long, 3.5-7.5 cm broad. Flowers mostly 5-merous, small, numerous, sessile in dense cylindrical spikes branching near the base, whitish, shaggy-hairy; calyx campanulate, 3-4 mm long; petals obovate, 5-6 mm long; stamens and staminodes 5 or 6. Pod leathery or woody, oblong, compressed, 2-valved, 13-21 cm long, 5-7.5 cm broad; seeds 1 or 2, deeply kidney-shaped, to 11 cm long and 6 cm broad.

Habitat and Distribution

A dominant in some forests in wet areas. Guyana and Trinidad.

Medicinal Uses

A rich pink-coloured decoction of the bark with a disagreeable nauseating odour and after-taste, thought to be purgative, seems to have rather the opposite effect. The bark is usually soaked overnight in water and the infusion is taken for severe dysentery.

The bark is also pounded and used as a fish poison by placing it in the water.



Morinda citrifolia

PAIN-KILLER
YAW-WEED

(RUBIACEAE)

Description

A shrub or small tree, 3-6 m or more high. Leaves opposite in pairs, with large rounded stipules on innovative branches, broadly elliptic to oblong-ovate, acute, cuspidate or obtuse at the tip, cuneate to rounded at the base, to 45 cm long and 25 cm broad, firm-textured, shiny. Flowers sessile in rounded compact stalked heads, the group giving rise to a compound fruit resembling a small Breadfruit. Corolla white, the tube about 1 cm long. Ripe fruit oblong, to 10 cm long and 6 cm broad, green becoming white then semi-translucent, squashy and foetid.

Habitat and Distribution

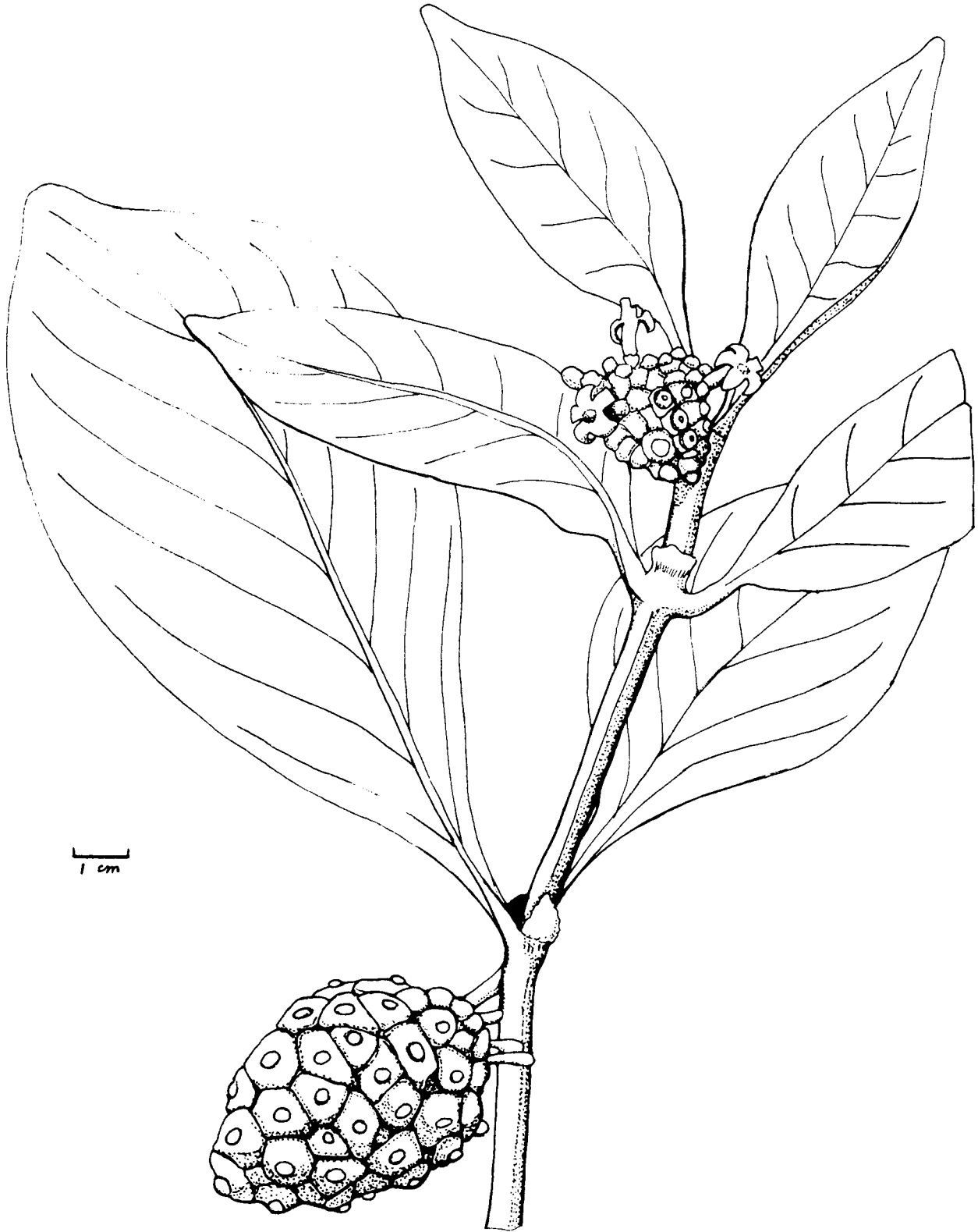
Native in tropical Asia and Australia where it is a component of coastal thickets and brackish swampy woodlands. Introduced and naturalized after escaping from cultivation in warm parts of the New World.

Medicinal Uses

The leaves, with or without those of Cowfoot-bush (*Pothomorphe peltata*), are macerated, mixed with coconut oil, and applied externally for the relief of pain of the joints including arthritic and rheumatoid pains.

Biodynamic Notes

Anthraquinones have been found in *Morinda lucida* (Demagos et al, 1981).



Nopalea cochenillifera
(Syn. *Opuntia cochenillifera*)

COCHINEAL
CROCHINEAL

(CACTACEAE)

Description

A shrubby much branched cactus with flattened elliptic segments with rounded margins, the plant to 4 m or more high. Areoles are the boss-like nodes on the segments which are generally spineless but clusters of minute prickles may develop; minute leaves are early deciduous from these nodes on new branches. Flowers solitary along the upper margins of the joints, 5.5-7 cm long, with erect crimson petals exceeded by the stamens.

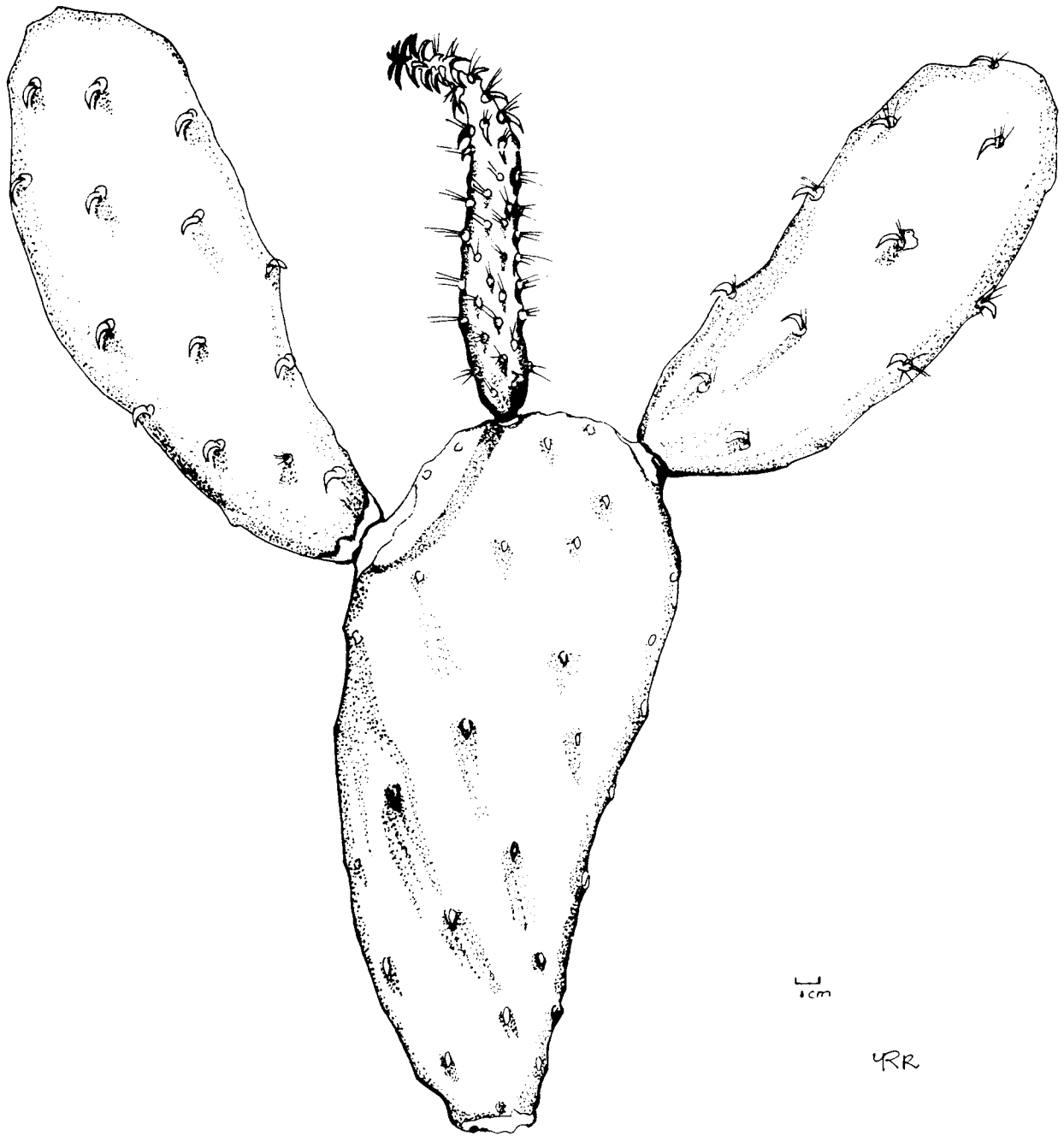
Habitat and Distribution

Probably native in Mexico, now widespread in cultivation in the tropics of both hemispheres.

Medicinal Uses

The sap of the plant is used by itself or with Sweet-aloes (*Euphorbia neriifolia*) for colds and wheezing especially in babies. As a treatment for pneumonia, the plant is grated and mixed with cornmeal and soft grease to form a paste which is warmed on a fire and immediately applied externally on the body; it reputedly relieves heavy chest colds and the accompanying fever associated with pneumonia.

Branches of the plant are roasted, sliced and applied as poultices to relieve pain in any part of the body. This application is often used to alleviate swelling, pain and the localized burning sensation resulting from filaria.



[
cm

YR

(LABIATAE or LAMIACEAE)

Description

A shrub to 2 m high, with thinly hairy square-sectioned branches. Leaves opposite in pairs, ovate to elliptic-lanceolate, acuminate at the tip, acute at the base, to 15 cm long and 5 cm broad, serrate-dentate, thinly hairy on the veins only, translucent-punctate in the blade. Flowers clustered in whorls along the pubescent branches of a terminal panicle, with the branches, often three, to 15 cm long. Flowers very irregular; calyx campanulate, to about 5 mm long in fruit, the lower lip closing, the mid-lobes shorter; corolla greenish. Nutlets subglobose, dark brown, lightly pitted, about 1 mm in diameter.

Habitat and Distribution

Native probably of tropical Asia, now widespread in tropical Africa but, as yet, only sporadic in tropical America and always in cultivation in gardens and household yards.

Medicinal Uses

The aerial parts are boiled to make tea which is drunk for colds, especially chest colds, and for wind pains in the stomach.

Biodynamic Notes

The essential oil obtained from leaves of *O. gratissimum* showed marked antibacterial activity (Grover and Rao, 1977).



(LABIATAE or LAMIACEAE)

Description

A low-branched, bushy, pubescent, strongly aromatic herb to about 50 cm high. Leaves opposite in pairs, stalked, broadly ovate-elliptic, cuneate at the base, acute or acuminate at the tip, the margin entire or shallowly serrate, to 7 cm long and 5 cm broad. Flowers racemose in distinct verticils, the racemes rather compact, to about 10 cm long; pedicels 4-7 mm long; calyx in flower about 4 mm long, enlarging to 7-9 mm long but not saccate in fruit; corolla strongly zygomorphic, white or mauve blotched purple or violet; stamens 4 with free filaments.

Habitat and Distribution

Common in open ground in developed areas. General in the American subtropics and tropics.

Medicinal Uses

Dried seeds are ground into a fine powder and placed into irritated eyes of children to bring relief. This plant is also used as a culinary seasoning.

Biodynamic Notes

The major constituents of *O. micranthum* are eugenol, methyleugenol and sesquiterpenes (Khosla et al, 1980).

Ocimum sanctum
(LABIATAE or LAMIACEAE)

JUMBIE-BALSAM
TULSIE

Description

An annual erect villose herb, 30-60 cm high. Leaves opposite in pairs, ovate to ovate-oblong, shortly acute at the base, acute or obtuse at the tip, the margin minutely serrate, 2-5 cm long, 1-3 cm broad; petioles to 2 cm long. Flowers racemose in distinct verticils; pedicels 2-3 mm long; calyx in flowers about 2 mm long, enlarging to about 5 mm long in fruit, the wing-like appendage of the upper lip cordate and suborbicular; corolla white or reddish; the upper pair of stamens with a hirsute appendage near the base.

Habitat and Distribution

Native in Asia, tropical Australia and Polynesia, cultivated and scarcely naturalized in parts of tropical America to which it has been introduced as a sacred and medicinal plant by Hindus.

Medicinal Uses

A tea made from the aerial parts is used as a treatment for chest-colds and alimentary disorders such as stomach pains caused by wind. Juice from the leaves is dropped into the ear for the relief of earache; it is also used as an antiseptic.

The entire plant may be placed in chicken pens to keep away mites.

Biodynamic Notes

Extracts prepared in cold water, hot water and acetone exhibited antifungal activity (Shekhawat and Prasada, 1971). Essential oils obtained from leaves of *O. sanctum* have shown marked antibacterial activity (Grover and Rao, 1977).

Methylchavicol, eugenol and other volatile oils of commercial importance have been found in this plant (Pareek et al, 1980).

Passiflora foetida

BABY-SEMITOO
MIS-MIS
WILD SEMITOO

(PASSIFLORACEAE)

Description

Annual or perennial slender semi-herbaceous tendril-climber, variably hairy, growing to 2 or 3 m and sometimes forming tangles. Leaves alternate, more or less 3-lobed, the lobes entire or minutely toothed, to 12 cm long, the petiole without glands. Tendrils and flowers axillary. Bracts forming a conspicuous 3-segmented involucre below the flower and pinnately divided into glandular filaments, exceeding the sepals, to 2.5 cm long. Petals 5, white with purple veins; outer corona series filamentous, the inner very short; stamens 5; stigmas 3. Fruit a subspherical berry about 2 cm in diameter, yellow when ripe.

Habitat and Distribution

A pantropical weed, common in thickets and waste places.

Medicinal Uses

The entire fresh plant is boiled and the liquid given to children as an anthelmintic. A decoction of the dried plant is drunk as a treatment for chest colds and coughs.

Biodynamic Notes

Cyanogenic glycosides have been identified in several species of **Passiflora** (Spencer and Seigler, 1983, 1985a, 1985b) and gynocardin was isolated from a species of this genus (Spencer and Seigler, 1984).

Flavonoids, including chrysoenol, apigenin, isovitexin, vitexin, 2"-xylosylvitexin, 2"-xylosylisovitexin, luteolin-7-beta-D glucose, kaempferol, luteolin, isoschaftoxide and vicenin were isolated from **Passiflora foetida** var. **hispida**, together with glucose, galactose and saccharose (Ulebelen et al, 1982).



Passiflora laurifolia

BELL-APPLE
SEMITOO

(PASSIFLORACEAE)

Description

High-climbing tendril vine with striate, grooved, woody stem. Leaves alternate, entire, elliptical, shortly acute at the tip, rounded at the base, to 14 cm long, glabrous, the petiole with a pair of glands. Flowers and tendrils axillary. Bracts 3, free to the base, forming a leafy involucre at the apex of the 1-flowered peduncle. Flower 6-10 cm in diameter, fragrant; petals cream with red speckles; corona bright purple with white bands. Ripe fruit ovoid, 7-8 cm long and 5.5-6 cm broad, the exocarp leathery, yellowish-orange; seeds flat, about 6.5 mm long and 4 mm broad.

Habitat and Distribution

Cultivated and naturalized in thickets, probably also native in Guyana and elsewhere in tropical South America; introduced widely in the Old World.

Medicinal Uses

The stem and leaves are boiled and used as a vermifuge, especially for children.

Biodynamic Notes

Pharmacological investigations indicated that extracts of *P. edulis* had tranquilizing effects due mainly to the alkaloid harman (Lutomski et al, 1975a, 1975b) and that maltol, isolated from *P. incarnata*, showed central nervous system depressant activity (Kimura et al, 1980; Aoyagi et al, 1974; Svanidze et al, 1974). *Passiflora incarnata* also contained vitexin and isovitexin (Quercia et al, 1978) and pharmaceuticals (ointments, gels etc.) containing extracts of this plant are used for treatment of capillary fragility (Aubert and Anthoine, 1985).

Saponarin, saponaretin, vitexin, delphinidin, malvidin, petunidin and cyanidin were obtained from *P. quadrangularis* (Glotzbach and Rimpler, 1968; Hallim and Collins, 1970; Billot, 1974).



(LEGUMINOSAE - MIMOSOIDEAE)

Description

A tree 10-15 m high, the young parts rusty-pubescent. Leaves alternate, bipinnate, with 10-20 or more pairs of pinnae; leaflets 15-25 pairs, linear and slightly curved, acute at the tip, oblique and eared on the lower side at the base, 7-12 mm long, 1-1.5 mm broad, glabrous. Spikes 10-20 cm long with numerous sessile flowers. Flowers 5-merous; calyx about 2 mm long; corolla purple outside, 4-6 mm long; stamens 5, exserted, white, exceeded by 5 staminodes. Pod ensiform, 20-35 cm long, 3-4 cm broad, the two valves strongly elastic and recurved on dehiscence; seeds obovate, about 4 cm long.

Habitat and Distribution

On sandy soils and numerous in secondary forests in wet areas. Trinidad and tropical South America.

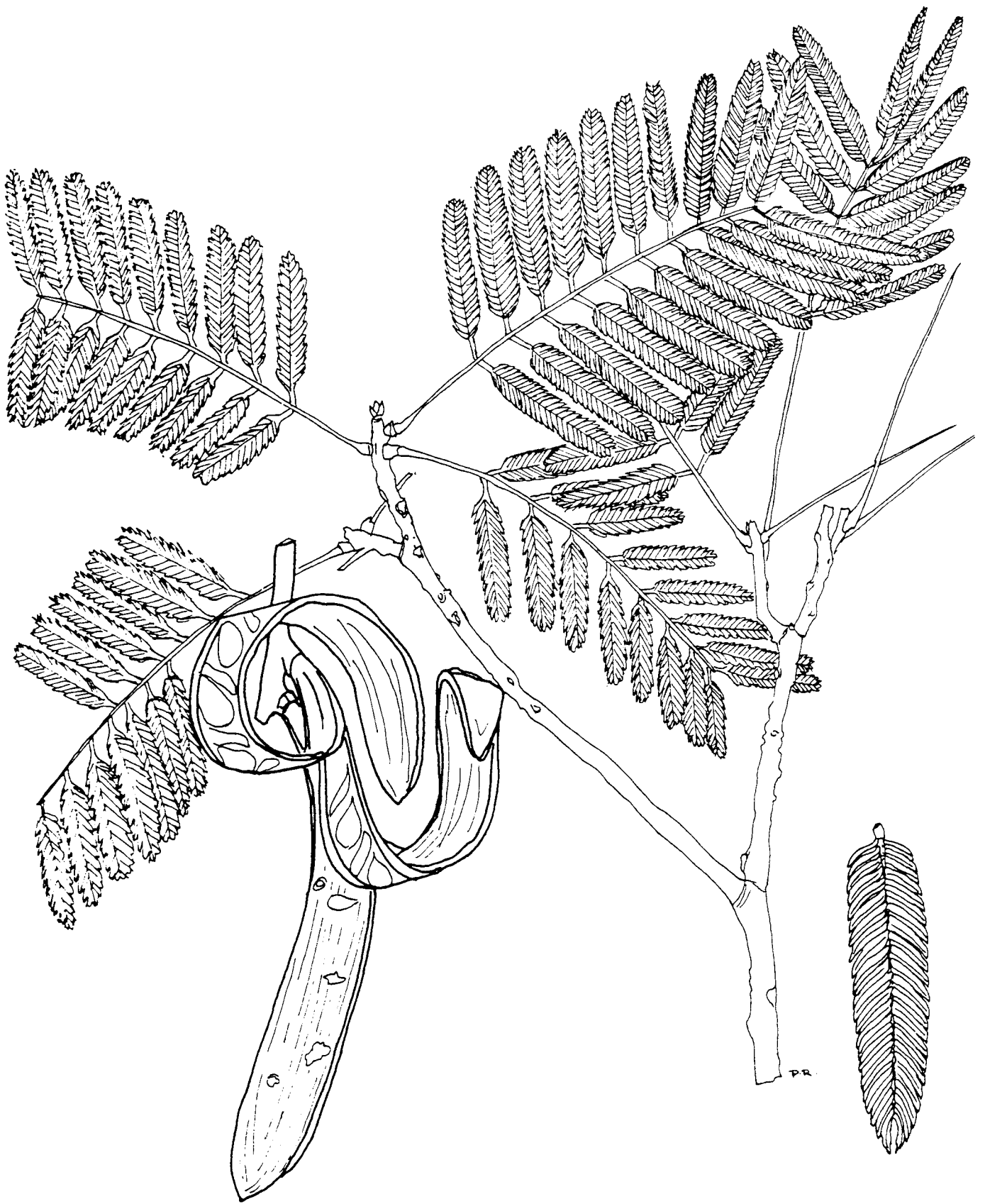
Medicinal Uses

The bark is said to possess antiseptic properties and a decoction is used to bathe ulcers. Juice from fresh inner bark is applied on cuts and bruises to stop bleeding and enable effective healing. As a remedy for snake bites, especially from Labaria and Morabana, a decoction of bark is mixed with rum, garlic (*Allium sativum*) and gunpowder and applied as a poultice to the affected area after washing with a decoction of the bark. A decoction of the bark also acts as an emetic. As a cure for 'Bush Yaws' a poultice is made from powdered bark and salted butter.

Biodynamic Notes

Extracts of *P. macrophylla* yielded alkaloids such as caffeoylputrescine (Hollerbach et al, 1970), and fatty acids containing tocopherols (Chem. Abs., 1977). They were also reported to show a positive inotropic effect, to increase the cardiac output in isolated pig heart, while in cats the effect was hypotensive (Da Silva and Paiva, 1970).

Saponins were found in the seeds of *P. eetveldeana* (Welter and Delaude, 1975), and sesquiterpenes were isolated from *P. epiphytica* (Bohlmann et al, 1979).



(PIPERACEAE)

Description

A delicate, erect, succulent herb to about 30 cm high. Leaves alternate, heart-shaped, to about 2.5 cm long and broad, palmately 5-nerved, pellucid. Spikes slender, simple, leaf-opposed or terminal, rarely axillary, to 5 cm long. Fruit seed-like, ovoid, ribbed, to 1 mm long.

Habitat and Distribution

Common as a weed of damp shady or sheltered places. General in the tropics.

Medicinal Uses

The sap from this succulent herb is used to treat eye infections. An infusion of the leaves is used to treat hypertension and heart troubles; it is said to give a 'cooling' effect on the body when taken orally.



Persea americana

AVOCADO PEAR
MORAKO
PEAR

(LAURACEAE)

Description

A tree with straggling-ascending branches, usually not over about 15 m high, but sometimes much taller. Leaves spiral and often clustered near the branch-ends, narrowly or broadly elliptic to obovate, usually pointed at the tip, cuneate at the base, to 20 cm long and over 15 cm broad, glaucous beneath; petioles well developed. Flowers in a much branched compact panicle shorter than the leaves, greenish-yellow; flower-parts in threes or multiples of three. Fruit variable in size and shape according to the variety, usually shiny and green or purple when ripe, often pear-shaped, to about 15 cm long; the flesh soft, greenish or yellow, oily, surrounding one large loose round seed.

Habitat and Distribution

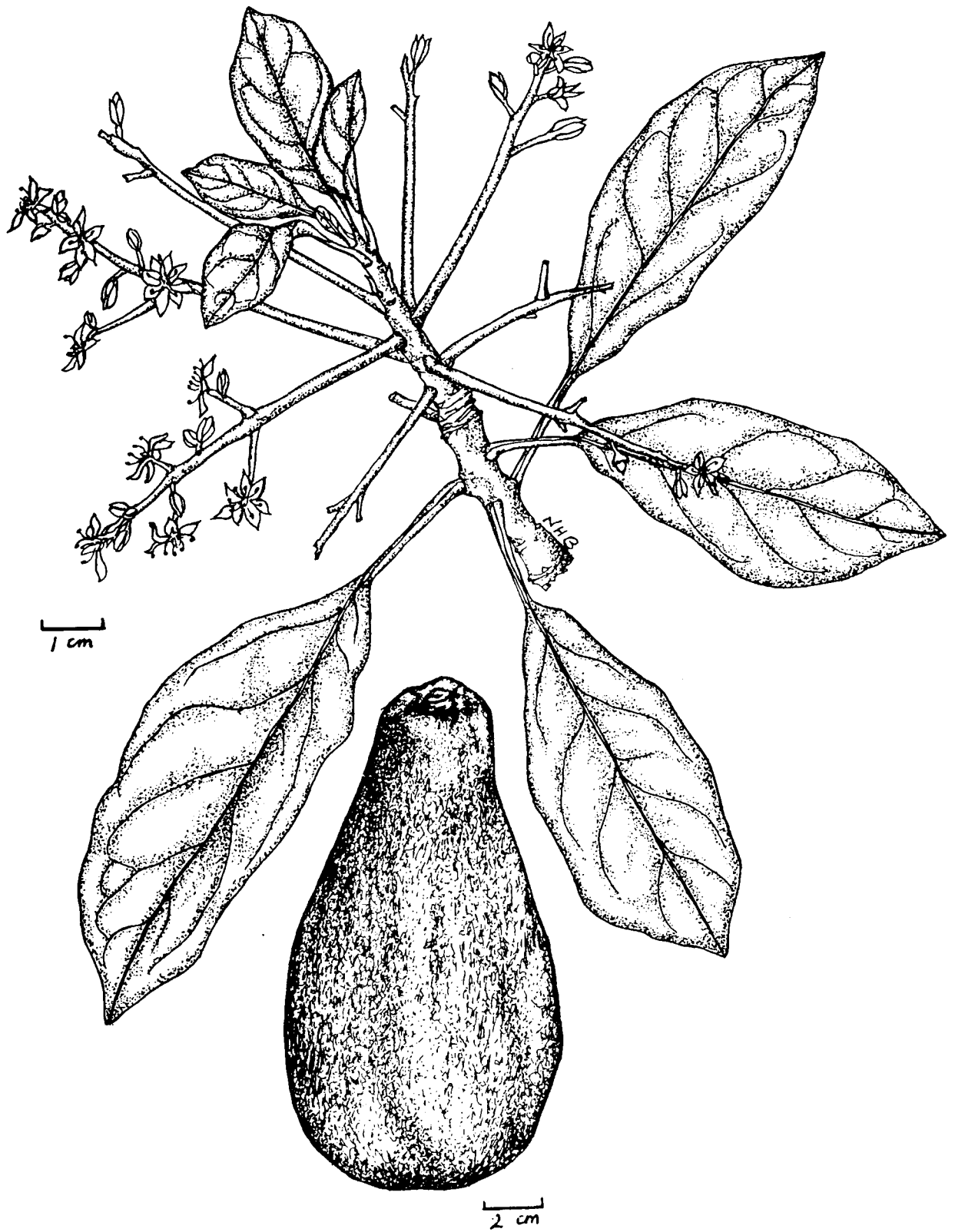
Native of Mexico, now widespread in cultivation in the subtropics and tropics, rarely naturalized.

Medicinal Uses

A decoction of the dried leaves is taken orally in cases of hypertension. The leaves are usually boiled with the red form of Zeb-grass (*Tripogandra serrulata*) and the liquid drunk as a treatment for biliousness.

Biodynamic Notes

The steroids cholesterol, campesterol, stigmasterol, beta-sitosterol, delta5-avenasterol, delta7-stigmasterol and delta7-avenasterol were found in Avocado oil which is said to be suitable for cosmetic and pharmaceutical preparations (Sciancalepore and Dorbessan, 1982). Cyanide has been identified in the leaves and seeds (Morton, 1981), and leaf extracts exhibited antihypertensive activity in rats (Feng et al, 1961). An extract from the seed possessed an erythroagglutinating property (Meade et al, 1980), and reductase and transferase enzyme preparations were obtained from the mesocarp (Caughey and Kekwick, 1982).



(PHYTOLACCACEAE)

Description

A deeply rooted perennial undershrub with tough stems to over 1 m high in flower, the whole plant emitting an acrid garlic odour when broken. Leaves spiral, elliptic, acuminate at the tip, cuneate at the base, to 20 cm long and 7 cm broad. Flowers in long slender spikes to 40 cm long; perianth 4-membered, white at first, becoming green in fruit. Fruit about 6-8 mm long, appressed to the rachis and developing two deflexed apical very sharply pointed bristles.

Habitat and Distribution

A weed of semi-shaded undisturbed ground from Florida and Mexico to Argentina and throughout the West Indies. Introduced and now firmly established in some parts of tropical Asia and Africa.

Medicinal Uses

The entire plant is boiled, normally with Minnie-root (**Ruellia tuberosa**), Coconut (**Cocos nucifera**) root and Pigeon-pea (**Cajanus cajan**) leaves, and the liquid used as a purgative by women suffering from 'bladder troubles' (leucorrhoea). The plant is boiled with Minnie-root, St Johns-bush (**Justicia secunda**) and Inflammation-bush (**Vernonia cinerea**) and small quantities of the decoction are drunk for the relief of menstrual pains; larger doses are said to procure abortion. A decoction of the plant is also used as a tonic 'for female rejuvenation' and as a diuretic.

Biodynamic Notes

Antimicrobial activity has been ascribed to this plant (Segelman and Segelman, 1975) and the milk of cows which eat it is said to be tainted with sulphur compounds (Segelman, 1975). Leaf extracts gave positive tests for alkaloids (Seaforth et al, 1983).

Coumarins were found in the root of **P. alliacea** (Rocha and Benzani-Da Silva, 1969).



Y.R.

Philodendron fragrantissimum
(Syn. *P. demerarae*)

BUCURUNA
SARSPARILLA*

(ARACEAE)

Description

A tufted epiphyte or scandent subshrub. Leaves alternate, simple, the blade ovate, acuminate at the apex, to 35 cm broad, entire but cordate at the base, the basal lobes ovate, rounded, slightly divergent, with strong midribs, the principal lateral nerves 10-12; petiole stout, grooved, 30-60 cm long. Peduncle 3-8 cm long. Spathe with a swollen base about 5 cm long and a lanceolate, acute, white limb 6-8 cm long, sometimes with a red margin. Spadix: the female part basal, 1.5-3 cm long and 1 cm broad, the flowers with a 6-10-locular ovary and a sessile annular pitted stigma; male part distal, cylindrical, obtuse, 4-6 cm long, the flowers with 3-5 stamens. Fruits baccate, about 8 mm long.

Habitat and Distribution

Mostly epiphytic or climbing on trees. Guyana, Suriname and Brazil.

Medicinal Uses

The roots are boiled together with the stem of Devil-doer (*Strychnos spp.*), root of Cockshun (*Smilax schomburgkiana*), stem of Kapadula (*Doliocarpus sp.*), Kupa-rope (*Clusia grandiflora*) and Granny-backbone (*Lygodium sp.* Illustrated on p. 213) and the liquid used as an aphrodisiac. The roots are used to make a tea generally and the decoction of aerial parts is used as a demulcent and diuretic. As a treatment for rheumatism, the leaves are warmed and tied over the affected area, reducing inflammation and relieving pain.

Biodynamic Notes

Plants of this genus are put to many uses throughout the American tropics; some undesirable and toxic effects have been noted (Plowman, 1969).

The plant contains a substance active against pathological fungi (Makamura, 1977).

Footnote

* It is important to note that apart from usage in Guyana, the name Sarsparilla is universally applied to species of *Smilax*. Some aspects of role as medicinal plants and of morphology as climbers may be comparable, but botanically *Smilax* and *Philodendron* are not closely related.



(LORANTHACEAE)

Description

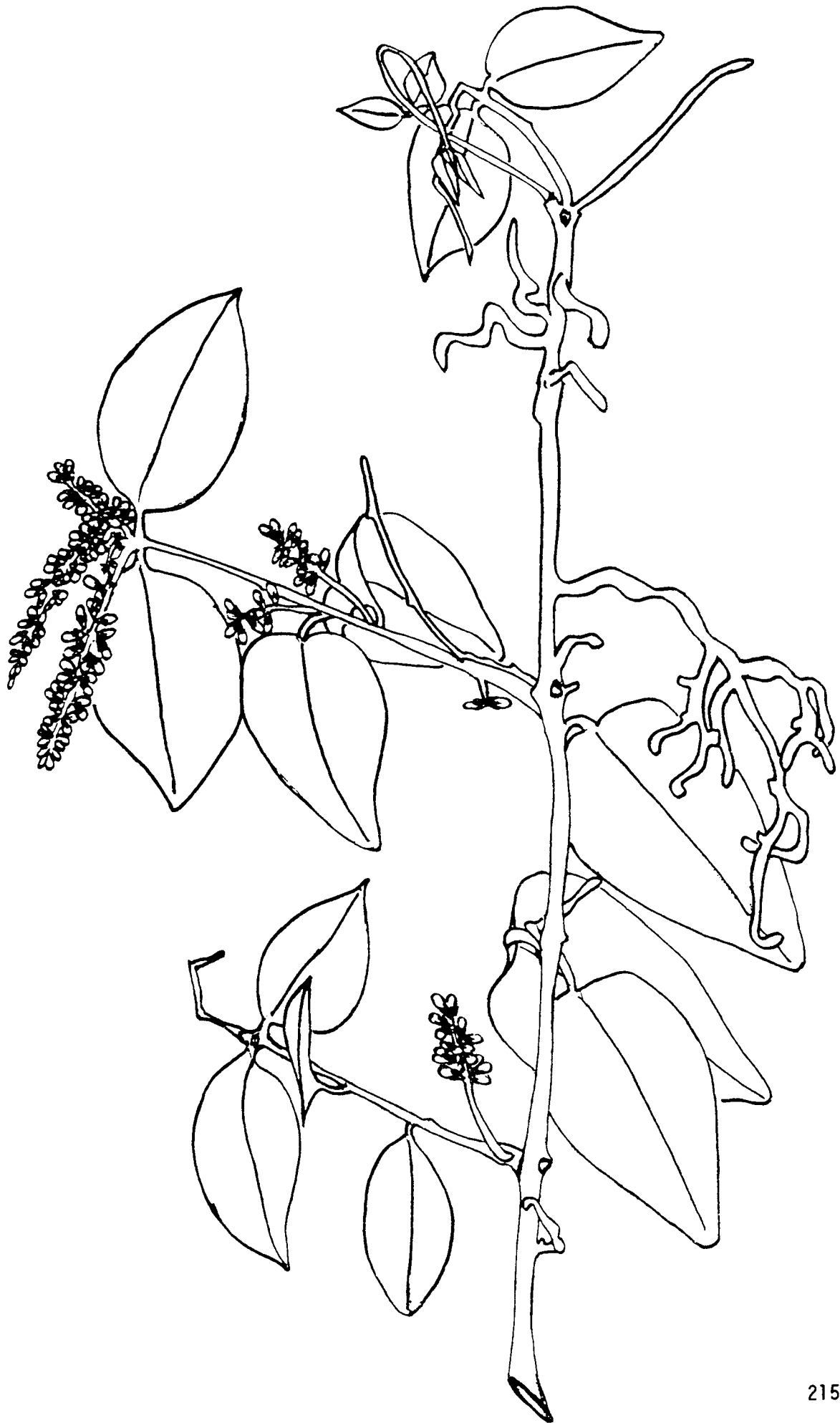
Straggling parasitic shrub on the branches of various trees, with evident roots clasping the bark of the host; stems glabrous, pale greyish. Leaves usually opposite, ovate to ovate-lanceolate, sometimes rounded, acute or shortly acuminate at the apex, variable at the base, 3.5-11 cm long, 3-7.5 cm broad, leathery, glabrous. Inflorescence a terminal or axillary much-branched panicle, composed of subsessile dioecious white flowers in clusters of three. Flowers unisexual, dioecious, 4-6 mm long, with a truncate calyculus 0.5-1.5 mm long. Fruit oblong to ovoid, red, about 7 mm long and 3.5 mm in diameter.

Habitat and Distribution

Often abundant on economic trees in developed areas, also in marginal and open forests frequented by birds which feed on and transport the fruits. Central and South America, Trinidad and Tobago.

Medicinal Uses

The entire plant is boiled with Burr-vine (*Stachytarpheta jamaicensis*) and Black-sage (*Cordia curassavica*) and the liquid taken orally for the relief of hypertension. A decoction of aerial parts is given with a pinch of salt to children suffering from thrush, and adult males or females suffering from leucorrhoea.



(EUPHORBIACEAE)

Description

An annual usually erect little-branched herb, 10-50 cm high, completely green including the flowers. Specialized determinate branches resemble pinnately compound leaves, but the true leaves are simple, oblong, acute or obtuse, slightly oblique, to 14 mm long and 6 mm broad and bear the inconspicuous flowers in pairs in their axils. Each pair of flowers usually comprises one male and one female. Capsule flattened-globose, about 2 mm in diameter. Seeds light brown, about 1 mm long, with 5-6 longitudinal ridges on the back.

Habitat and Distribution

Common as a weed of disturbed and waste ground especially on sandy soils. Although first described from West Africa, this species is a native of tropical America which has subsequently become widely spread through the tropics.

Medicinal Uses

The infusion of the herb is taken for the relief of dysentery, and is also used as a blood purifier (bitter tonic) to reduce blood-sugar level.

Biodynamic Notes

Antihepatotoxic components have been isolated from **Phyllanthus niruri**,* including phyllanthin, hypophyllanthin and triacontanol (Syamasundar et al, 1985). Other compounds that have also been reported in this species are quercetin, rutin, quercitrin, astragalin and fisetin 4'-O-glucoside (Gupta and Ahmed, 1984).

Antitumor compounds were isolated from **P. acuminatus** (Pettit, 1983) and a potent antispasmodic alkaloid was obtained from **P. sellowianus** (Calixto et al, 1982).

*** Footnote**

Unfortunately, the name **Phyllanthus niruri** has been widely misapplied to **P. amarus** and other common and widespread related species. **Phyllanthus niruri** is a very rare plant endemic to the West Indies.



Physalis angulata

MONKEY-GUN
PAP-BUSH
PAPOOSE

(SOLANACEAE)

Description

Weak-stemmed spreading-branched herb to 60 (-120) cm high, the angular stems only thinly pubescent to glabrescent. Leaves alternate, ovate to lanceolate, cuneate at base, the margin more or less sinuate or coarsely toothed, 5-11 cm long, 3.5-8 cm broad; petioles 4-8 cm long. Flowers solitary on pedicels 5-10 mm long; calyx at flowering 3-7 mm long, becoming greatly expanded and inflated in fruit; corolla openly campanulate, 6-12 mm long and broad, dull yellow and usually darker olive at the base and without spots; anthers blue or violet. Fruit a globose berry, 10-12 mm in diameter, enclosed in the angled calyx which enlarges to 2-3.5 cm long.

Habitat and Distribution

Common as a weed of cultivation and waste ground throughout the subtropics and tropics.

Medicinal Uses

The decoction of the plant is widely used for the relief of stomach upset and Brights disease. The plant may be boiled, together with leaves from male plants of Congo-pump (*Cecropia* spp.) and Papaw (*Carica papaya*), mixed with rum as a preservative, and the mixture taken regularly until the patient is cured.

Biodynamic Notes

Two crystalline substances, physalin A and physalin B were isolated from *P. alkekengi* (Matsuura et al, 1970).



(PHYTOLACCACEAE)

Description

A tough-stemmed bushy glabrous herb 60-120 cm high. Leaves alternate, simple, elliptic to ovate-lanceolate, acuminate with a usually calcarate tip, 10-20 cm long, 4-8 cm broad, covered with minute cystoliths. Flowers in lax terminal racemes to 60 cm long in fruit; pedicels accrescent to 10 mm long; perianth-segments 5, about 2 mm long, pink; stamens 8-20. Fruit fleshy, depressed, 5-7 mm in diameter, black when ripe, with 8-12 1-seeded loculi; seeds subreniform, 2-2.2 mm long.

Habitat and Distribution

A weedy undershrub of disturbed and waste ground usually in rather damp sheltered places. Scattered through the American tropics.

Medicinal Uses

The leaves and young stems are eaten for the relief of diabetes and a decoction of roots is drunk as a treatment for syphilis.

Biodynamic Notes

Dicarboxy and/or carbomethoxy oleanes were reported in **P. rivinoides** and **P. americana** (Parkhurst, 1975). Carbomethoxy oleanolic acid was isolated from the former species (Gonzalez et al, 1972).

Strong anti-inflammatory saponins were obtained from the callus mass of stems and roots of **P. americana**, (Chi and Kim, 1985). Americanin, isolated from the dried fruits of **P. americana**, decreased the mortality rate of phalloidin poisoned mice (Goerler et al, 1980).

Saponins of **P. dodecandra** were effective as spermatocides and as antiblastocyst and abortion agents (Parkhurst and Stolzenberg, 1975).



Pimenta racemosa
(Syn. *P. acris*)

BAY-LEAF
SPICE *
SPICE-LEAF

(MYRTACEAE)

Description

A tree to 15 m high; bark smooth, variegated and flaking in large pale-coloured patches; young twigs 4-angled and slightly flattened. Leaves opposite in pairs, oblong to elliptic, mostly obtuse at the tip and rounded at the base, to about 15(-20) cm long and 5(-7) cm broad, prominently net-veined, rich green, highly aromatic. Inflorescences paniculate with many small flowers; calyx with 5 spreading sepals; petals white, 3 mm long. Berries subglobose to ellipsoid, 8-10 mm long, ripening blackish.

Habitat and Distribution

This species is believed to be native in scattered localities in tropical America including Cuba, some islands of the Lesser Antilles, Tobago and in northern South America. It has been brought into cultivation in Florida, the Bahamas, Jamaica and Trinidad, and in the Old World in Malaysia, Indonesia and some islands of the Pacific.

Medicinal Uses

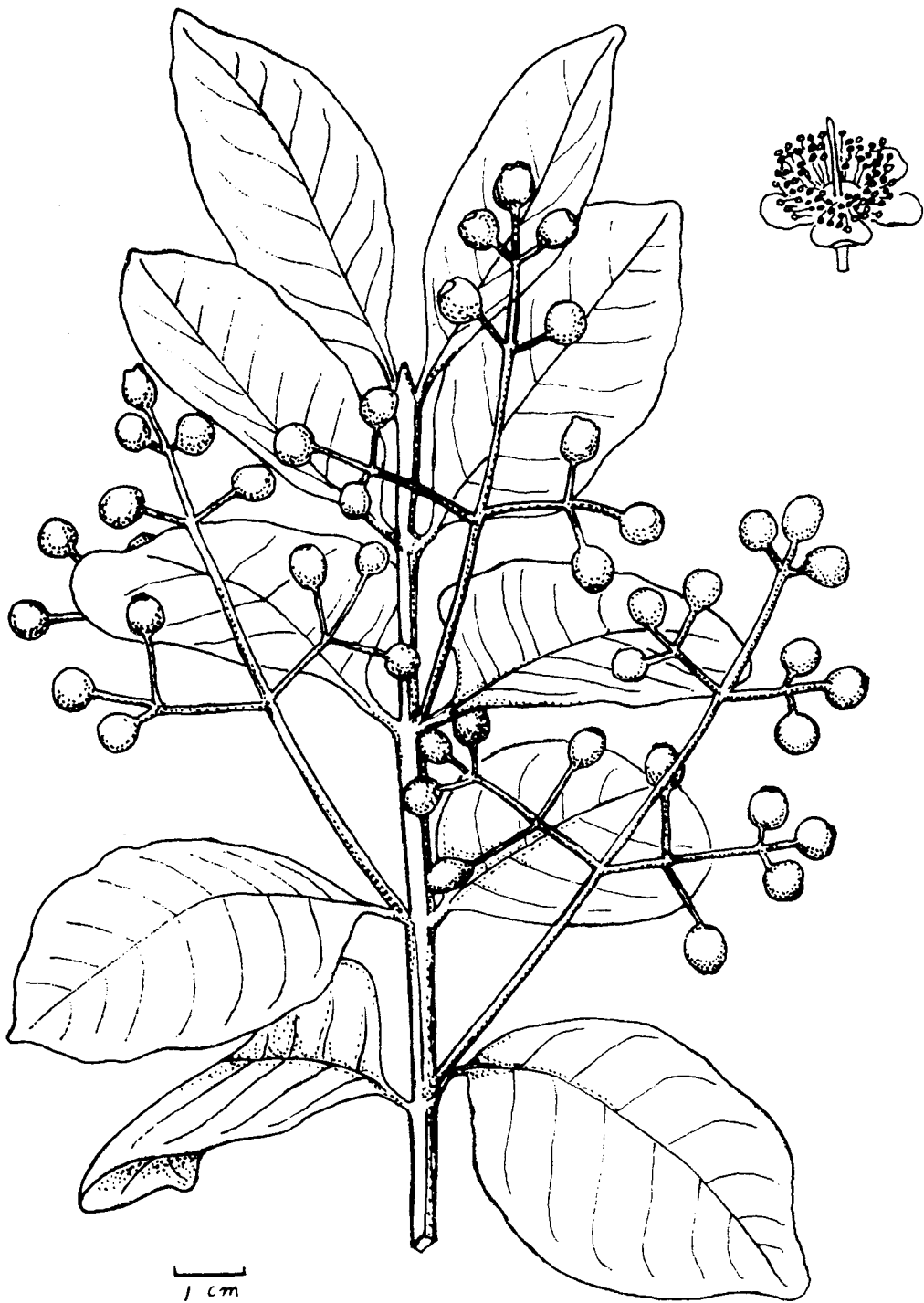
The dried leaves are used as a tea generally and this is also said to relieve flatulence.

Biodynamic Notes

The main component of the essential oil from leaf and berry is the phenol eugenol; methyl eugenol, isoeugenol and chavicol are also present. Many constituent monoterpene and sesquiterpene hydrocarbons have been identified (Purseglove et al, 1981).

Footnote

* The use of the name Spice refers in Guyana more properly to Cinnamon (*Cinnamomum verum*, syn. *C. zeylanicum* - Lauraceae).



Piper nigrum

BLACK PEPPER
GOL-MIRCH

(PIPERACEAE)

Description

A trailing and climbing shrub to 10 m high, with thickened joints and adventitious roots. Leaves alternate, ovate, acute at the tip, cuneate at the base, 10-15 cm long, 4-6 cm or more broad, entire, smooth, with 5-7 prominent nerves from the base; petiole terete, 1-1.5 cm long. Inflorescences on lateral spreading branches, leaf-opposed slender spikes 7-15 cm long, the small naked flowers, usually unisexual, sunken in hollows; male flowers with 2 stamens; female flowers with a subglobose ovary and usually 3 stigmas. Fruits numerous on the pendulous spikes, subglobose 1-seeded berries to about 6 mm in diameter, red or yellow when ripe.

Habitat and Distribution

Native of south-western India, now cultivated, often in special gardens and plantations, throughout the humid tropics.

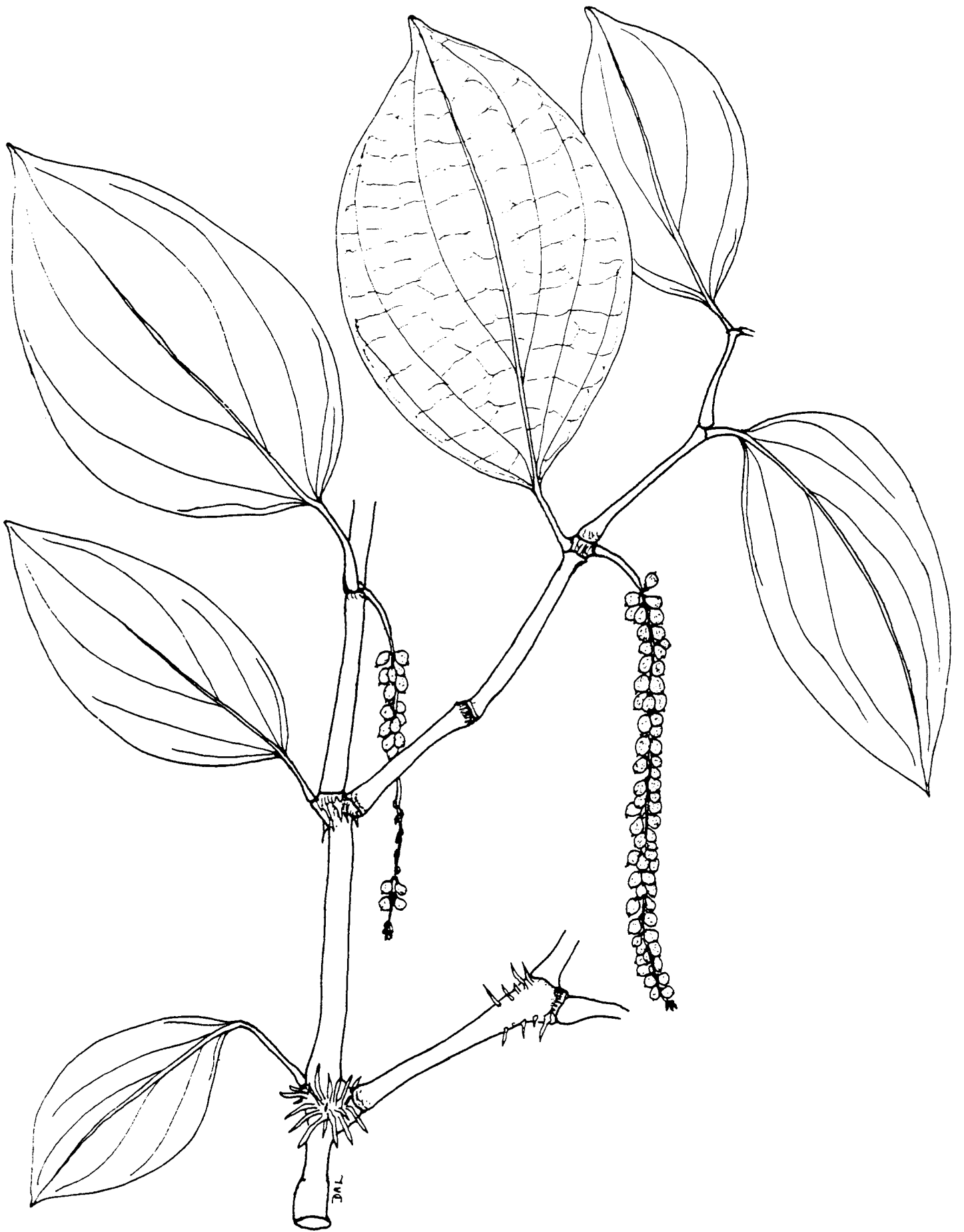
Medicinal Uses

The dried berry and the powder made by pounding the berry are thought to be efficacious in the treatment of ailments of the urogenital system.

The ground green berries are boiled and the liquid drunk for the relief of wind pains (flatulence). A decoction of the dried berries, St Johns-bush (**Justicia secunda**) and Ginger (**Zingiber officinale**) is taken for menstrual pains.

Biodynamic Notes

Piperine is the main volatile alkaloid contributing to the characteristic pungency of this spice. Many monoterpene and sesquiterpene hydrocarbons have been identified (Purseglove et al, 1981).



Pithecellobium jupunba

BREAD-AND-CHEESE
HURIASA
HURUASA
PAKURI
SOAPWOOD

(LEGUMINOSAE - MIMOSOIDEAE)

Description

Tree to 20 m high, the young parts rusty-pubescent. Leaves alternate, bipinnate; pinnae 2-4 pairs with a small roundish gland between each pair; leaflets 3-6 or rarely more pairs, obliquely rhomboid or obovate, blunt-tipped, 1-6 cm long, 1-3 cm broad, pale and minutely pubescent beneath. Flowerheads globose or shortly spicate, on rusty-pubescent peduncles to 8 cm long; calyx 2.5-3 mm long; corolla 5-6 mm long, whitish, rusty-pubescent; stamens numerous, about 2 cm long. Pod curved or coiled, twisting on dehiscence and red inside, 10-15 mm broad, more or less constricted between the seeds. Seeds roundish, compressed, about 7 mm in diameter.

Habitat and Distribution

In forests in moist areas from Guadeloupe and the Windward Islands to Trinidad and in northern South America.

Medicinal Uses

An infusion of scraped roots is used to treat dandruff and as a stimulant to hair growth. The seeds are swallowed by young women just before intercourse as a fertility drug.



Pityrogramma calomelanos

AISEGAY
SILVER-FERN
SILVER-BACK FERN
WILD MARAN

(FILICALES - POLYPODIACEAE - ADIANTOIDEAE)

Description

A terrestrial fern with tufted fronds to about 1 m high from a short dark-scaled rhizome; stipes dark glossy brown, mostly shorter than the blade. Blades bipinnate, dark green above, whitish or rarely yellowish waxy on the underside, lanceolate or oblong-deltate in outline, 10-30 cm broad below the middle; ultimate segments lanceolate to elliptic, usually sharply pointed and serrate or deeply incised, of firm texture. When fertile, sporangia covering and nearly concealing the lower surface.

Habitat and Distribution

Common on sandy or clay soils in rough open but more or less sheltered places. In subtropical and tropical America and Africa; introduced and naturalized elsewhere.

Medicinal Uses

An infusion of leaves is used for stomach pains and either macerated leaves or juice thereof is placed on cuts and bruises to stop bleeding.

A decoction of leaves is drunk for the relief of colds. An aqueous extract of the entire plant is considered a cure for venereal diseases, being taken orally or by local application.

Biodynamic Notes

Isolation of the sesquiterpene lactones pterosin and calomelanolactone was reported (Bardouille et al, 1978). In addition to pterosin and calomelanolactone, a third compound 2', 6'-dihydroxy-4, 4'-dimethoxy-dihydrochalcone was reportedly isolated. Pterosin is reported to have antibiotic properties while 2', 6' dihydroxy-4, 4'-dimethoxy-dihydrochalcone exhibited antifungal activity against **Rhizopus niger**, **Penicillium** and **Aspergillus** (Bardouille and Cox, 1977).

Plectranthus amboinicus
(Syn. *Coleus aromaticus*)

COARSE-LEAF THYME
PODINA
PORTUGUESE THYME
THICK-LEAF THYME
THYME

(LABIATAE or LAMIACEAE)

Description

A lax straggling and decumbent thick-stemmed herb, with flowering branches ascending to about 60 cm high; strongly aromatic. Leaves opposite in pairs, ovate to suborbicular, acute, obtuse or rounded at the tip, truncate-subcordate and shortly cuneate at the base, to about 10 cm long and 8 cm broad, coarsely crenate, thickly fleshy, hairy beneath on the prominent veins; petioles to 2 cm long. Inflorescence a terminal compound raceme of cymose whorls, to 40 cm long; flowers pedicellate; calyx campanulate, 2-4 mm long, with the upper lip oblong, the lower 4 teeth subequal, hirsute and glandular; corolla bright lilac, strongly 2-lipped, 7-12 mm long; stamens 4, the filaments fused below into a tube around the style. Nutlets smooth, pale brown, flattened.

Habitat and Distribution

The origin was possibly in southern tropical Africa, but the species is now widely grown in warm countries as a pot-herb.

Medicinal Uses

The leaves are used as a seasoning or boiled to make a tea reputedly efficacious in the treatment of colds, delayed labour and menstrual pains. It relieves labour pains and aids the expulsion of the afterbirth. The juice from roasted leaves is taken orally, or applied externally with a pinch of salt, to treat allergies, swellings and inflamed areas of the body.

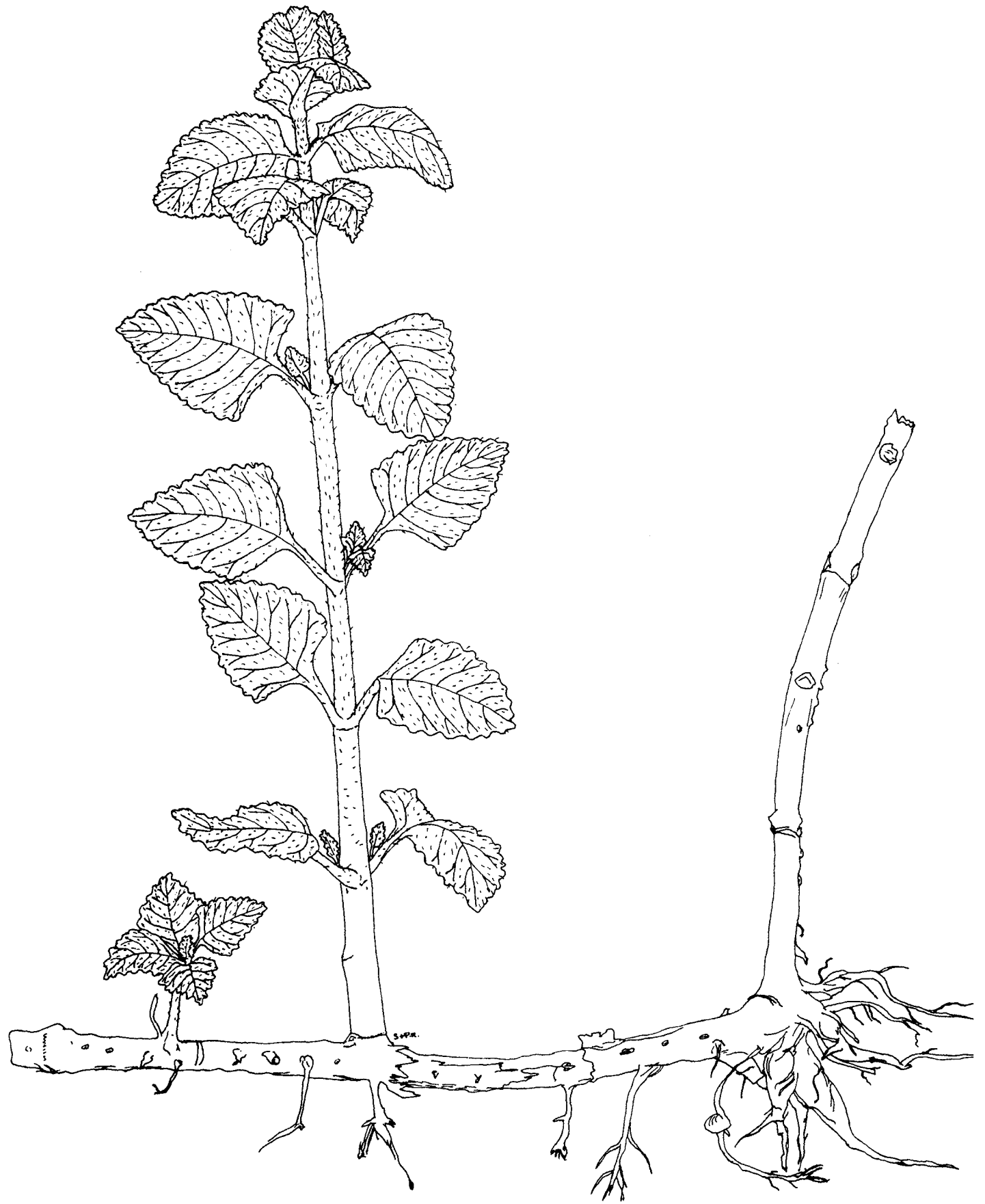
Biodynamic Notes

Pharmacologically active substances were isolated from the benzene-ethyl acetate extracts of roots of *Coleus forskohlii* (? *C. barbatus*) including a substance used for treating heart and cardiovascular ailments (Bhat et al, 1977, 1980). Among the substances isolated were coleforsin, which exhibited antihypertensive, vasodilatory and inotropic activities, and naphthopyrone, which also showed antihypertensive action (Bhat et al, 1979a, 1979b; Hoechst, 1977, 1981). A diterpene, 2-deoxycarnosol, was later isolated from the cardioactive dichloromethane crude extract of *Coleus barbatus* (Kelecom, 1984).

The medicinal, antibacterial and antiseptic properties of *C. aromaticus* have been attributed to the principal components of an extract, including codeine, carvacrol and phenols in addition to flavones, aromatic acids and tannins (Hoang, 1979; Bos et al, 1983).

Footnote

The correct identification and naming of plants of the affinity of Thick-leaf Thyme pose some considerable problems especially the judgement as to how many related species or varieties of this African group have been introduced into the American tropics.



Pothomorphe peltata
(Syn. *Piper peltatum*)

COWFOOT-BUSH
COWFOOT-LEAF
DOBORI-BANARO

(PIPERACEAE)

Description

A soft-wooded shrubby herb with finely ribbed stems, 1-2 m high. Leaves alternate, peltate, rounded-cordate, the nerves radiating from the point of attachment to the petiole, thin, acute, gland-dotted, glabrous except near the margin, 15-35 cm or more in diameter; petiole widened and sheathing the thickened node. Spikes several on a common axillary solitary or paired peduncle, 5-10 cm long. Flowers minute, bisexual in dense spadices; stamens 2-6; stigmas 3. Fruit a 3-sided nutlet.

Habitat and Distribution

From Mexico to Brazil and Peru and throughout the West Indies in thickets and along sheltered paths and roadsides.

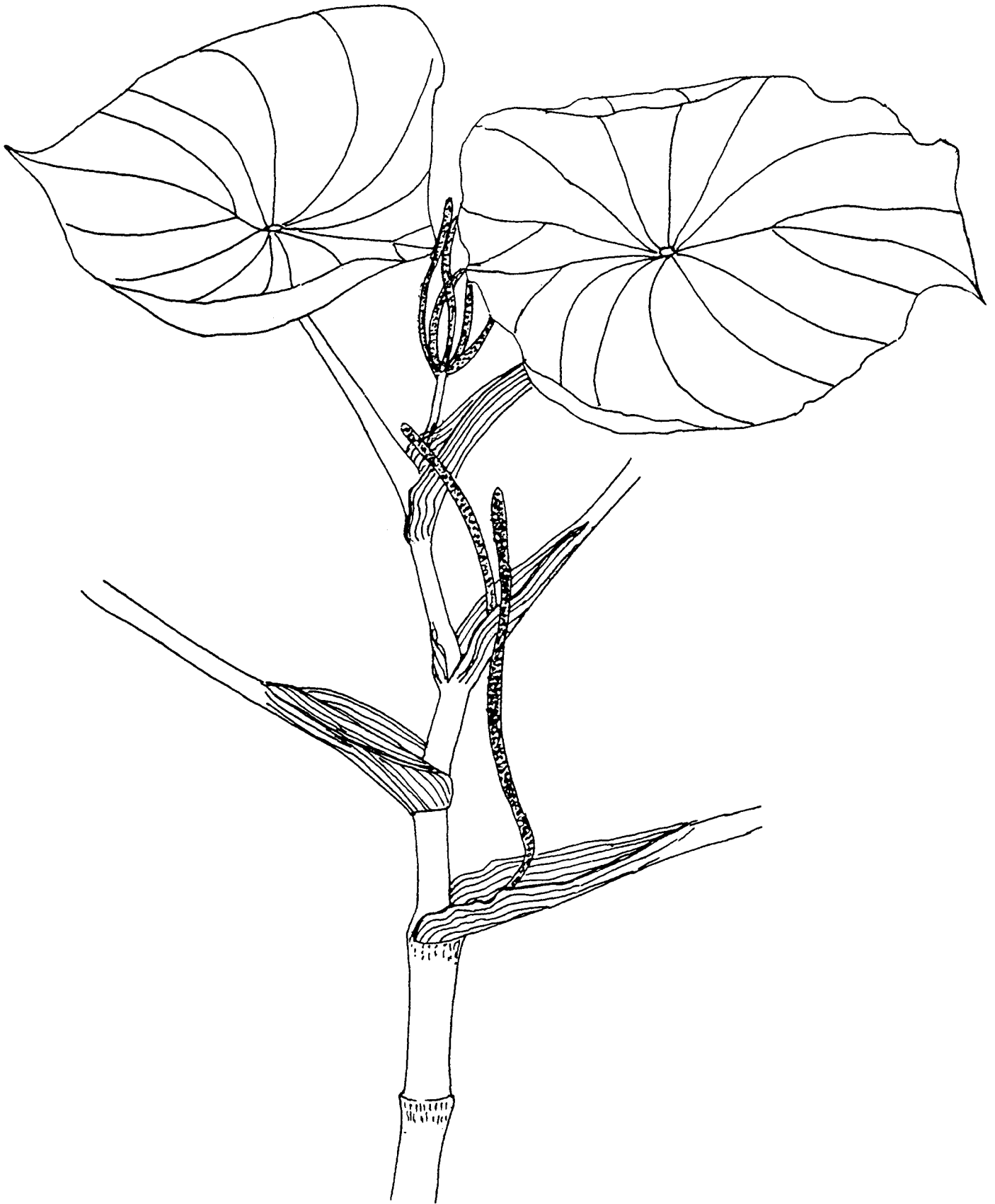
Medicinal Uses

The leaves are quailed and rubbed with coconut oil or castor oil and applied to any painful or swollen joints; the leaves are ground and applied to cuts or boiled and taken for 'belly pain'.

The plant is said to possess an anti-inflammatory property and the leaves are usually heated, made into a poultice and applied to affected areas.

Warm leaves are tied to the head and forehead to relieve headaches, and to other areas for the relief of arthritic pains and pains resulting from hernia.

A decoction of leaves is drunk as a purgative for uterine clean out.



Psidium guajava

AAMRUDH
GUAVA

(MYRTACEAE)

Description

A shrub or small tree, rarely over 7 m high; bark peeling in large smooth thin flakes. Leaves opposite in pairs on 4-angled twigs, elliptic or oblong, mostly obtuse at the tip, broadly cuneate at the base, 7-14 cm long, 2.5-5 cm broad, pellucid-dotted, appressed-hairy beneath. Flowers usually solitary; calyx closed in bud, splitting irregularly on opening, usually into 5 lobes; petals white; stamens numerous. Fruit a globose or pyriform berry, crowned by the persistent calyx, 2-6 cm long, ripening yellow with yellow or pinkish flesh surrounding numerous hard seeds, strongly aromatic, edible.

Habitat and Distribution

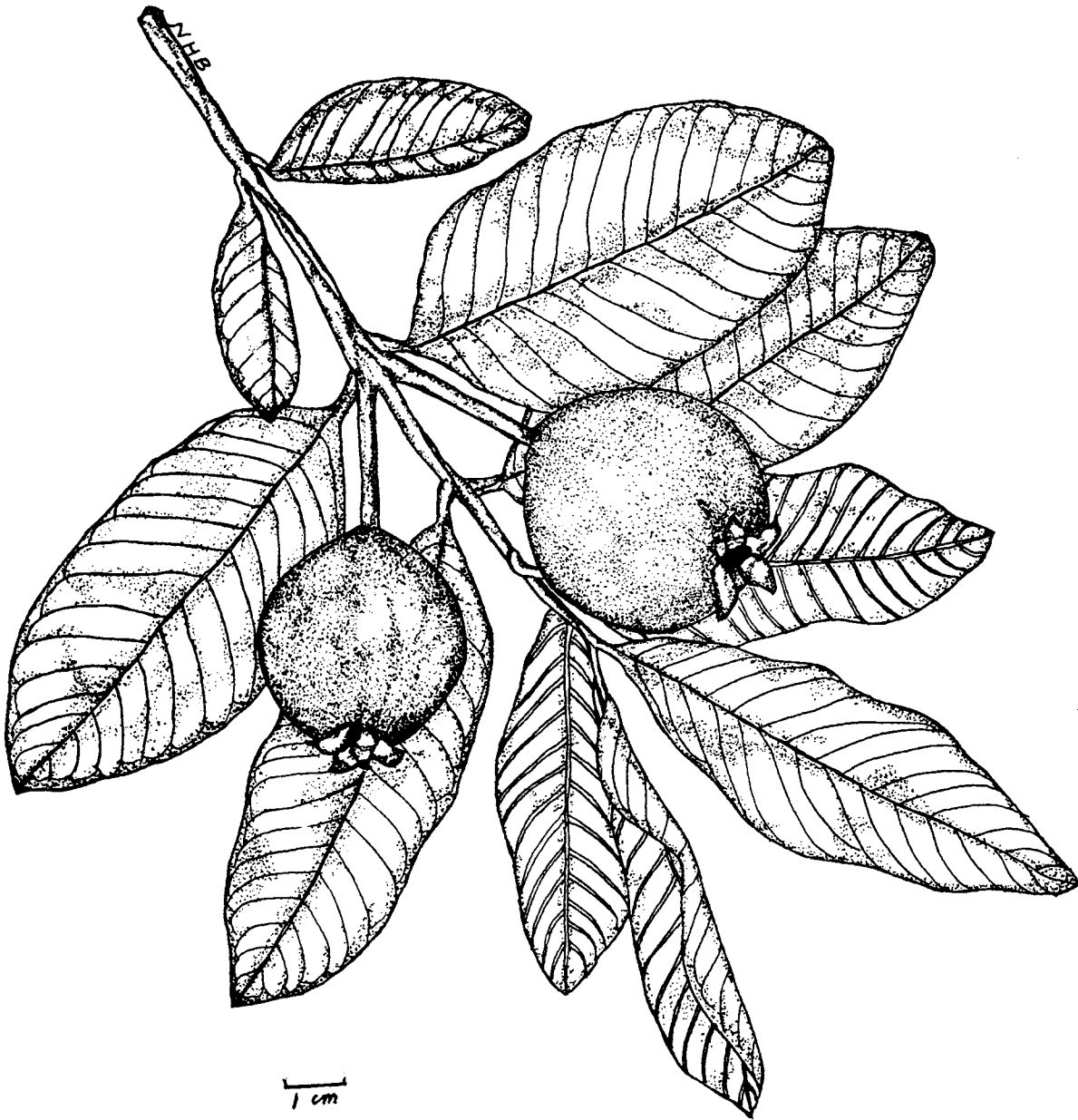
Sometimes cultivated but also very common as an adventive in pastures and thickets. Throughout the American tropics and almost universally introduced into the Old World.

Medicinal Uses

A decoction of the bark and/or the leaves and root is drunk for the relief of diarrhoea. The green fruits are also eaten for the same purpose. The bark may be boiled with bark from other plants such as Pomegranate (**Punica granatum**) and Mango (**Mangifera indica**) as a treatment for diarrhoea.

Biodynamic Notes

The tannin level and vitamin C content are high in the leaves and fruits (Watt and Breyer-Brandwijk, 1962). Unripe fruits yield hexahydroxydiphenic acid and L-arabinose which disappear in ripe fruits. Ripe fruits contain mainly ellagic acid and leucocyanidin and oxalates are at a maximum in unripe fruits (Misra and Seshadri, 1968).



Punica granatum

ANAR
POMEGRANATE

(PUNICACEAE)

Description

A shrub 1-3 m or more high, with numerous straight slender branches often spiny at the ends. Leaves mostly opposite in pairs, elliptic, acute or obtuse at the tip, cuneate at the base, 2-6 cm long, 1-2 cm broad, entire, smooth, glabrous. Flowers solitary or 2-3 together at the ends of short leafy branches; calyx broadly tubular, about 3 cm long, with 5-7 thick triangular acute valvate lobes, enclosing the ovary below; petals 5-7 at the throat of the calyx, ruffled, shortly clawed, showy, crimson; stamens numerous, inserted in the calyx-tube below the petals. Fruit depressed-globose, crowned by the persistent calyx, somewhat angled, 6-8 cm in diameter, yellow or reddish, the cavity irregularly divided into chambers with many seeds. Seeds polygonal, about 1 cm long, covered with a pinkish translucent juicy coat.

Habitat and Distribution

Native probably of western Asia, now cosmopolitan.

Medicinal Uses

The bark is boiled and the decoction taken for instant relief of diarrhoea. The mature but unripe fruit is also taken for the same purpose but is not as effective.

Biodynamic Notes

A number of piperidine alkaloids have been identified including isopelletierine, N-methylisopelletierine and pseudopelletierine (Liebisch et al, 1968; Keogh and O'Donovan, 1970). Juice from the leaves of young plants contained the alkaloid 2-(2-propenyl)-delta'-piperidine (Roberts et al, 1967), isopelletierine and pseudopelletierine were found in the bark and wood of the mature plant (Marion, 1960), and pregnenolone was isolated from seedlings (Gawienowski and Gibbs, 1969).

The anthocyanins present in the seed coats were 3,5-diglucoside and 3-glucoside of cyanidin, delphinidin and pelargonidin (Du et al, 1975), and the tannins punicalagin and punicalin were isolated from the peels (Mayer et al, 1977). Another compound, ellagitannin (granatin A) was also reported by Okuda et al, 1979.



Quassia amara
(SIMAROUBACEAE)

QUASHIE-BITTERS
QUASSIA-BITTERS

Description

A shrub or small tree. Leaves alternate, pinnate with usually 2 pairs of opposite and a terminal leaflet, the winged petiole and rachis red. Leaflets oblanceolate, obovate or elliptic, acuminate, to 16 cm long and 7 cm broad, subentire. Flowers in terminal racemes to 30 cm long, showy; petals 5, about 3.5 cm long, exceeded by the stamens, red. Fruit of 5 ellipsoid drupes, free from each other on a fleshy red receptacle.

Habitat and Distribution

Native of tropical South America. Widespread in cultivation elsewhere.

Medicinal Uses

The woody stem is chipped and soaked in wine or water and the extract is taken to restore loss of appetite and as a bitter tonic to reduce blood-sugar levels. The roots are allowed to stand in water overnight and the infusion is used to reduce fever, including malarial fever. Too frequent use is believed to cause paralysis. Stems and leaves are boiled and the liquid used as a bath to treat measles and smallpox.

Biodynamic Notes

Wood of **Quassia** is one of the sources of quassia chips used for medicine and insecticides (Saenz et al, 1970).

The sap of **Q. amara** showed significant activity in vitro against cells derived from human carcinoma of the nasopharynx. The antileukemic quassinoid, quassimarin, and the companion quassinoid, simalikalactone, were isolated from the plant extract (Kupchan and Streelman, 1976). Quassine, isoquassine, neoquassine (Adams and Whaley, 1950; London, 1950; Saenz et al, 1970) and 18-hydroxyquassine (Cassinori et al, 1966) were also isolated from this plant.



Renealmia alpinia
(Syn. *R. exaltata*)

KROWATTI
KURUWATTI

(ZINGIBERACEAE)

Description

Plants with a ginger-like rhizome, the sterile shoots usually 1 m or more high with leaves in two rows, the leaf-blade narrowly elliptic, acuminate, to 1 m or more long and to 10(-20) cm broad, glabrous at least on the upper surface. Flowering shoot leafless, less than 1 m high, the flowers in a terminal bracteate raceme; scape reddish; bracts soon withering, pink or red, subtending one or a few flowers each; flowers with a pink or red calyx of 3 sepals about 2 cm long; corolla slightly longer, yellow, orange or red; labellum yellow. Capsule at first red, maturing blackish-purple, ellipsoid to subglobose, crowned by the persistent calyx, to about 3 cm long and 2 cm broad. Seeds numerous with an orange aril.

Habitat and Distribution

Mexico, Central and tropical South America and the Lesser Antilles in thickets and forest margins.

Medicinal Uses

A decoction of the roots is taken orally to induce vomiting and to relieve stomach pains, and the purple-red juice is used to treat diseases of the eye. A decoction of the leaves is used as a fever-bath or hair-wash for healthier-looking dandruff-free hair.

Biodynamic Notes

Proanthocyanins were found in the leaves (Williams et al, 1977).



Ricinus communis

CASTOR BEAN
CASTOR-OIL PLANT

(EUPHORBIACEAE)

Description

A short-lived shrub or small tree, usually to about 3 m high. Leaves spiral, long-stalked, the blade to 60 cm broad. peltate and palmately divided into 7 or more lobes. Inflorescences terminal, the male flowers clustered towards the base and the female towards the tip. Stamens numerous with branched filaments. Female calyx deciduous. Capsule oblong, to about 2.5 cm long, spiny or rarely smooth, 3-valved. Seeds carunculate, variously mottled, greyish or brown, 10-17 mm long.

Habitat and Distribution

Native of the Old World tropics, now widespread. Common as a casually cultivated plant and as an adventive in thickets and on waste ground. There are many varieties of this species differing in stature, colour of foliage, size and shape of fruit and size and colour of seed.

Medicinal Uses

Castor beans are used generally as a laxative. Oil extracted from the seeds is given for the relief of constipation. The leaves are tied on the head to alleviate pain and on ulcers to relieve pain and swelling. An infusion of the leaves is used as a fever bath.

Biodynamic Notes

Ricinus communis agglutinin (RCA_I) is a potent protein inhibitor (Yamamoto et al, 1985). The agglutinin has been reported as a tumor-specific lectin, i.e. only agglutinating tumor cells (Wagner and Proksch, 1985). RCA_I, a galactose-specific lectin has been proposed as a treatment for cancer (Plotkin et al, 1985). Iodinations of *Ricinus communis* lectins, ricin D and hemagglutinin, with KI led to inactivation of the cytoagglutinating activity on Sarcoma 180 ascites tumor cells as well as the toxicity to Hela cells of ricin D (Shimada and Funatsu, 1985).



Ruellia tuberosa

BLUE-BELL
MENOW-WEED
MINNIE-ROOT

(ACANTHACEAE)

Description

A perennial herb with thick elongated fusiform fascicled roots. Shoots erect, scarcely as much as 60 cm high. Leaves opposite in pairs, elliptic, to 12 cm long and 4.5 cm broad. Inflorescence of few showy flowers. Calyx-segments narrow, about 2 cm long, reflexed in fruit. Corolla trumpet-shaped, 3-4.5 cm across the limb, mauve to bluish-purple, rarely white. Capsule straight, 2-2.5 cm long, opening explosively in wet weather.

Habitat and Distribution

Common in pastures and other non-arable grassy places, mostly at low elevations. General throughout the New World subtropics and tropics and established sporadically in East and West Africa and Asia.

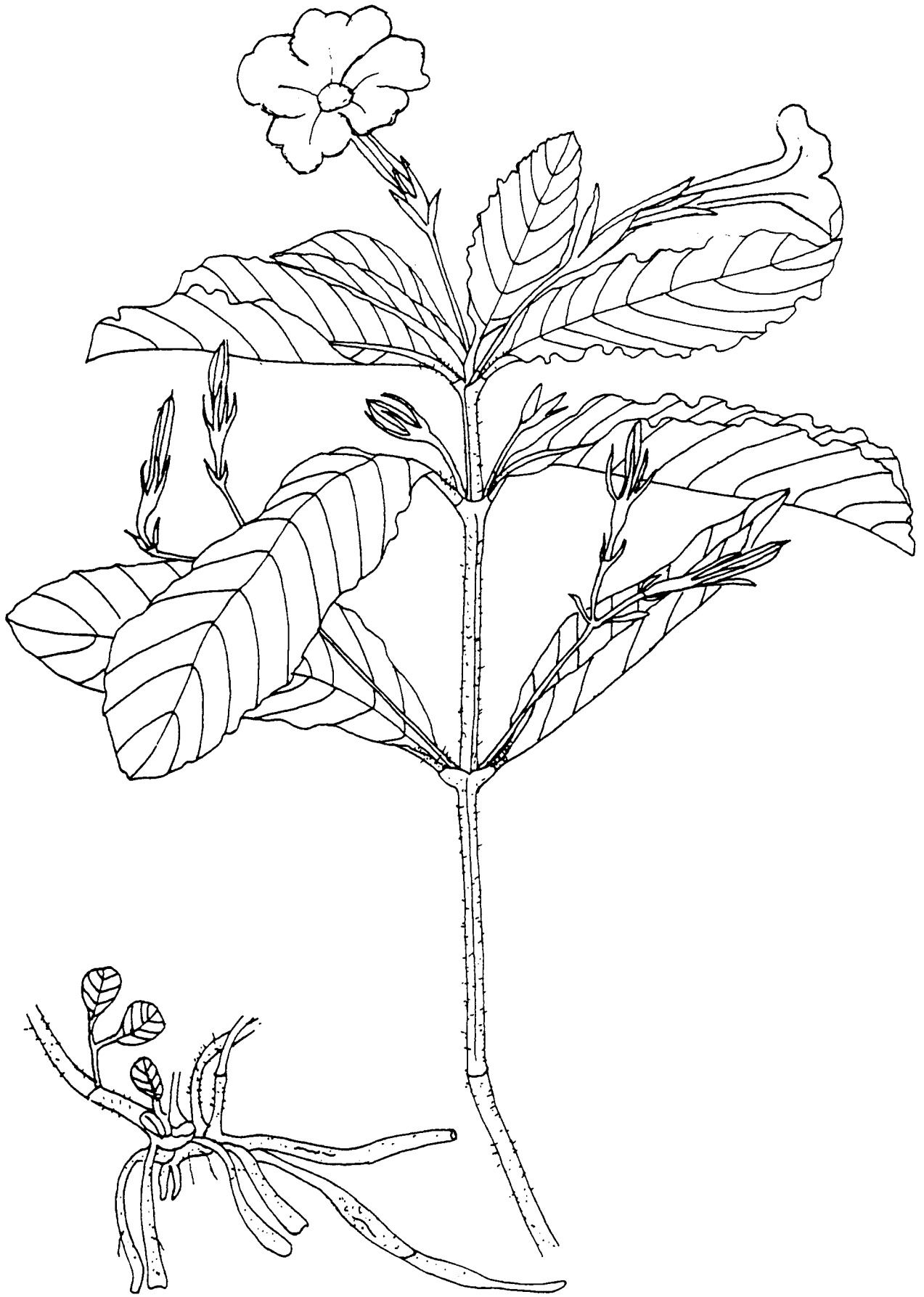
Medicinal Uses

A tea made from roots and leaves is used by persons suffering from general weakness and as an antidiuretic for those with kidney problems. A decoction of the entire plant, together with Gully-root (*Petiveria alliacea*), is drunk to 'clean out' the uterine tract (dilation and curettage), or as an abortifacient in which case St Johns-bush (*Justicia secunda*) and Inflammation-bush (*Vernonia cinerea*) may be added.

Biodynamic Notes

The leaves contain traces of apigenin and luteolin (Nair and Subramaniam, 1974).

The seed oils of *R. tuberosa* yielded capric, lauric and myristic acids (Ahmad et al, 1979).



Schefflera morototoni
(Syn. *Didymopanax morototoni*)

KAROHORO
MATCHWOOD

(ARALIACEAE)

Description

A tree to 25 m high, sparingly branched; the bark smooth and marked with ring-scars. Leaves spiral, clustered at the branch-ends, digitately compound with 7-11 leaflets; leaflets oblong or oblanceolate, the tip long-acuminate, the base rounded, 8-45 cm long, 3-20 cm broad, the inner longer than the outer, pendulous in bright sunlight, entire, leathery, glabrous above, golden- or rusty-pubescent beneath; petioles 30-60(-100) cm long. Inflorescence a very large panicle of umbels. Flowers small, regularly 5-merous; calyx campanulate, the tube about 1 mm long; petals valvate, greenish; ovary inferior. Fruit compressed, transversely oblong, 4-6 mm long, 7-10 mm broad, with persistent calyx-teeth and 2 styles.

Habitat and Distribution

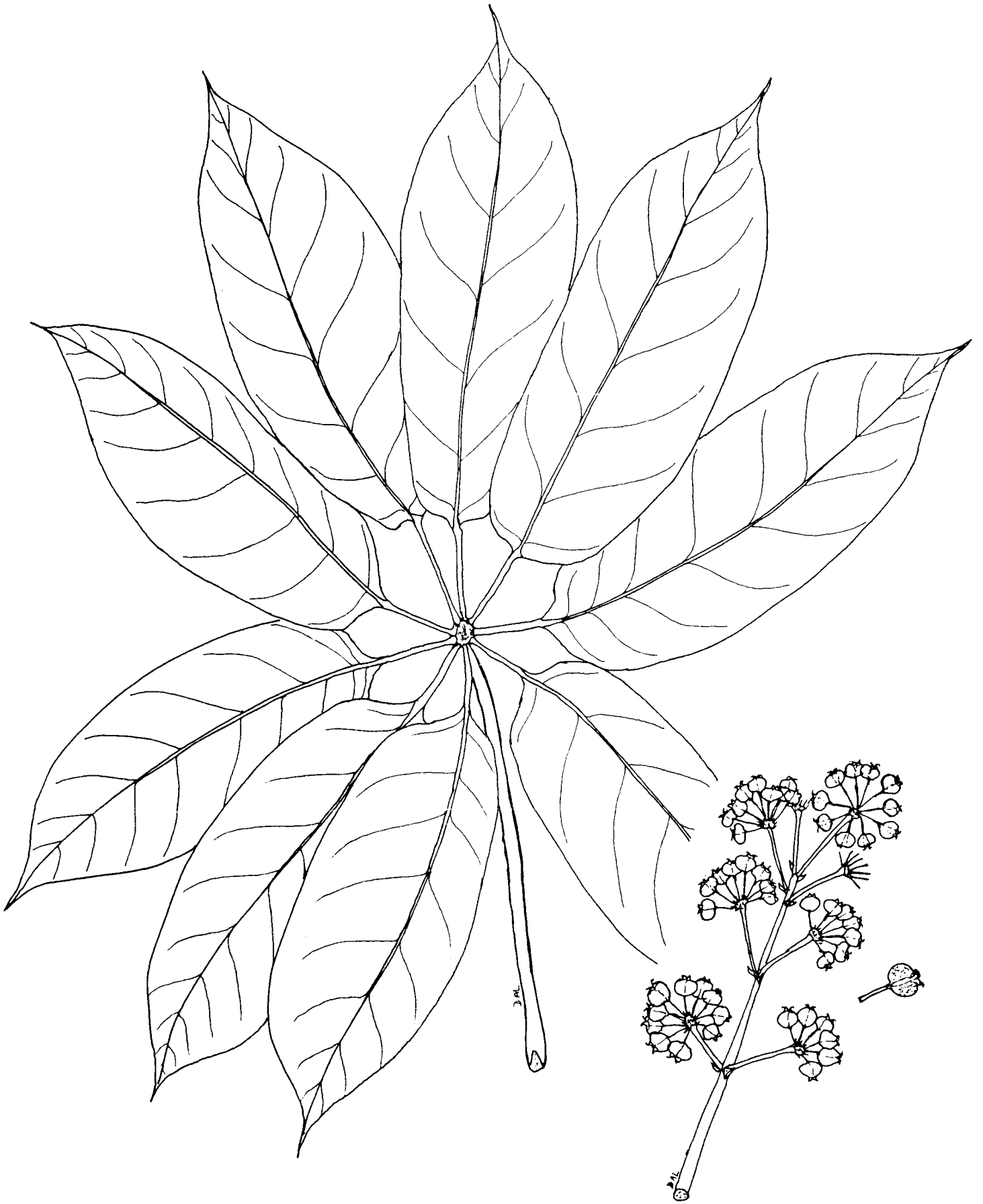
In wet forests and along water-courses. Southern Mexico to Panama and South America; Great Antilles (except Jamaica), Guadeloupe, Trinidad.

Medicinal Uses

The sap of the inner bark is used to treat abscesses. The bark is also boiled and the liquid used as a wash for the relief of itching.

Biodynamic Notes

An antifungal agent, falcarindiol, was isolated from *Schefflera digitata*; the compound showed marked specificity for dermatophyte fungi and acted by inhibiting spore germination (Muir and Walker, 1979).



(SCROPHULARIACEAE)

Description

A much branched erect annual taprooted herb to about 60 cm high; stems slender, glabrous. Leaves opposite in pairs or whorled, linear to oblong-elliptic, to 5 cm long and 1 cm broad, entire or serrate. Flowers commonly paired in the upper axils, stalked; corolla white, 3-4 mm across, the four lobes equal, densely bearded at the base, longer than the tube, reflexed. Capsule ovoid-globose.

Habitat and Distribution

A common weed of open ground, throughout the subtropics and tropics of both hemispheres.

Medicinal Uses

The plant is used as a tea generally and to 'purify the blood', that is for reducing blood-sugar levels and treating jaundice and boils, in which case it may be mixed with Zeb-grass (*Tripogandra serrulata*) and the leaves of Pear (*Persea americana*) and Carrion-crow-bush (*Cassia alata*). A decoction of the plant is given to children as a treatment for fever, thrush and sores in the mouth. For thrush and sores or ulcers, the leaves are macerated and applied to the affected areas. An infusion of the macerated plant or a strong decoction when drunk induces vomiting and is often used as an emetic to relieve stomach upsets.

Biodynamic Notes

This plant is used in folk medicine as a treatment for hypertension in Taiwan (Chow et al, 1974) and for diabetes mellitus in India; a hypotensive principle, 6-methoxybenzoxazolinone, was isolated from the roots together with betulinic and afflaionic acids (Chen and Chen, 1976). Amellin has also been identified; it is associated with the normal use of this plant as an antidiabetic in Indian medicine (Mahato et al, 1981).

An oil from the aerial parts yielded tritriacontane, dulciol, beta-sitosterol, dulciolone and two crystalline alcohols (Ali and Rahman, 1966). Other compounds that have been found include sitosterol, hexacosanol, D-mannitol, scutellarin, scutellarein, friedelin, glutinol, dulcioic acid and alpha-amyrin (Satyanarayana, 1969; Quadrat-I-Khuda et al, 1964; Ramesh et al, 1979; Mahato et al, 1981).



(MALVACEAE)

Description

An erect bushy herb 30-90 cm high, usually with several slender wiry branches. Leaves alternate, lanceolate to rhombic-oblong, acute to broadly obtuse at the tip, narrowed and minutely cordate at the base, the margins serrate-dentate, 2-8 cm long, to 4 cm broad, dark green and glabrescent above, pale tomentellous with minute stellate hairs beneath; stipules small, subulate. Flowers 5-merous on axillary peduncles to 4 cm long; calyx 6-7 mm long, minutely stellate-pubescent; petals to about 1 cm long, contorted in bud, yellow to orange-yellow fading pinkish, ephemeral. Fruit of 9-14 separating, oblique 2-awned carpels 3-4 mm long.

Habitat and Distribution

A common weed of pastures and waste open ground and pathsides, throughout the subtropics and tropics.

Sida acuta

Another common weed with similar habit and general distribution, and the same common name and uses in Guyana. The leaves have small scattered stellate hairs, especially on the veins beneath; these occur also on the stem, pedicels and calyx which are otherwise more or less glabrous. The stipules are unequal in each pair and the leaf blades are acute at the tip. The petals are light yellow or white with a yellow base.

Medicinal Uses

The leaves are used as a tea generally.

The plant is ground and mixed with 'soft grease' and sugar and applied as a poultice on abscesses to soften the area and release pus.

Biodynamic Notes

Plants of the genus **Sida** are used in Sri Lanka and India as astringents, antidotes for scorpion stings and snake bites, anti-tubercular agents, cooling stomachics and for nervous, urinary and cardiac diseases. The alkaloid of **Sida acuta**, cryptolepine, showed hypotensive action and antimicrobial activity against **Proteus vulgaris**. Cryptolepine was also identified in **S. rhombifolia** in addition to ephedrine and vasicine (Gunatilaka et al, 1980).



(SIMAROUBACEAE)

Description

A small tree 2-10 m high, with an unbranched trunk. Leaves alternate, crowded at the top, paripinnate, 1-2 m long, with 15-35 pairs of leaflets and a globular gland at the apex of the rachis; leaflets oblong, shortly acuminate and with a globular gland at the tip, oblique at the base, 6-30 cm long, 2-9 cm broad, glabrous, dark green above, light green with prominent nerves beneath. Inflorescence a many flowered terminal panicle, about 1 m long. Flowers hermaphrodite, greenish, 2-3 cm long; petals 5, linear, valvate; stamens 10. Fruit drupaceous, obovoid, 6-10 cm long, 4-6 cm broad, brownish-hairy, reddish-brown, maturing yellow, 1-seeded.

Habitat and Distribution

In wooded areas. From Costa Rica and Panama to the Guianas and the Amazon Basin, cultivated in many parts of northern South America.

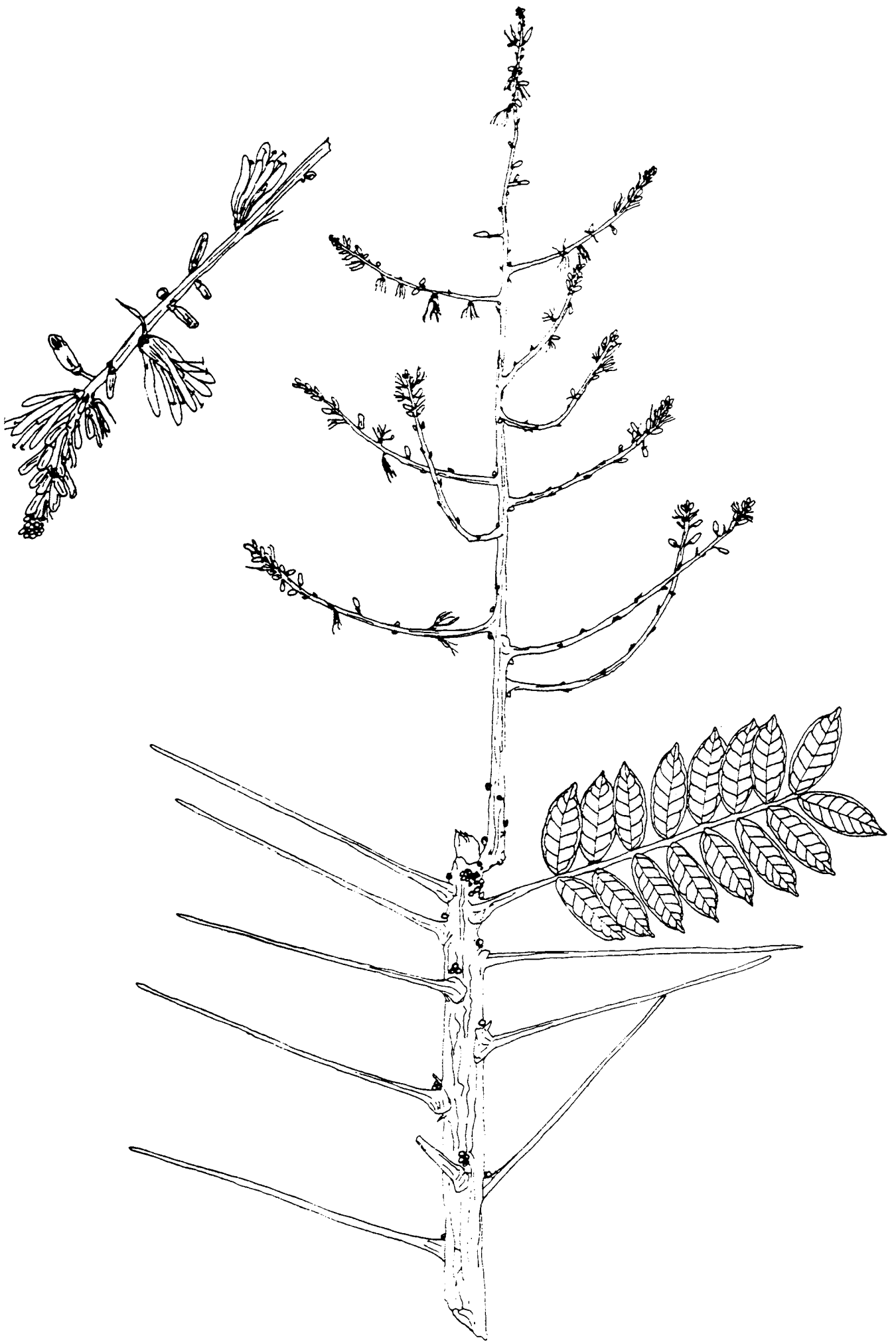
Medicinal Uses

An infusion of the bark and seeds is used as an antidote for snake bites and as a febrifuge for mild fevers. A powder is made from the dried leaves and used as a treatment for mange (Ascariasis) in dogs and the control of mites and ticks.

Biodynamic Notes

The bark and seeds contain a bitter alkaloid cedrine (Fanshawe, 1950).

Antileukemic compounds (6 alpha-tigloyloxy-chaparrin and 6 alpha-tigloyloxy-chaparrinone) were obtained from *S. cuspidata* (Polonsky et al, 1980). Giesbrecht et al (1980) reported 8-methoxycanthin-6-one and 3-methoxycanthin-2, 6-dione in the ethanolic extract of *S. cuspidata*.



(MONIMIACEAE)

Description

A monoecious shrub or small tree, the young twigs yellowish stellate-hairy, the older glabrous. Leaves opposite in pairs, simple, entire, ovate, oblong or lanceolate, 8-20 cm long, 4-10 cm broad, obtuse or shortly acuminate at the tip, obtuse or acute at the base; petioles 5-15 mm long. Flowers small; male flowers with 4-6 small obtuse perianth-members and 10-12 stamens; female flowers with numerous 1-ovuled ovaries. Fruit globose, greenish when ripe or reddish-purple, about 7-8 mm in diameter.

Habitat and Distribution

In woodlands and thickets. Panama, Trinidad and northern South America.

Medicinal Uses

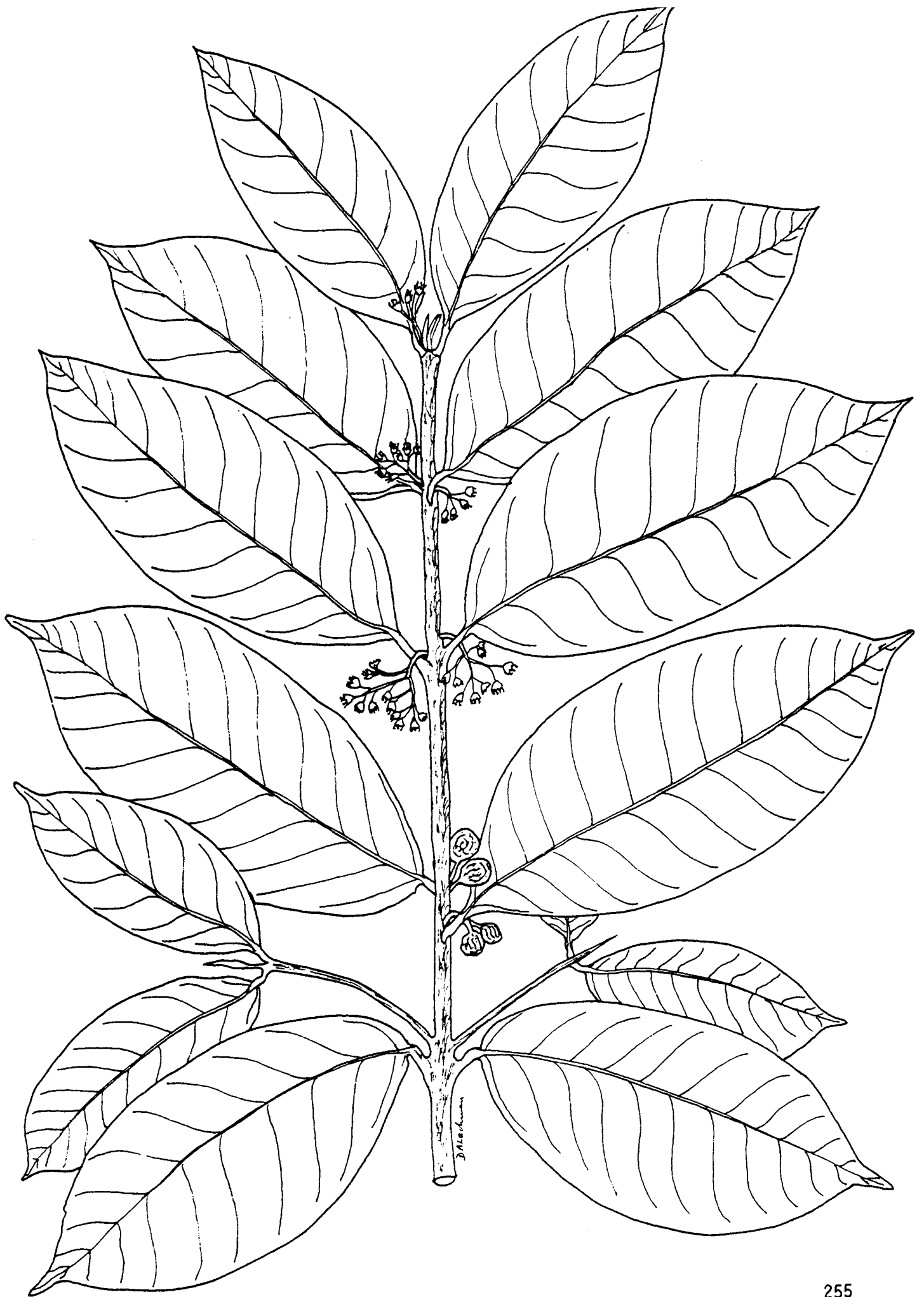
A decoction of the leaves is used for colds and fever, and induces sweating. It is also reputedly effective for treating diabetes, hypertension and whooping cough, and as an anthelmintic

Pounded leaves are applied externally for the relief of pains and for treating ant bites; ants are referred to as Muniri in the Arawak language.

Biodynamic Notes

Siparuna guianensis leaves have been used in Brazil to treat mange and other diseases, and *S. nicaraguensis* is reported to have unspecified medicinal uses (von Reis Altschul, 1978).

The oxoarporphine alkaloids liriodenine and oxonanterine were isolated from the roots of *S. gilgiana* (Chiu et al, 1982).



Smilax schomburgkiana

COCKSHUN
DOROKWAROPIMPLA
HAMELUNA-BALLI

(SMILACACEAE)

Description

A high climber, often growing from a massive woody rootstock; stem twining, branched, terete, with a few spines and scattered blackish tubercles, otherwise smooth and glabrous. Leaves alternate, ovate to lanceolate, acute or acuminate, rounded to cuneate at the base, 5-15(-30) cm long, (2-)3-5(-16) cm broad, rather strongly 3(-5)-impressed-nerved, smooth, glabrous; petiole half-clasping the stem at the base; tendrils sometimes developed. Male and female flowers on separate plants in leafy racemose panicles of umbels from axils of the main stem; peduncles to 2 cm long; pedicels 3-15, 7-8 mm long; tepals 6, 1.5-2 mm long. Berry blackish-red, 2-3-seeded.

Habitat and Distribution

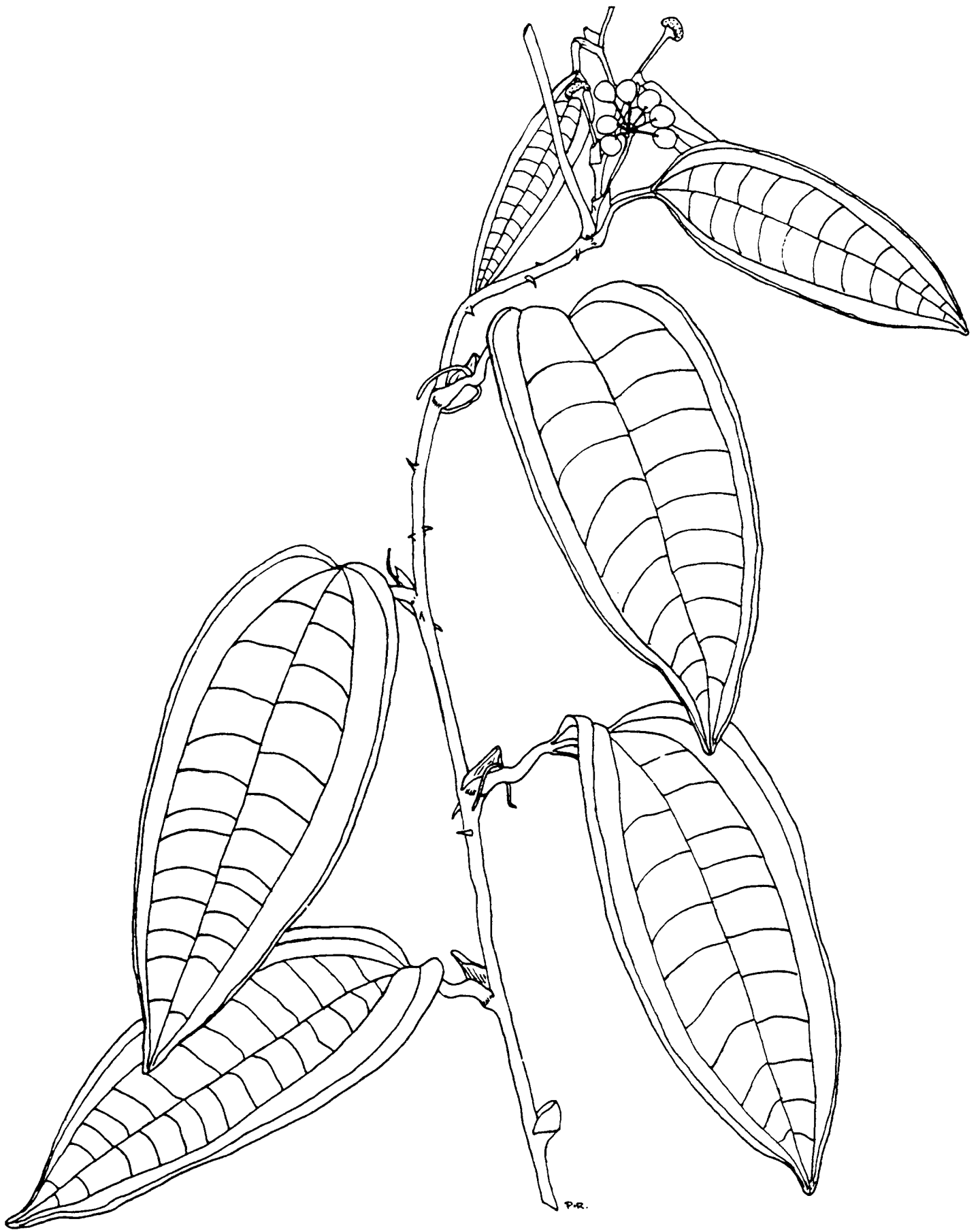
In forests in the Guianas and eastern Brazil.

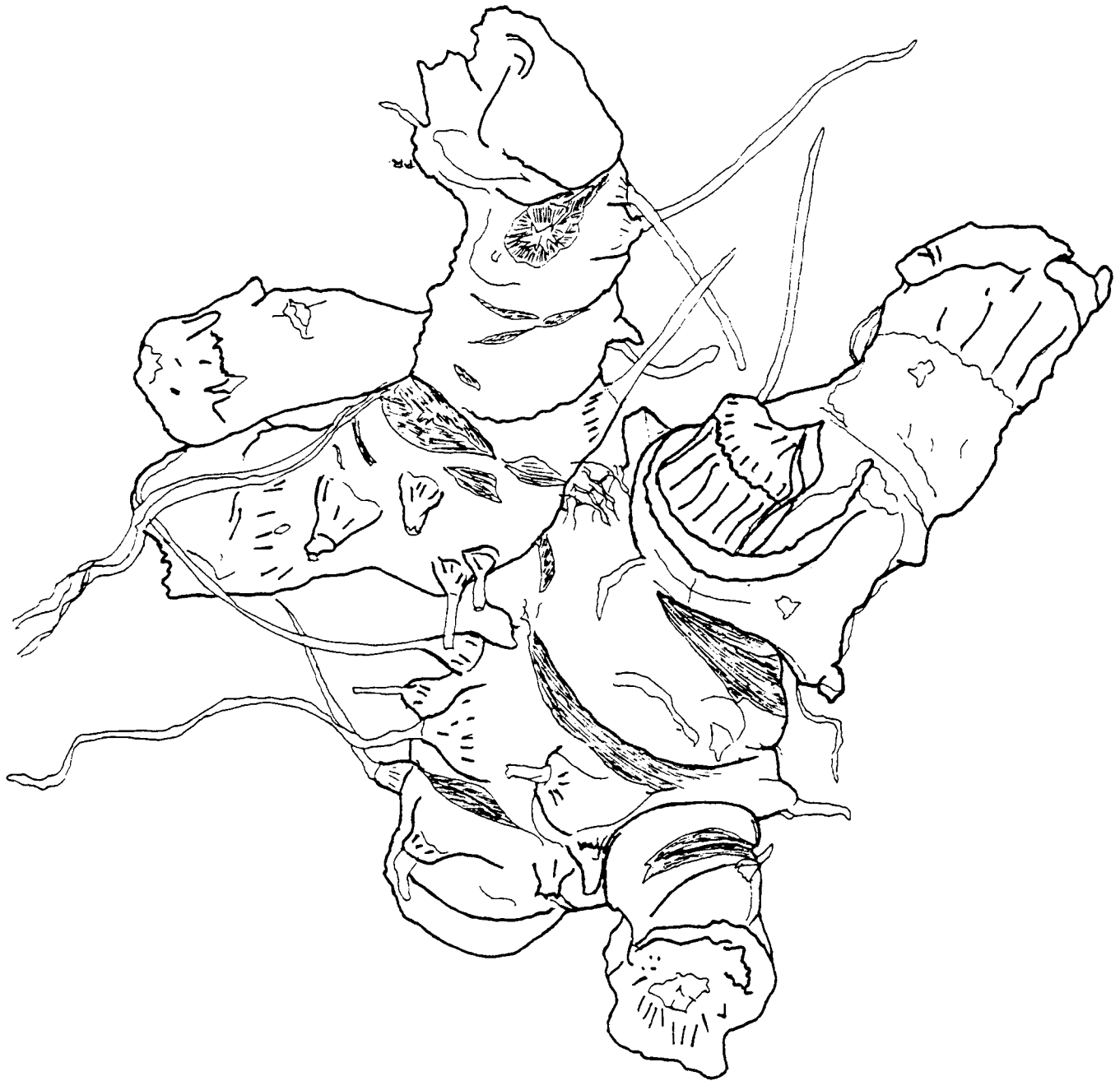
Medicinal Uses

A decoction of the root, and sometimes the woody stem also, may be mixed with Kapadula (*Doliocarpus* sp.), Sarsparilla (*Philodendron* sp., see note p. 212) and Devil-doer (*Strychnos* spp.) and used as an aphrodisiac or tonic. An infusion of the root is used to treat diseases of the urinary bladder and nervous conditions.

Biodynamic Notes

Smilax glycyphylla yielded phenolic compounds (Williams, 1967), and *S. sieboldi* yielded steroidal sapogenins (Akhori and Yasuda, 1965) and asperosid (bisdesmosine.22-hydroxyfurostanol saponin) was isolated from the leaves of *S. aspera* (Petricic and Radosevic, 1969).





Solanum americanum
(Syn. *S. nigrum*, as a misidentification)

BITTER-GUMMA
BLACK CALALU
BLACK NIGHTSHADE

(SOLANACEAE)

Illustrated overleaf

Description

A herb to 60 cm or more high with slender spreading thinly hairy branches; stems weak, usually smooth but sometimes with shallow soft prickles on the ridges of the upper branches. Leaves alternate, ovate, acute, the blade narrowed to the stalk, to 14 cm long and 7 cm broad, often sinuate-margined or shallowly toothed. Inflorescences umbelliform on extra-axillary or internodal peduncles, the pedicels spreading in all directions. Flowers regular, the corolla-lobes 5, 2 mm long, white; anthers yellow. Fruit a globose shiny berry, ripening black.

Habitat and Distribution

Common as a weed of cultivation and disturbed ground, throughout the American subtropics and tropics.

Medicinal Uses

The decoction of the plant, thought elsewhere to cause diarrhoea, is used to expel worms and as a 'blood purifier'.

Biodynamic Notes

Steroidal alkaloids and sapogenins have been found in many species of *Solanum* (Carle, 1981). The sapogenin, tigogenin, was reported in the roots of *S. nigrum* (Sharma and Chand, 1979) and acetylcholine-like activity was detected in the fruit (Cesario de Malo, 1978).



Solanum jamaicense

BURA-BURA
BULI-BULI

(SOLANACEAE)

Description

A straggling often low-branched undershrub 0.6-2 m high, the stems with numerous short broad-based curved prickles and stellate hairs. Leaves alternate, broadly ovate, subsessile, cuneate at the base, sinuate or shallowly lobed, acute or obtuse at the tip, to about 12 cm long and nearly as broad, densely stellate-pubescent. Inflorescences mostly internodal, subsessile with short unilateral racemose branches. Flowers white; calyx-lobes linear, about 4 mm long; corolla-lobes acute, about 5 mm long. Ripe berry globose, orange-red, mostly 7-8 mm in diameter.

Habitat and Distribution

In rough pastures and damp waste places throughout tropical America.

Medicinal Uses

A decoction of leaves and roots is used to treat children for thrush and as an anthelmintic.

Biodynamic Notes

A number of species of **Solanum** are toxic. However, Solanum alkaloids are not generally regarded as dangerous since they are poorly absorbed and rapidly detoxified following ingestion (Mahmood and Thakur, 1980). But **S. nigrum** has been described as a potential human health hazard (Osman et al, 1976).

Solanum alkaloids have shown glycemic effects on rats (Şatoh, 1968).

The Solanum alkaloids beta-dihydrosolasodine and tetrahydrosolasodine antagonize the positive chromatropic action of adrenaline in dogs and cats (Krayner and Briggs, 1950).

Solasodine has been isolated from several species of **Solanum**, including **S. nigrum** (Maiti et al, 1979).

Solanum stramonifolium

BULBULI*
BULI-BULI
BURA-BURA

(SOLANACEAE)

Description

Shrub to 1.5 m high covered with stellate-downy hairs, the young branches, petioles and leaf-ribs purplish and armed with straight or curved flattened thorns to 18 mm long. Leaves alternate, petiolate, broadly ovate in outline, angular-lobed, unequal at the base, to 30 cm long and nearly as broad, densely and finely woolly beneath. Flowers in short scorpioid cymes, regular, 5-merous; calyx cupular, 2.5 mm long; corolla rotate, about 2 cm broad, the lobes lanceolate and hairy outside. Berry red, globose, about 1 cm in diameter.

Habitat and Distribution

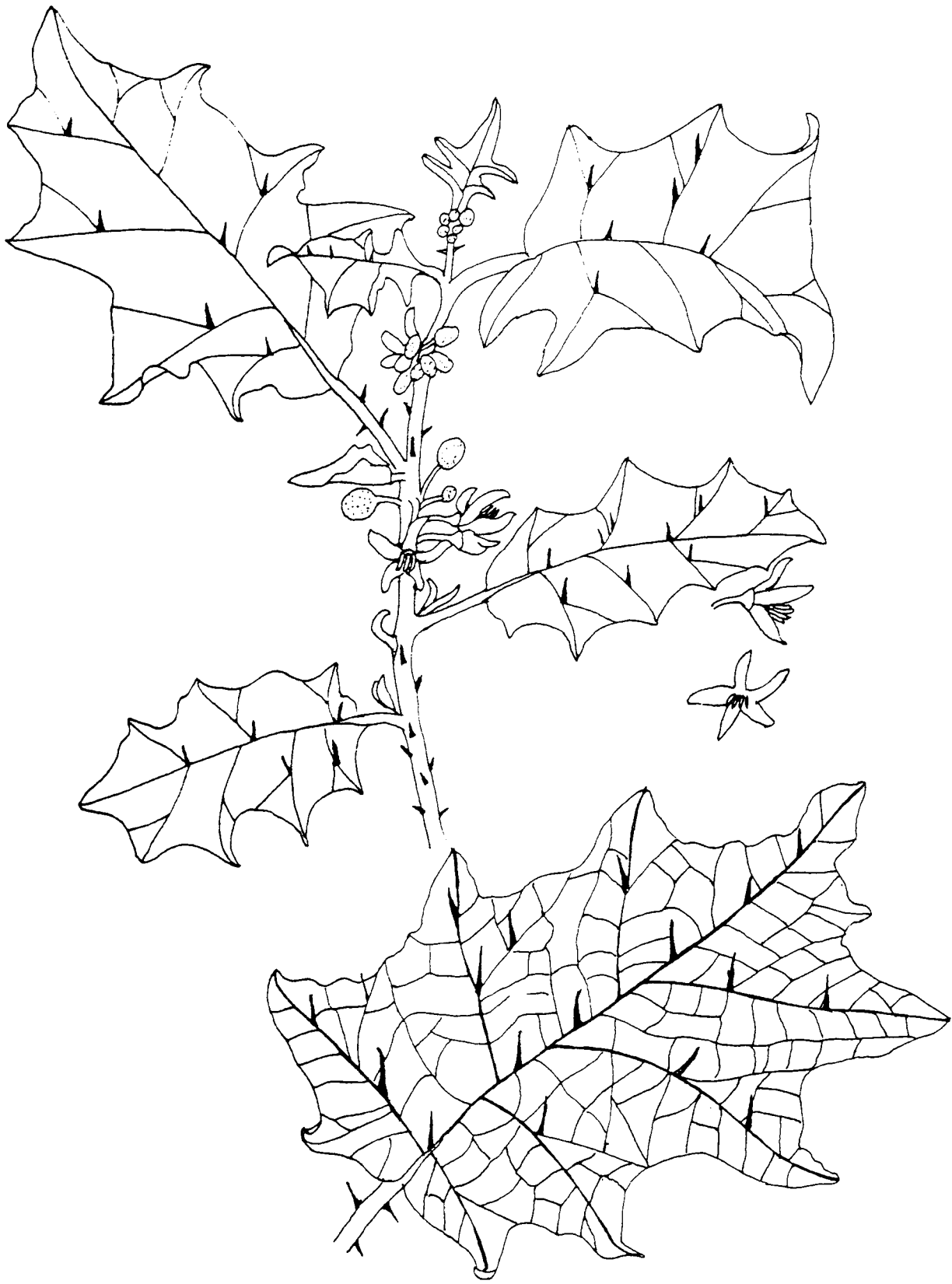
In moist thickets and clearings in forested areas on sandy and clay soils. Trinidad and tropical South America.

Medicinal Uses

An infusion of leaves is used to treat thrush. A syrup made from leaves and flowers is taken for colds. Juice from fruits (which are edible) is applied externally to relieve irritation caused by ant bites. The root is pounded and plugged in a decayed tooth to relieve toothache, and a decoction of roots is used in treating venereal diseases.

Footnote

* All these common names are also applied to other species of *Solanum*, especially *S. demerarense*.



Spigelia anthelmia

WORM-BUSH

(LOGANIACEAE)

Description

Annual herb 5-40 cm high, the stem erect, simple or branched, usually developing only two pairs of close-set leaves below each inflorescence. Leaves broadly lanceolate, sessile and cuneate at the base, long-tapered to the tip, to 12 cm long and 4 cm broad. Flowers along one side of terminal and axillary 5-15 cm long simple spikes, 5-merous; sepals acute, 2 mm long; corolla 1 cm long, the tube white, funnel-shaped, the limb with magenta lines. Capsule 2-lobed, scaly-warted, 4-5 mm long and about 6 mm broad.

Habitat and Distribution

A common weed of open waste stony or cultivated ground. General in the tropics.

Medicinal Uses

The entire plant is boiled and the liquid drunk for hypertension and thrush. Sap from the leaves is used to treat infections of the eye.

Biodynamic Notes

The plant is reputed to have anthelmintic properties. It is said to cause dimness of vision with dilated pupils, giddiness, spasms of the muscles of the eye and face, and convulsions. It is reported to cause death to domestic animals within 2-3 hours, and may be fatal to children. A toxic alkaloid spigeline has been isolated from the leaves (Adams, Magnus and Seaforth, 1963).

Footnote

The botanical and common names of this plant allude to vermifuge properties.



(VERBENACEAE)

Description

A shrub or undershrub sometimes to over 1 m high, the stem with short hairs or glabrescent. Leaves opposite in pairs, ovate to oblong-elliptic, acute or obtuse at the tip, long-cuneate at the base, 3-7 cm long, 2-4 cm broad, serrate-crenate, sparsely strigillose above, mostly glabrate beneath except on the veins. Spike slender, lax, mostly 25-30 cm long, with shallow furrows about as broad as the scarcely thickened rachis. Flowers spreading at anthesis; bracts linear, about 4 mm long; corolla 6-7 mm long, the limb 5-6 mm across, usually light blue-mauve or nearly white. Fruit 6 mm long.

Habitat and Distribution

Common in rough pastures and along roadsides. Throughout warm America, introduced into the Old World.

Medicinal Uses

The entire plant is boiled and the liquid drunk for hypertension and thrush. The sap from the leaves is used to treat infections of the eye.

Biodynamic Notes

A glucoside substance was isolated from the plant (Carrick et al, 1968).

Stachytarpheta indica is used externally for rheumatic inflammation, fever and dysentery and friedelin, stigmasterol, ursolic acid, hispidulin and scutellarein were detected in the leaves (Subramaniam et al, 1974).



Stachytarpheta jamaicensis

BLUE-VINE
BURR-VINE
VERVINE

(VERBENACEAE)

Description

A herb or undershrub with ascending branches to about 1 m high. Leaves opposite in pairs, oblong-elliptic, obtuse at the tip, long-cuneate at the base, to 9 cm long and 4.5 cm broad, crenate. Spikes to about 50 cm long, firm and mostly about 2.5 mm thick, with furrows about half as broad as the rachis. Flowers spreading at anthesis; bracts ovate-lanceolate, about 6 mm long; corolla 8-10 mm long, the limb about 9 mm across, usually deep blue-violet. Fruit, about 7 mm long with 2 nutlets,

Habitat and Distribution

A common weed of pastures especially in coastal or sandy situations. Subtropical and tropical America, introduced into Asia and the Pacific.

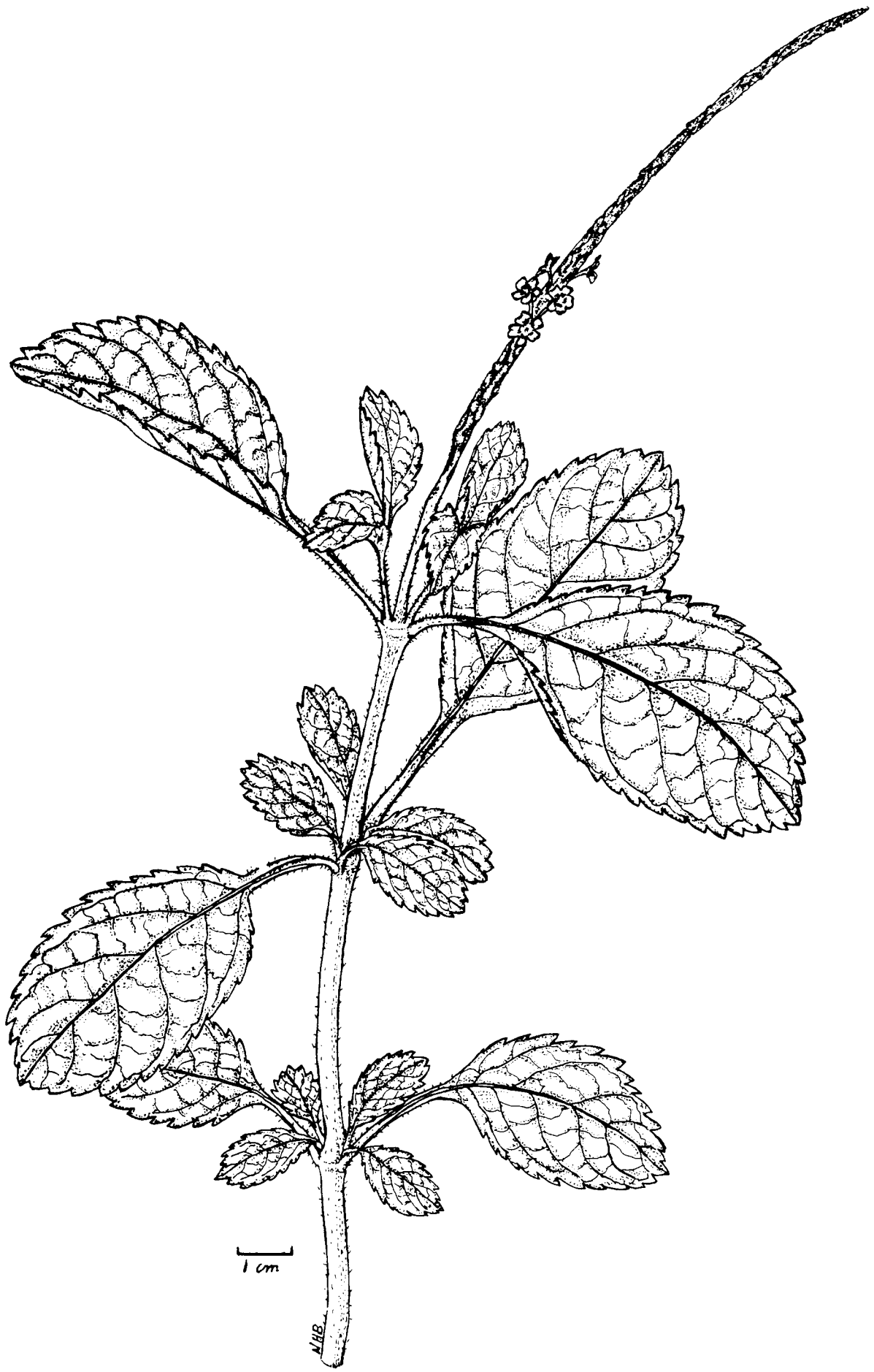
Medicinal Uses

A decoction of the entire plant is used for diabetes, low blood-pressure, and for 'cooling' and 'soothing'.

Biodynamic Notes

Leaf extracts contain gamma-amino butyric acid which increases blood-pressure (Durand et al, 1962).

Tarphetalin was isolated from *S. jamaicensis* (Jawad and Doorenbos, 1980).



(MALPIGHIACEAE)

Description

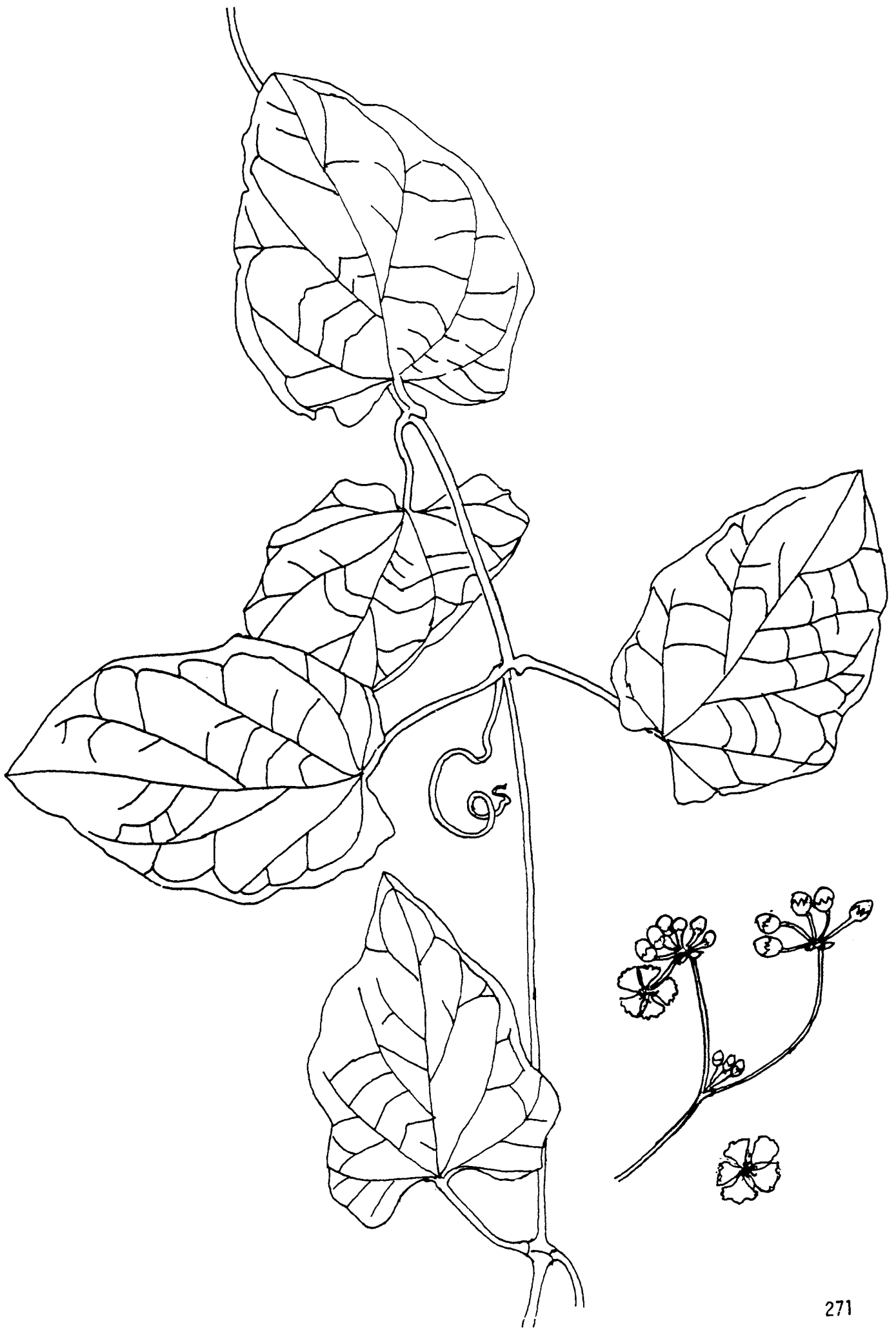
A climbing or trailing shrub, silky-hairy on the young parts. Leaves opposite in pairs, variable in position and shape, orbicular to ovate, to about 17 cm long and broad, the base openly cordate, the margin often repand or coarsely crenate, remaining silvery- or bronze-silky beneath; petioles to 7 cm long with 2 large cupular glands at the top. Flowers in pedunculate corymbose racemes; pedicels 7-12 mm long; sepals 5, the 4 lateral with paired ellipsoid glands; petals 5, slender-clawed, obovate or suborbicular, the limb 6-7 mm in diameter, yellow or reddish-orange; stamens unequal. Fruit of 2 developed and one abortive samaras, often coloured wine-red.

Habitat and Distribution

In thickets and on open ground in sandy areas, through north-eastern South America.

Medicinal Uses

The stem and leaves are crushed and used for washing hair. The seed is swallowed as a contraceptive (in Amerindian villages).



(COMPOSITAE or ASTERACEAE)

Description

An annual herb to about 1 m high, with a lax angled glabrescent stem. Leaves alternate, elliptic-lanceolate, acute or acuminate at the tip, cuneate at the base, mostly 6-9 cm long and 1.5-5 cm broad, obscurely serrate, puberulous. Flower-heads subglobose, about 8 mm broad, in small axillary clusters or solitary; florets 20-30, all tubular, white or pink. Achene prominently 2-4-angled, 1.5 mm long, with a white pappus.

Habitat and Distribution

In low-lying wet places throughout tropical America. Introduced into the Old World.

Medicinal Uses

The juice squeezed from the leaves of this herb is administered orally or rectally to babies with 'thrush', sometimes in combination with juice squeezed from either of the following herbs - Cotton-bush (**Gossypium spp.**), Sweet-broom, (**Scoparia dulcis**). The juice of the herb is also frequently applied to cuts and ulcers or the whole plant may be boiled for tea to relieve colds, wheezing, asthma or backache.



Strychnos cogens

BUSH-ROPE
DEVIL-DOER

(LOGANIACEAE)

Description

A canopy climber with a woody stem to 10 cm in diameter. Leaves opposite, broadly elliptic to narrowly lanceolate, acuminate at the tip, usually obtuse at the base, 4-15 cm long and 2-6.5 cm broad, 3-5-nerved, glabrescent above, yellowish-velvety beneath at first; tendrils present. Inflorescences of congested axillary cymes, the branches rusty-setulose; bracts broad, closely embracing the calyx; corolla white, 6 mm long, glabrous outside. Fruit more or less globose, to about 2.5 cm in diameter, the shell less than 1 mm thick, yellowish, shiny, smooth. Seeds 1 or 2, discoid, about 15 x 11 mm and 3 mm thick, the testa crustaceous.

Habitat and Distribution

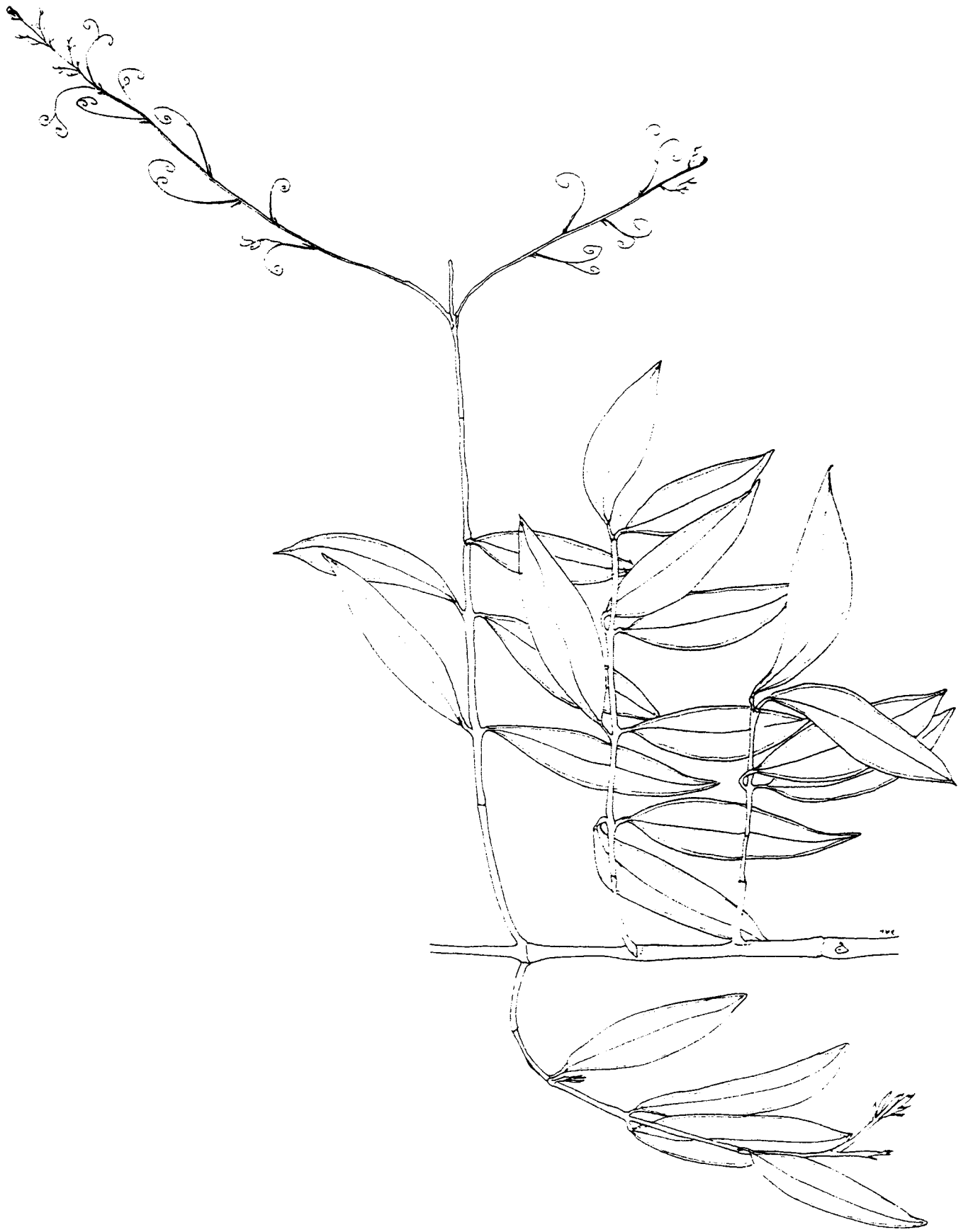
Around ponds in the Rupununi savannas and in seasonal forest in the Kanuku Mountains, Guyana. Also in Colombia, Venezuela, French Guiana and Brazil.

Medicinal Uses

The bark is used to make a tonic which is an aphrodisiac or a treatment for 'weak back' (leucorrhoea - a condition in which males produce a white genital discharge and experience loss of libido). The bark is often used with *Kapadula* (*Doliocarpus dentatus*), Sarsparilla (*Philodendron* sp.) and Granny-backbone (*Lygodium* sp.).

Biodynamic Notes

Strychnine and brucine have been isolated from plants of this genus (Okada and Kawashima, 1969). Diaboline, 11-methoxydiaboline, normacusine B, henningsamine, spermostrychnine, C-calebassine and C-curarine were isolated from various species of *Strychnos* (Marini-Bettolo, 1969). Strychnorubigine, strychnohirsutine, tetrahydrostrychnohirsutine and 11-methoxystrychnofeudlerine were found in American species of *Strychnos* (Marini-Bettolo et al, 1978). Additionally, jobertine, beta-colubrine, pseudostrychnine, pseudobrucine, pseudo-beta-colubrine, strychnine N-oxide, brucine N-oxide and beta-colubrine N-oxide were found (Delle et al, 1970; Asai et al, 1982; Jacob et al, 1984).



Strychnos diabolii

BLACK DEVIL-DOER
BUSH-ROPE
DEVIL-DOER

(LOGANIACEAE)

Description

A canopy climber with a stem to 15 cm in diameter; the bark rough, dark reddish-brown; slash pale crimson. Leaves opposite, ovate to obovate, shortly acuminate to rounded at the tip, obtuse at the base, 5-15 cm long and 3-9 cm broad, 5-plinerved, densely and softly rusty-pubescent above and beneath; tendrils present. Inflorescences of terminal corymbose cymes, the branches densely rusty-pubescent; flowers numerous; corolla white, with rusty hairs, the tube about 8 mm long, the lobes short, densely bearded at the base within. Mature fruit globose, 4-4.5 cm in diameter, the shell about 6 mm thick, orange-yellow, shiny, smooth. Seeds many, rather discoid, about 21 x 13 mm, the testa crustaceous.

Habitat and Distribution

In forests. Guyana.

Medicinal Uses

The bark and stem are boiled and the liquid used as an aphrodisiac. It may be used with Kapadula (*Doliocarpus dentatus*), Sarsparilla (*Philodendron* sp.) and Granny-backbone (*Lygodium* sp.). A tonic made from the bark is also used to treat 'weak back' (leucorrhoea) and loss of libido.

Biodynamic Notes

Diaboline was isolated from this plant (Bioser and Phillipson, 1971).

Strychnos mitscherlichii

BUSH-ROPE
COMMON DEVIL-DOER
DEVIL-DOER
WHITE DEVIL-DOER

Description

A canopy climber with a stem to 12 cm in diameter; the bark very rough, scaly, blackish-brown; slash off-white. Leaves opposite, broadly ovate to narrowly lanceolate, long-tipped, obtuse or rounded at the base, 4-22 cm long and 3.5-10.5 cm broad, leathery, glabrous; tendrils present. Inflorescences of compact, axillary cymes, the branches glabrous to sparsely puberulent; corolla-tube about 8 mm long, glabrous outside, the lobes much shorter. Fruit globose or subglobose, to 4 cm in diameter, the shell 1-2 mm thick, dark grey, rough. Seeds many, discoid, about 18 x 12 mm and 6 mm thick, the testa crustaceous.

Habitat and Distribution

In dry evergreen woodlands or rain-forest, from Ecuador, Colombia and Bolivia to the Guianas and Brazil.

Medicinal Uses

Chips of the bark are used to make a tonic which is taken as an aphrodisiac. It may be used in combination with Kapadula (*Doliocarpus* sp.), Sarsparilla (*Philodendron* sp.), Kupa-rope (*Clusia grandiflora*), Cockshun (*Smilax schomburgkiana*), Monkey-ladder (*Bauhinia scala-simiae*) and Granny-backbone (*Lygodium* sp.). It is also used as an arrow poison.

Biodynamic Notes

The main sources of calabash curare in South America are *S. mitscherlichii* and *S. toxifera* (Waser 1953; Delle et al, 1967; Battersby and Hodson, 1968). Curare alkaloids exert a paralysing action.

Strychnos toxifera

BUSH-ROPE
CURARO
DEVIL-DOER
OURARI

Description

A canopy climber with a stem to 6 cm in diameter; the bark rough, dark brown; slash pale crimson; branchlets and leaves with long spreading reddish hairs. Leaves opposite, oblong-ovate to elliptic, 7-10 cm long and 2.5-5 cm broad or larger, 5-nerved, shortly petiolate; stipules interpetiolar; tendrils present. Inflorescences of terminal pedunculate 2-3-branched cymes; flowers white, fragrant; corolla hirsute outside, white, 15-18 mm long, the lobes about 2 mm long. Mature fruit globose, about 7 cm in diameter, the shell about 2.5 mm thick, bluish-green, shiny, smooth. Seeds 10-15, more or less discoid, about 23 mm long, the testa crustaceous.

Habitat and Distribution

In primary and secondary forests. Panama, Colombia, Venezuela, Ecuador, the Guianas and Brazil.

Medicinal Uses

The plant is used by Amerindians as a fish poison. It is used to poison arrows as well as a beena (a charm, especially for protection or aphrodisiac purposes) (Haynes, 1969).

Biodynamic Notes

Extracts from several species of *Strychnos* were shown to have strong convulsant and muscle-relaxant activities (Geevaratne et al, 1977; Geevaratne and Verpoorte, 1978; Verpoorte, 1978).

The bark contains curarine, a quaternary alkaloid, which paralyses peripheral nerves (Fanshawe, 1950).

Syzygium cumini
(Syn. *Eugenia jambolana*)

JAMOON

(MYRTACEAE)

Description

A tree 10-20 m or more high, glabrous. Leaves opposite in pairs, elliptic-lanceolate to broadly oblong, abruptly short-acuminate, cuneate at the base to a petiole 1-2 cm long, 7-16 cm long, 3.5-7 cm broad, leathery, with fine prominulous venation. Flowers white or pinkish, 8 mm across; calyx truncate; petals united and falling off as a cap; stamens numerous, with filaments 2-6 mm long. Fruit oblong to ellipsoid, 1.5-2.5 cm long, purple-black, 1-seeded.

Habitat and Distribution

Native of India. Widely introduced and cultivated in tropical Asia, sporadically in Jamaica, Trinidad and elsewhere in the New World tropics.

Medicinal Uses

The bark of the tree is used in most concoctions reputed to cure diarrhoea, dysentery and thrush in children

The seeds are parched, ground and made into a beverage like coffee which is a treatment for diabetes.

Biodynamic Notes

A product showing hypoglycemic activity was obtained from the dry seeds of this plant (referred to as *Syzygium jambolanum*) (Lab. Laroche, 1968).



Tabebuia insignis var. **monophylla**
(Syn. *T. longipes*)

WARAKURI
WHITE CEDAR

(BIGNONIACEAE)

Description

A tree 8-20 m high, the branchlets densely lepidote. Leaves opposite in pairs, 1-foliolate, simple, the blade articulated to the petiole at the base of a stalk to 8 mm long, elliptic or oblong, acute to acuminate at the tip, cuneate to rounded at the base, to 27 cm long and 11 cm broad, often much smaller, leathery, minutely lepidote or glabrous. Inflorescences shortly cymose. Flowers pedicelled; calyx campanulate, 1-2 cm long, split into 2 lobes; corolla funnel-shaped, white, 4-6 cm long, the limb 5-6 cm in diameter, pilose within in the anterior upper half of the tube. Capsule linear, attenuate and beaked, 10-20 cm long, 8-15 mm broad, densely lepidote, with scattered immersed glands. Seeds transversely oblong with broad membranous wings.

Habitat and Distribution

In swamp forests and wet savannas. Guyana and Suriname.

Medicinal Uses

An infusion of the bark is used to treat sores, skin diseases and syphilis.

Biodynamic Notes

Steroid saponinins have been found in three species of **Tabebuia**. Varying compositions of saponins, coumarins and flavonoids have been found in the bark (Wasicky, 1967).



(LEGUMINOSAE - CAESALPINIOIDEAE)

Description

A tree to 16 m or more high, often of great girth but rarely with very long or spreading branches; bark with large hard brownish-grey flakes. Leaves alternate, pinnately compound, to about 12 cm long; leaflets 10-20 pairs, opposite, oblong, rounded at the tip, unequal at the base, mostly to about 2 cm long and 6 mm broad. Racemes axillary and terminal, to 4 cm long. Flowers yellow marked red, the three larger petals 13-15 mm long; stamens 3, united into a sheath. Pod light brown and corky outside, blunt at the ends, about 7-15 cm long and 2.5-3 cm thick. Seeds in a pulp, irregularly rounded, 11-13 mm in diameter.

Habitat and Distribution

Common near habitations in the subtropics and tropics of both hemispheres. Native probably of tropical Africa, widely introduced and naturalized.

Medicinal Uses

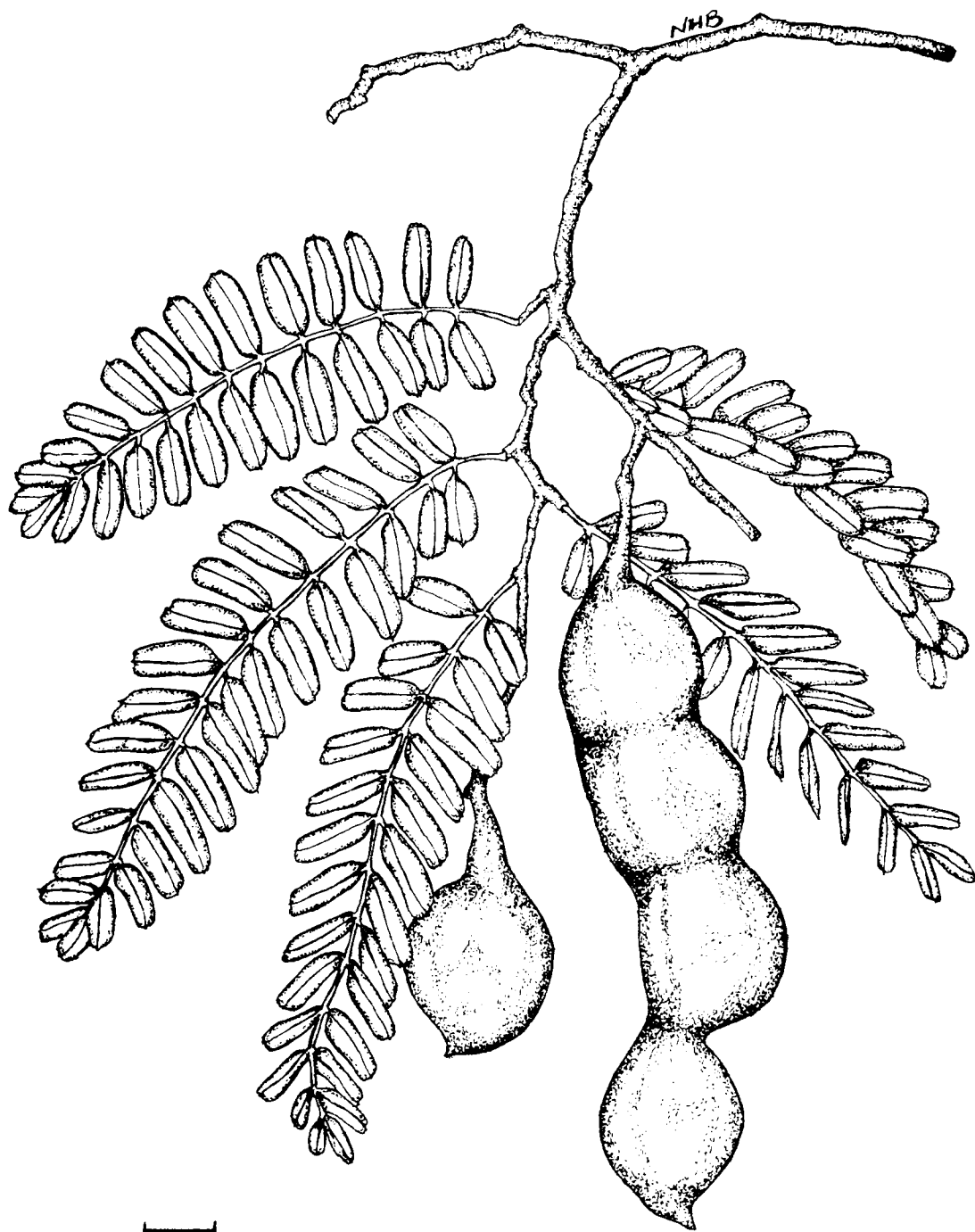
The leaves are warmed and strapped on to affected areas for relief of pains and swellings, especially in cases of sprains; the area may be massaged with coconut oil before leaves are applied.

A decoction or infusion of the leaves is used for bathing sores or as a general bath for persons suffering from measles and allergies.

A syrup is made from the ripe pods and taken orally for relief of chest colds and coughs.

Biodynamic Notes

Pharmaceutical grade polyoses were obtained from extracts of roasted and dehusked seeds (Nandi et al, 1979). Several pyrazines and thiazoles have been found (Lee et al, 1975). A proanthocyanidin was isolated from the bark and heartwood (Bhatia et al, 1969) and hordenine was obtained from the mature bark (White, 1969).



1 cm

(ANACARDIACEAE)

Description

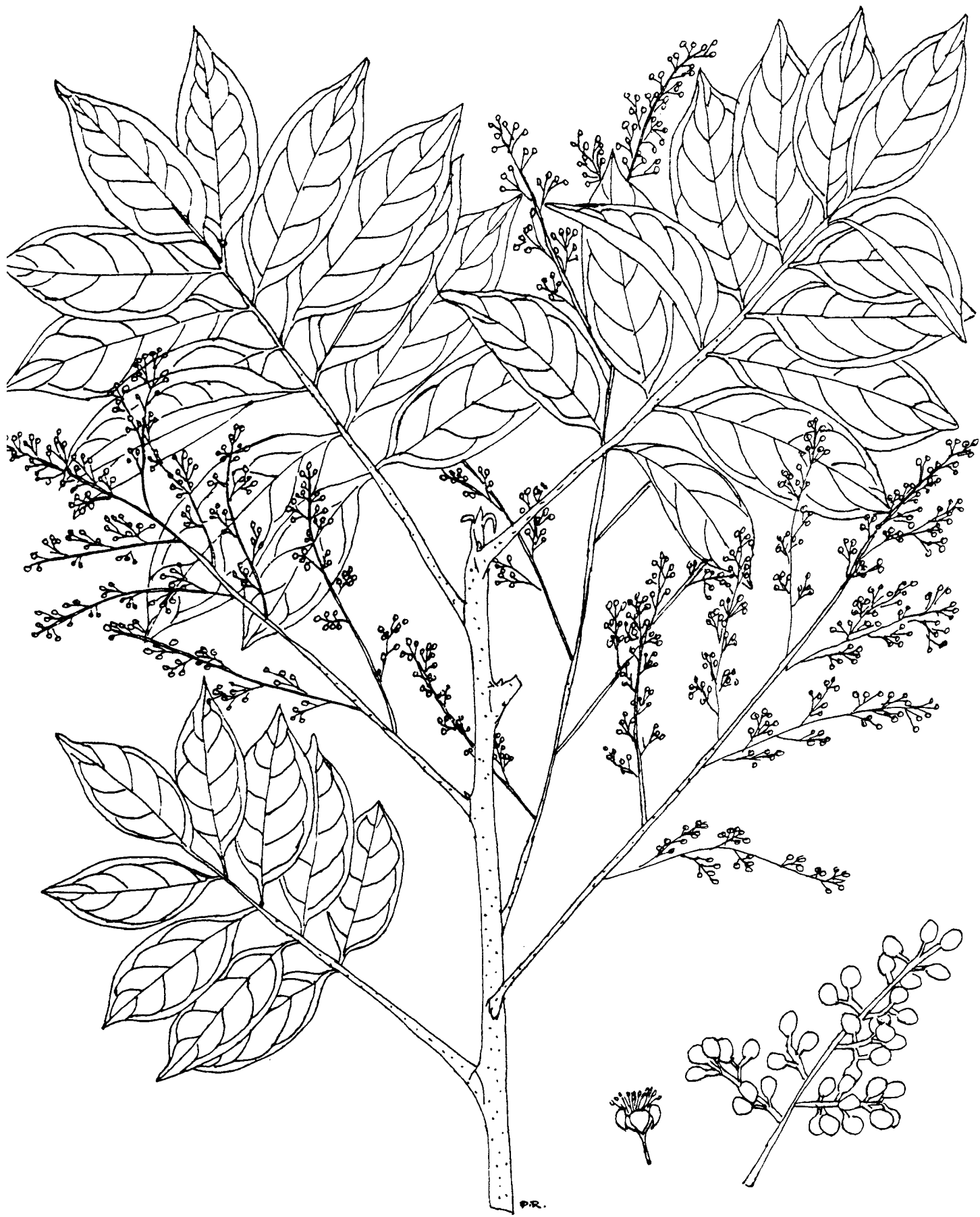
A buttressed tree to 30 m high. Leaves alternate, imparipinnate, 10-45 cm long; leaflets 2-5(-7) pairs, obovate, oblong or lanceolate, acuminate or cuspidate at the tip, cuneate at the base, 5-20 cm long, 1.5-8 cm broad, the terminal one usually larger, membranous, glabrous or puberulous on the nerves beneath. Panicles axillary, to as long as the leaves. Flowers polygamo-dioecious, pentamerous, very small, yellowish-white, the male with (8-)10 stamens. Drupe subspherical to obovoid, about 1 cm long, with a thin fleshy exocarp, a woody endocarp, a single pendulous seed and the remains of 4-5 styles.

Habitat and Distribution

In forests. Trinidad and tropical South America.

Medicinal Uses

The inner bark is scraped and used as a dressing for cuts and sores and for treating snake bites. A decoction of the bark is used as a fever bath.



Tephrosia sinapou
(Syn. *T. toxicaria*)

KUNALI
SURINAM POISON
YARRO-CUNALI

(LEGUMINOSAE - PAPILIONATAE)

Description

Shrub 0.6-2 m high with velvety-pubescent branches. Leaves alternate, pinnate, stipulate; leaflets opposite in 12-20 pairs, narrowly oblong, 2.5-7 cm long, to 12 mm broad, silky-pubescent. Inflorescence a terminal raceme to about 20 cm long. Flowers shortly stalked; calyx toothed, densely villous; petals white, the standard 12-15 mm long. Pod linear, 2-valved, dehiscent, densely villous.

Habitat and Distribution

Tropical continental America from Mexico to Brazil and Bolivia, also in Hispaniola and Jamaica, a weed of waste places but often preserved or cultivated for its uses.

The stem and leaves are crushed and used as a fish poison.

Medicinal Uses

The leaves are crushed and applied on sores to bring relief. Macerated leaves are used for washing hair to get rid of lice and may be placed in streams and trenches as a fish poison.

Biodynamic Notes

Prenylated flavonones were obtained from the roots of *Tephrosia* spp. (Cucá-Suarez, 1980).



Orig. KABADULI

Tetracera asperula

KABADULI*

(DILLENIACEAE)

Description

A climbing shrub, or sometimes a small tree, with greyish branches, the younger minutely scabrous, otherwise glabrous. Leaves alternate, lanceolate or ovate-lanceolate, the apex usually acute, the base rounded or obtuse, 5-16 cm long, 2.5-6.5 cm broad, leathery, the margin entire, roughish when young, soon smooth and somewhat shiny later and almost completely glabrous, petiolate. Inflorescences racemes of 3-6-flowered cymes, from the axils of the upper leaves, 8-20 cm long. Flower-buds globose, 5-7 mm in diameter. Flowers mostly hermaphrodite; sepals 5-6, the inner to 6 mm long in fruit, stellate-pubescent; petals 5, obovate; stamens numerous in male flowers, the filaments broadening upwards. Follicles of the fruit dark shiny brown, about 1.5 cm long, 2-3-seeded. Seeds black, glossy, the aril longer and deeply lacerate.

Habitat and Distribution

In savannas, thickets and woodlands in sandstone areas of the Guianas.

Medicinal Uses

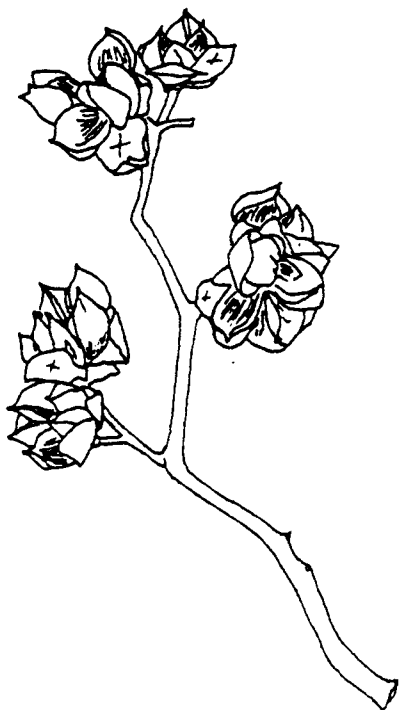
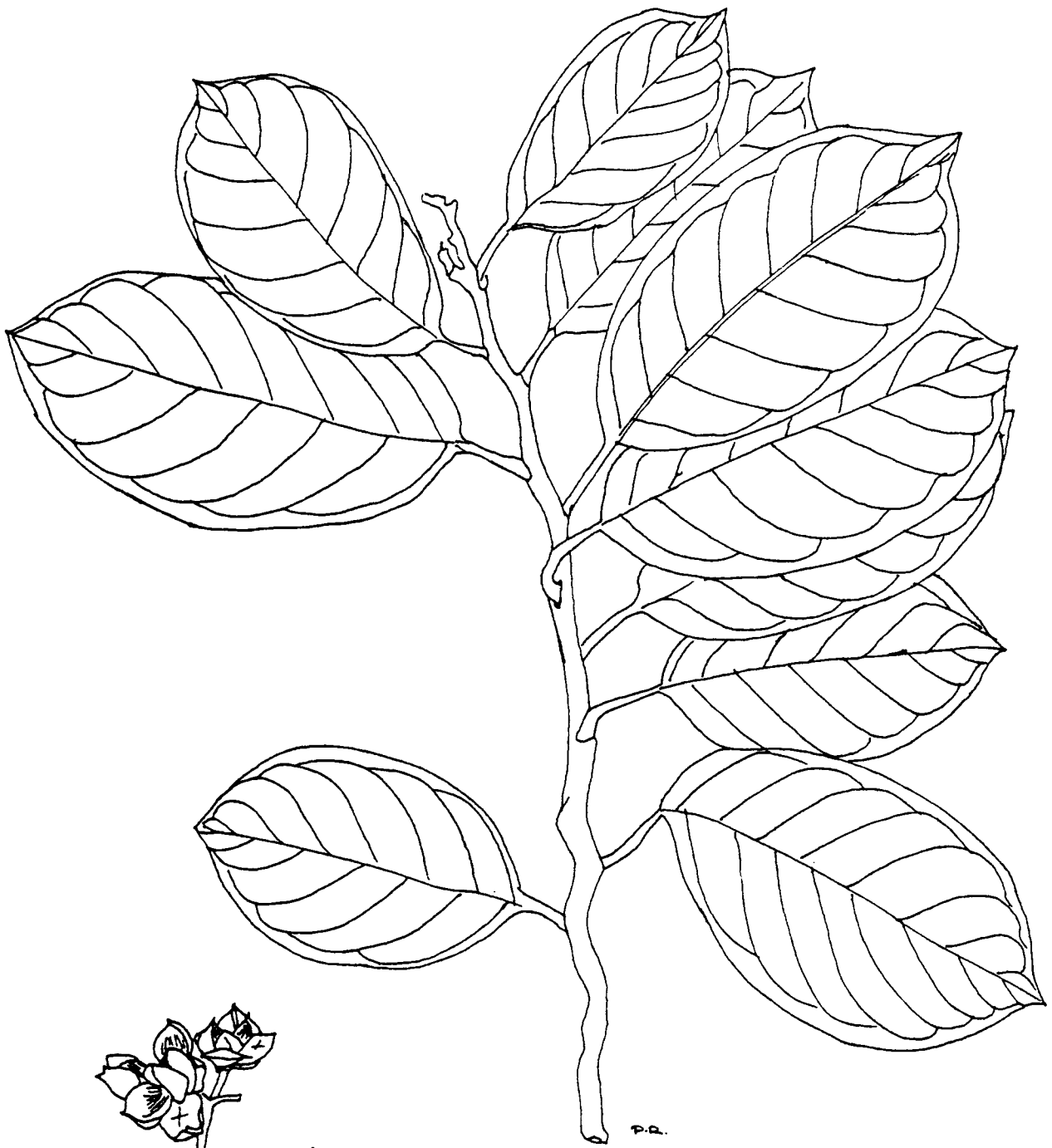
A decoction of the bark is used for treating syphilis.

Biodynamic Notes

Kaempferol 5-methyl ether was identified in the leaves of **Tetracera** and the presence of rhamnatin, isorhamnatin, rhamnocitin and azaleatin was confirmed (Kubitzki, 1968; Harborne, 1969).

Footnote

* Fanshawe (1947) has Kabuduli for all climbing members of the Dilleniaceae, cf. **Doliocarpus**.



P.R.

Tripogandra serrulata
(Syn. *Tradescantia elongata*)

ZEB-GRASS

(COMMELINACEAE)

Description

Trailing and rooting perennial herb with flowering stems erect to 1 m or more long. Leaves alternate, sheathing above the nodes, narrowly ovate, acute at the apex, oblique at the base, to 13 cm long and 3 cm broad, usually glabrous. Inflorescences pedunculate from the uppermost leaf-axils, the peduncles to 5 cm long. Flowers regular, shortly stalked; sepals 3, 2.5-5 mm long, green; petals 3, ovate-elliptic, 3.5-6 mm long, pink or white; stamens 6, unequal, the longer ones bearded. Fruit a capsule; seeds greyish, with paler reticulations, 1-1.5 mm long.

Habitat and Distribution

In damp thickets and low-lying margins of woodlands, from Mexico and the West Indies to northern South America.

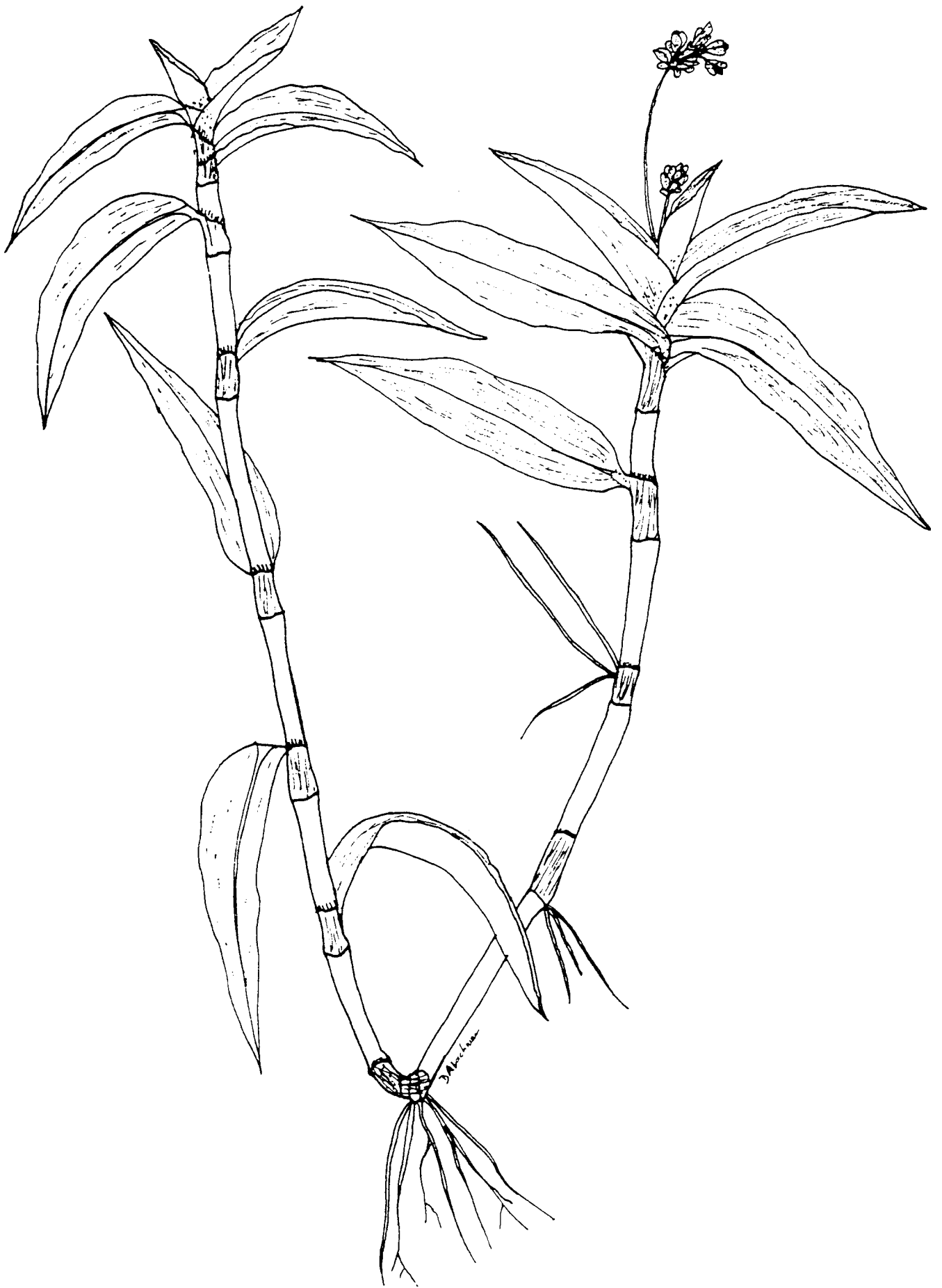
Medicinal Uses

An infusion of white and red Zeb-grass is used to treat kidney disorders.

Red Zeb-grass, Sweet-broom (*Scoparia dulcis*) and Baan-caryla (*Momordica charantia*) are boiled together and the resulting liquid is drunk as a purgative.

A decoction of Zeb-grass and Pear (*Persea americana*) leaves is taken for biliousness.

Men apply macerated leaves to the face to encourage the growth of beard.



Unxia camphorata
(Syn. *Melampodium camphoratum*)
(COMPOSITAE or ASTERACEAE)

CAMPHOR-BUSH
HAIWA-BALLI-GRASS
SAND-BITTERS

Description

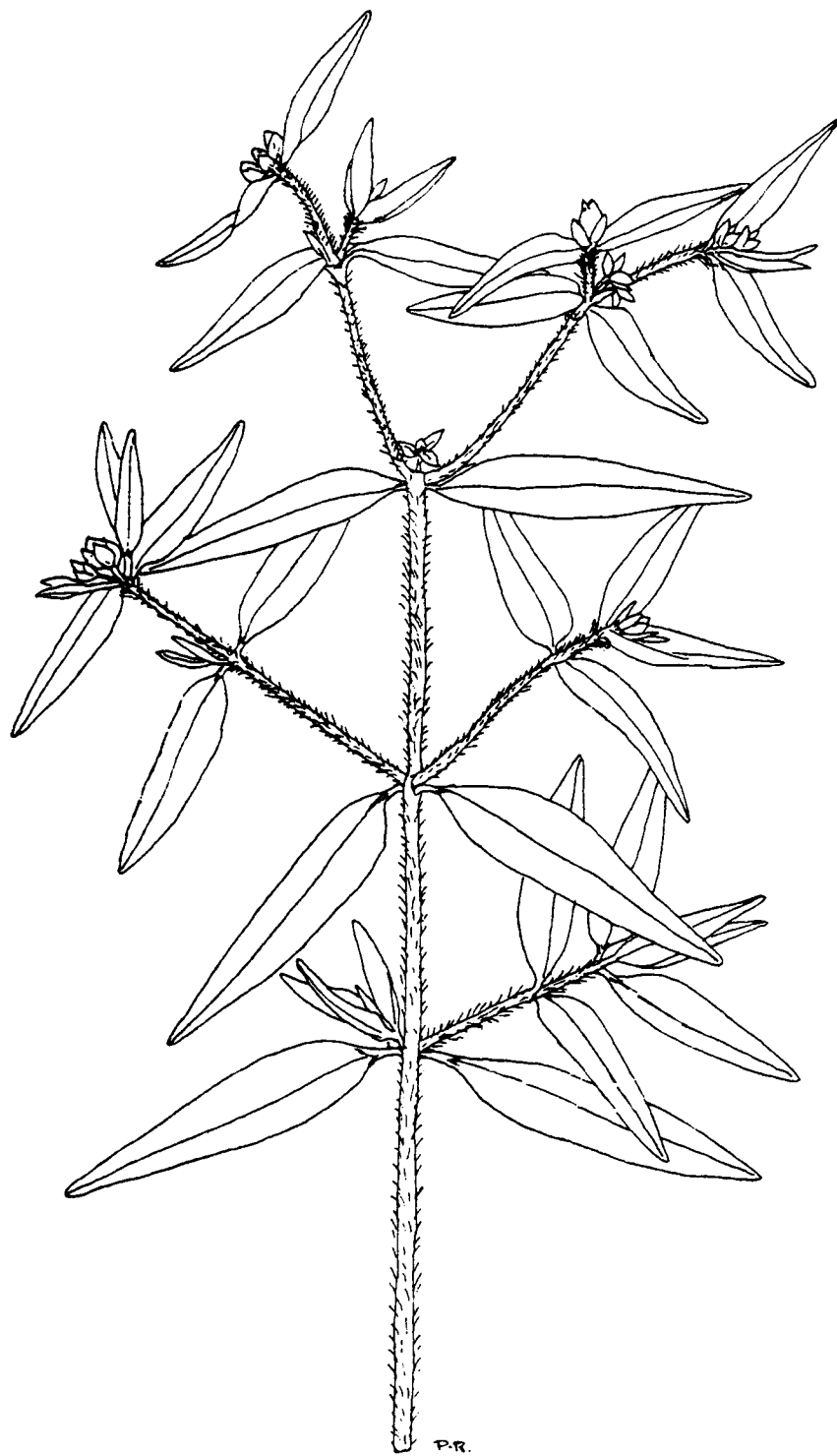
A fragrant annual herb to about 50 cm high, usually much branched and copiously hairy. Leaves opposite in pairs, oblong or lanceolate, 2-5(-8) cm long, 4-20 mm broad, subentire, the tip acute, the base usually obtuse, moderately pilose to glabrous, shortly petiolate. Capitula few together, terminal, on peduncles to 10 mm long, 6-7 mm in diameter; ray-florets 3-5 with ligules about 2 mm long, yellow; disc florets about 6. Achenes compressed, about 2 mm long.

Habitat and Distribution

Locally common, especially on open sandy ground. Panama, through northern South America to Brazil.

Medicinal Uses

A decoction of the plant is used as a bitter tonic and a treatment for colds.



Vernonia cinerea

(COMPOSITAE or ASTERACEAE)

BLUE FLEABANE
INFLAMMATION BUSH
STRONGMAN-BUSH
TROPICAL FLEABANE

Description

An erect taprooted pubescent herb to 60 cm or more high. Leaves alternate, ovate to lanceolate, acute or obtuse, cuneate at the base, mostly 1.5-5 cm long and 1-3 cm broad, sinuate-dentate to subentire, shortly petiolate with often small leaves of reduced axillary branches in the axils. Inflorescences terminal and from the upper axils. Capitula stalked, 5-6 mm long, 14-20 flowered; involucral bracts in 5 series, linear-lanceolate; corollas mauve to purple. Achenes shortly bristly, 1.5 mm long, brown; pappus of white bristles about 3 mm long and very short outer scales.

Habitat and Distribution

A very common weed of pastures and waste places, throughout the tropics.

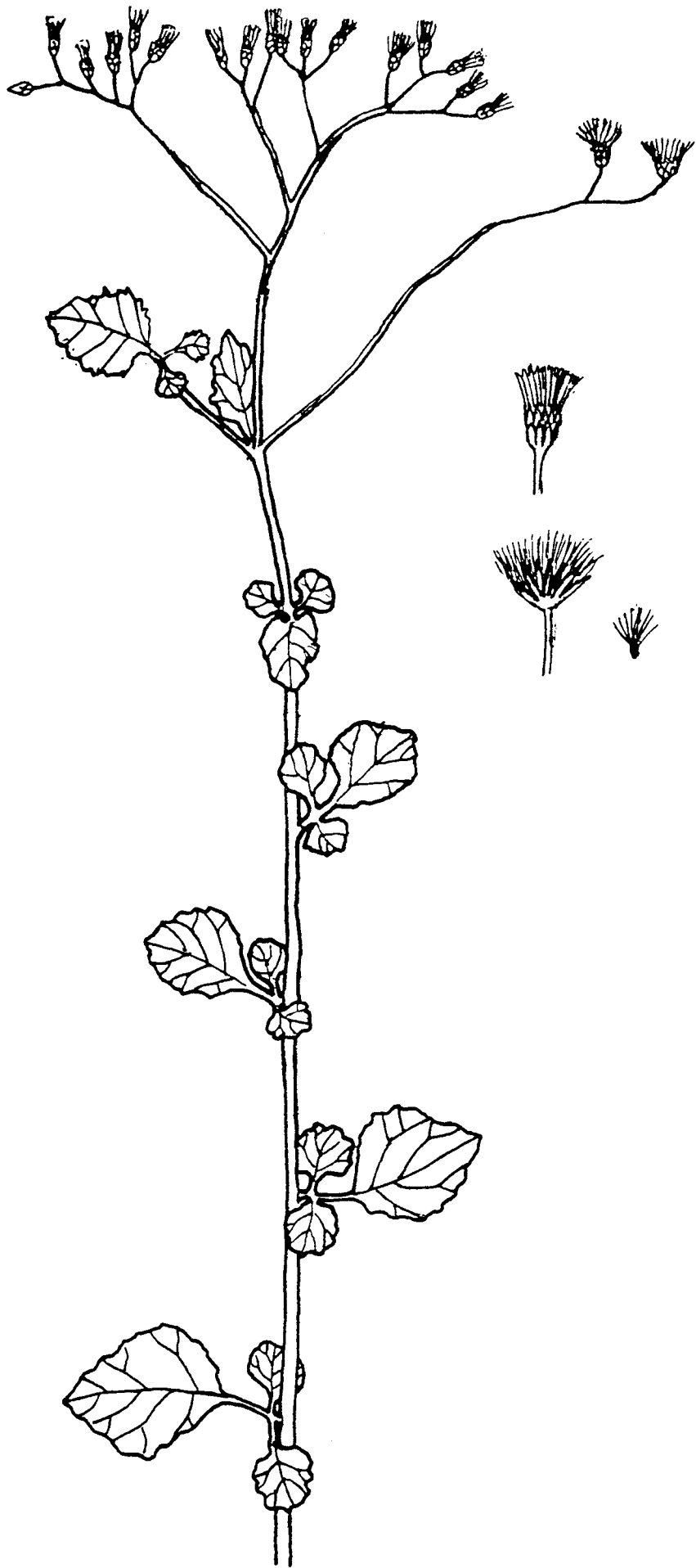
Medicinal Uses

A decoction of the aerial parts has been used as a diuretic, for treatment of kidney disorders, for relief of swelling, inflammation and pains, especially pains in the lower abdomen and menstrual pains. It is also believed to aid in the expulsion of the afterbirth (placenta) and is often used as an abortifacient. However, a decoction of the plant together with St Johns-bush (*Justicia secunda*), is reputed to be a more potent abortifacient and remedy for menstrual pains.

Biodynamic Notes

All parts of the plant are used for various illnesses in India and Pakistan (Kirtikar and Basu, 1975; Dasfur, 1977). The aqueous ethanolic extract of the whole plant was reported to have antiviral and anticancer activities in mice (Dhar et al, 1968) and the methanolic extract showed significant diuretic activity in rats (Herrera et al, 1978). Flavonoids are reported to have diuretic properties (Williams, 1967). The following flavonoids of medicinal importance have been identified in *V. cinerea*: luteolin 7-0-glucoside, luteolin 7-0-galactoglucoside, luteolin 7-0-glycoglucoside, quercetin 3-0-rhamnoglucoside and quercetin 7-0-glucoside 3-0-rhamnoside (Wagner et al, 1972; Mabry et al, 1975).

The roots yielded stigmasterol, sitosterol, stigmast-5, 17(20)-dien-3beta-ol, 26-methyl-heptacosanoic acid, delta-amyrin acetate, alpha-amyrin acetate, 3beta-acetoxyurs-13(18)-ene, beta-amyrin acetate, beta-amyrin and alpha-amyrin (Misra et al 1984a, 1984b). Other compounds which have been reported are beta-sitosterol, alpha-spinasterol, campesterol and .24-hydroxyfarax-14-ene (Ventkateswara-Rao, 1962; Misra et al, 1984c).



Vismia angusta

BLOODWOOD*
LARGE-LEAF BLOODWOOD
ORALI

(CLUSIACEAE or GUTTIFERAE)

Description

A tree to 8 m high, with a straight cylindrical trunk, the branchlets laterally compressed and rusty-stellate-tomentose, the plant exuding an orange-yellow sap when broken. Leaves opposite in pairs, oblong to ovate-oblong and gradually narrowed from the broad rounded or cordate base to the acute apex, to 30(-40) cm long, to 8(-12) cm broad, leathery, glabrous and green above, light brown-tomentose beneath, the whole leaf punctate with numerous blackish glands. Inflorescence a large terminal, showy, rusty-tomentose panicle with opposite branches. Flowers white or yellowish; sepals oblong, 6-8 mm long, rusty-tomentose outside, with glandular dots and lines, the flower-bud blunt at the base; petals oblong-lanceolate, 9-12 mm long, with numerous large black spots; stamens numerous, connate in 5 bundles. Fruit a green ovoid-globose berry about 13 mm long.

Habitat and Distribution

In savannas and thickets in tropical South America.

Medicinal Uses

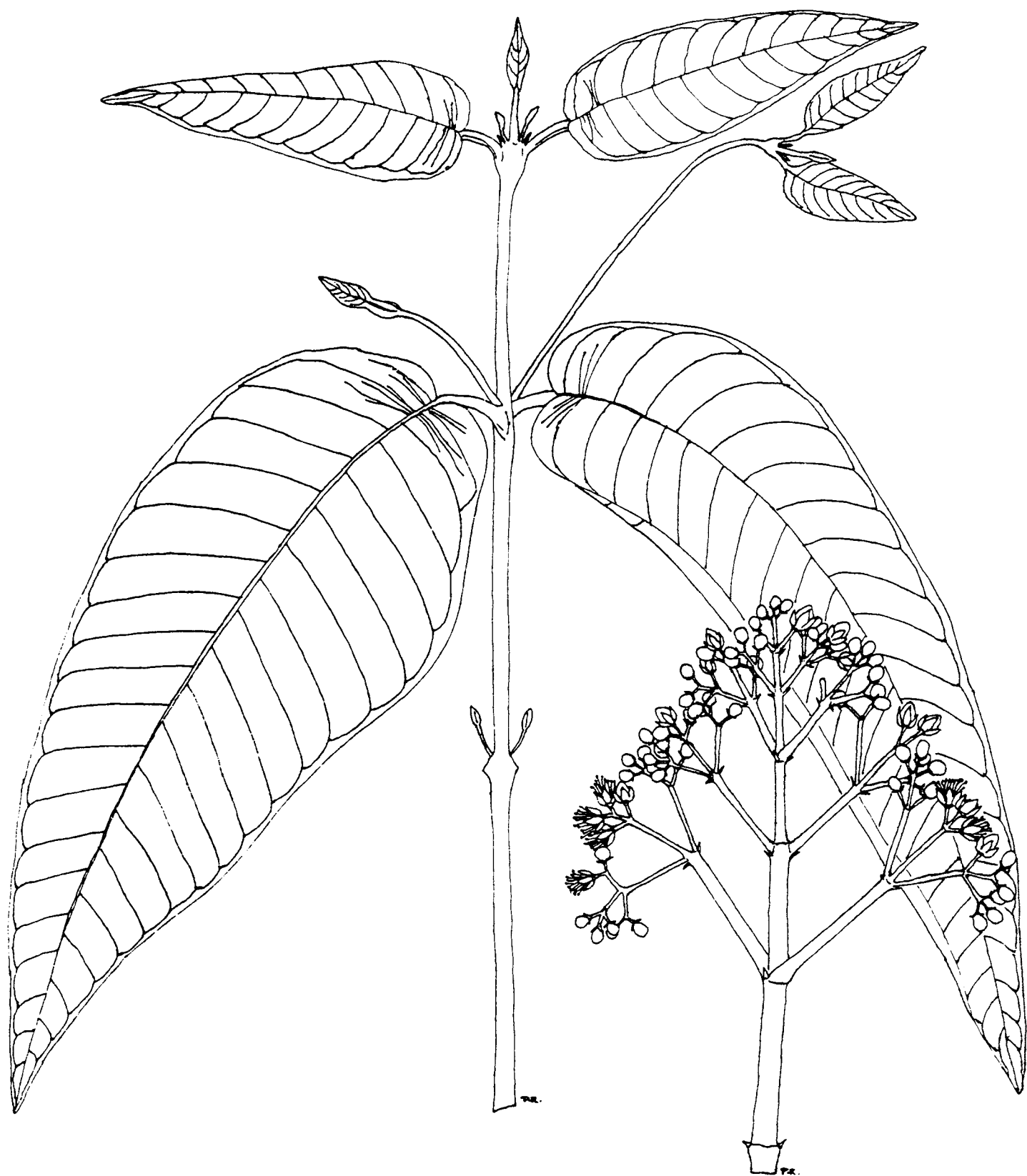
The latex is used for treating measles, ulcers, bush yaws, ringworm, lotta and any other skin infections.

Biodynamic Notes

Anthracene derivatives were isolated from berries of various species of **Vismia** from tropical America. Among these compounds were vismin, ferruginins A and B, haruganin and ferruanthrone (Marini-Bettolo et al, 1978).

Footnote

* This species is referred to as Large-leaf Bloodwood to distinguish it from **V. guianensis**.



Vismia guianensis

BLOODWOOD
FINE-LEAF BLOODWOOD
ORALI
SMALL-LEAF BLOODWOOD

(CLUSIACEAE or GUTTIFERAE)

Description

A tree to 15 m high, the young branchlets minutely puberulous, exuding an orange-yellow sap when broken. Leaves opposite in pairs, ovate to lanceolate, long-acuminate with a small blunt tip, acutely cuneate at the base, to 10(-13) cm long and about 5 cm broad, rather leathery, glabrous above, minutely brownish- or greyish-tomentose beneath, glandular warts wanting or obscured by the indumentum. Inflorescence a terminal panicle, puberulous, with opposite branches. Flowers yellowish or greenish; sepals oblong-lanceolate, about 7 mm long, rusty-puberulous outside; flower-buds subglobose or ellipsoid; petals oblong-obovate, 8-10 mm long, with a few small black spots apically; stamens numerous, in 5 bundles. Fruit a dark green or brown berry, ovoid and obtuse, later globose, slightly angled, 8-12 mm long.

Habitat and Distribution

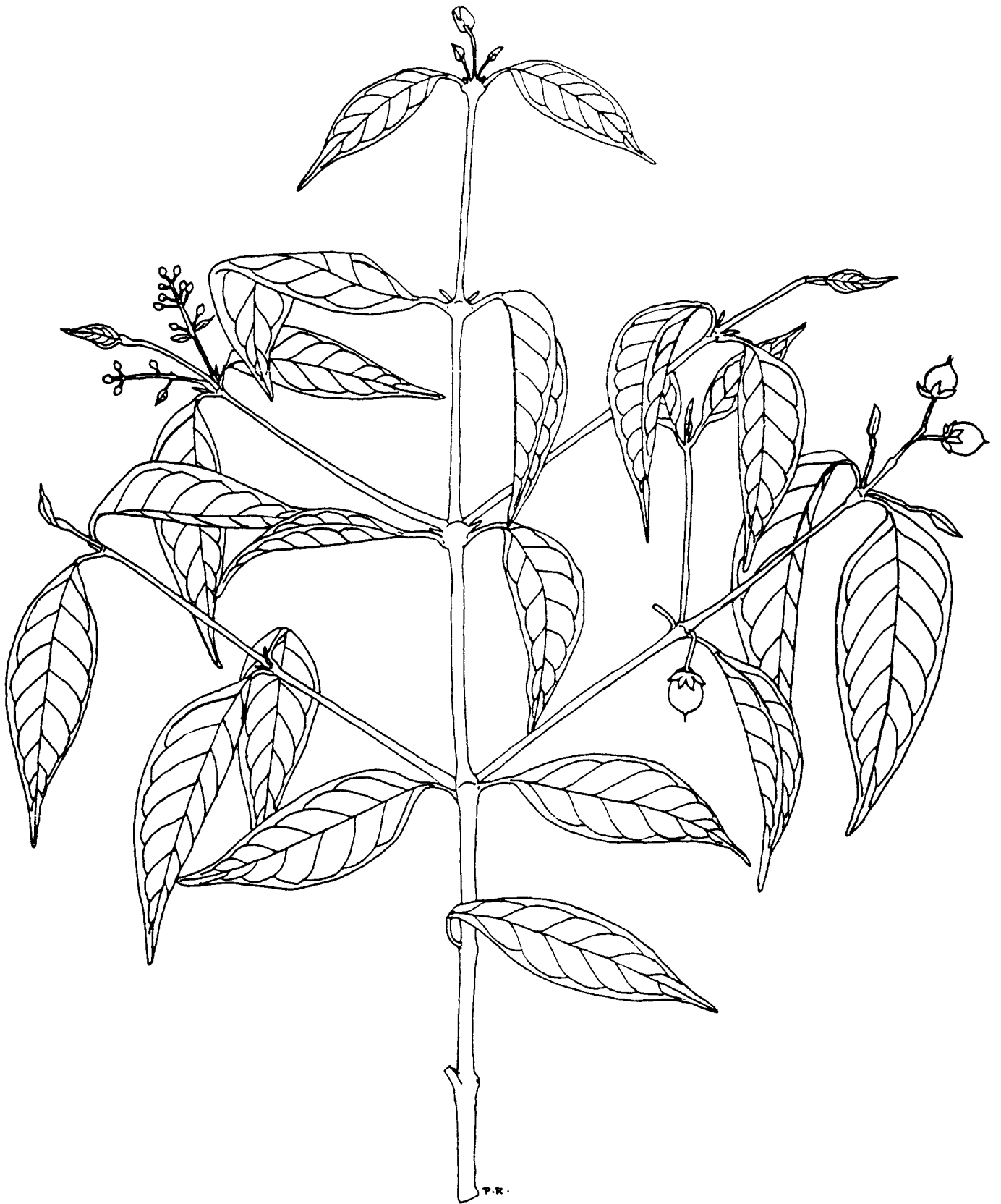
In woodlands and thickets in tropical South America.

Medicinal Uses

The latex is used as a purgative and applied externally to treat lotta, minor cuts and bruises, and to relieve itching. The bark and leaves are boiled together and a draught taken for thrush.

Biodynamic Notes

Berries of *V. guianensis* contained ferruginin A, delta-hydroxyferruginin A and delta-y-dihydroxyferruginin A (Delle et al, 1980).



Waltheria indica
(Syn. *W. americana*)

HARO-BANARO
VELVET-LEAF

(STERCULIACEAE)

Description

A shrubby herb 0.5-2 m high with a tomentose indumentum. Leaves alternate, ovate to lanceolate, usually obtuse at the tip, rounded or subcordate at the base, crenate-margined, mostly 3-9 cm long and 1-4 cm broad. Flowers 5-merous, crowded in axillary sessile or shortly stalked inflorescences; calyx about 5 mm long; petals yellow, about 6 mm long. Fruit a 2-valved 1-seeded capsule about 2.5 mm long.

Habitat and Distribution

Common in open sandy ground and waste places in the subtropics and tropics.

Medicinal Uses

The entire plant is used as a tea generally and often taken as a treatment for heavy colds.

Biodynamic Notes

The peptide alkaloids, adonetines X, Y, Y' and Z have been determined (Pais et al, 1968).



Wedelia trilobata

CREEPING DAISY
DAISY

(COMPOSITAE or ASTERACEAE)

Description

A low herb with spreading and rooting branches, the flowering shoots ascending to about 20 cm high. Leaves opposite in pairs, obovate and strongly or weakly 3-lobed, mostly to about 7 cm long and 5 cm broad, usually toothed. Flower-heads 2 cm or more broad, on distinct peduncles. Disc and ray-florets yellow or orange-yellow.

Habitat and Distribution

Common in damp pastures and grassy thickets, often widely trailing on upper beaches. Sporadically through the American subtropics and tropics where the rainfall is sufficient; also in West Africa and Hawaii.

Medicinal Uses

The entire plant is used as a tea generally and often taken for colds. It may be mixed with Sweet-sage (*Lantana camara*) to make a syrup which is drunk for colds. In cases of heavy chest colds, a very strong decoction of the plant is used as an emetic.

Biodynamic Notes

Acetylenes and several new kaurenic acid derivatives were isolated (Bohlmann and Le Van Ngo, 1977).

Purified wedeloside, isolated from *W. asperrima*, showed antitumor activity (Oelrichs et al, 1980).



Xylopia **aromatica**
(Syns. *X. cubensis*, *X. grandiflora*
as - a misidentification)

RED-KOYAMA

(ANNONACEAE)

Description

A shrub or tree to 10 m or more high, the young branches tomentose. Leaves alternate, disposed in two rows on the branches, lanceolate to elliptic, tapered to the apex, rounded or shortly acute at the base, 8-15 cm long, 2-4.5 cm broad, firm-textured, glabrous on the upper surface, shortly hairy beneath; petioles 3-6 mm long. Flowers few or numerous in axillary clusters; calyx cupular, minutely 3-toothed; outer petals 3, linear, to 30 mm long and 2-3 mm broad; inner petals a little shorter, about 1 mm broad; stamens many, 1-1.5 mm long. Carpels about 25, sunken in a deep cavity of the receptacle, enlarging to 2-2.5 cm long, 6-7 mm thick and ripening torulose and blackish.

Habitat and Distribution

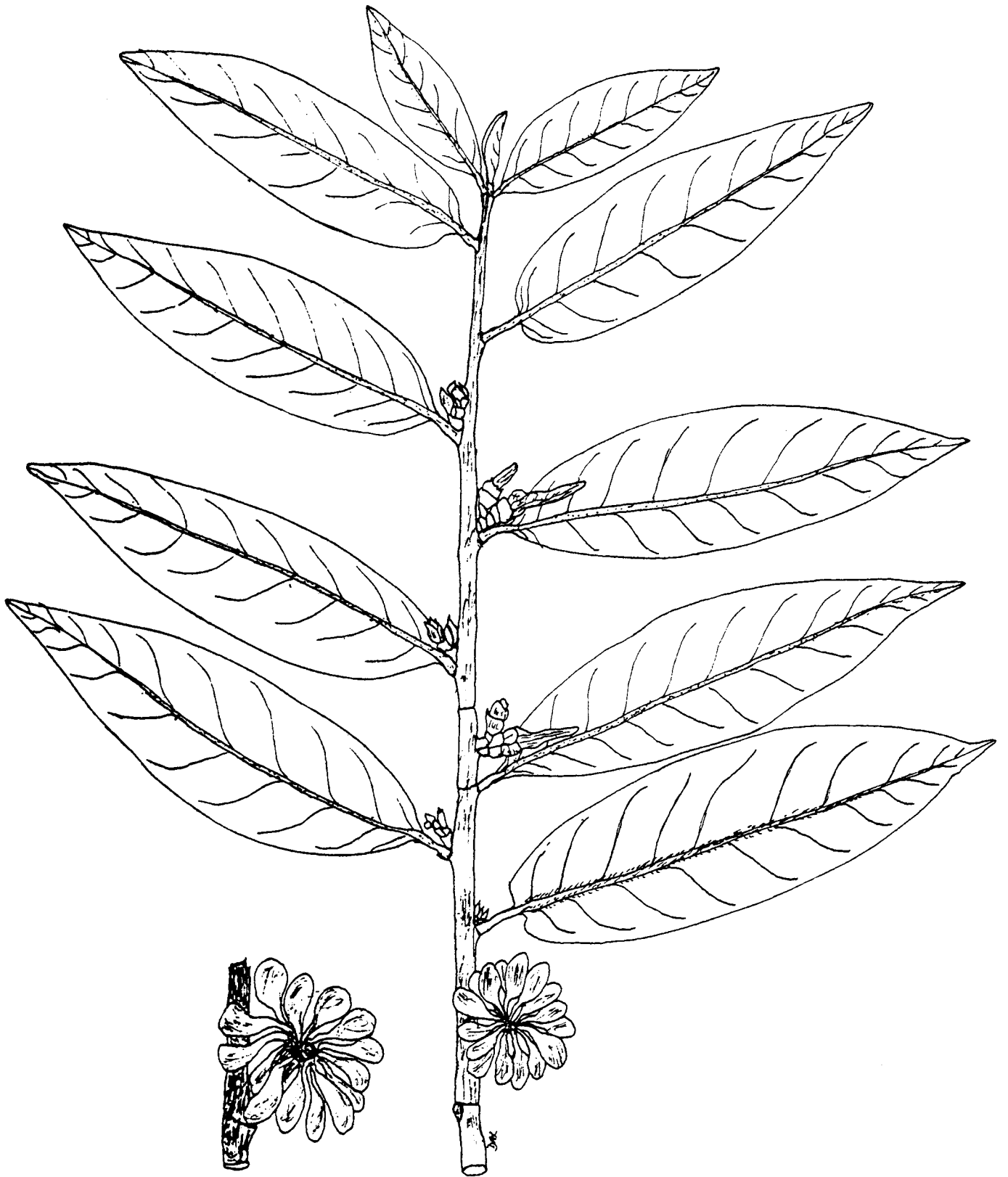
In thickets. Central America to south Brazil and Paraguay, Cuba and Trinidad.

Medicinal Uses

An infusion of the powdered fruit is used to treat dysentery. The bark is pounded and used as a fish poison.

Biodynamic Notes

Antimicrobial properties were detected in *Xylopi*a *aethiopica*. Three diterpenes, including xylopic acid, were isolated from fresh ripe fruits and were active against *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Candida albicans* (Boakye-Yiadom et al, 1977).



BIBLIOGRAPHY

- Abraham, E.A.V. (1912) "Materia Medica Guian. Britt". Timehri, 3rd ser. 2, 179-196. (General)
- Adam, S.E.I. (1974) Toxicology 2, 67. (Jatropha)
- Adam, S.E.I. & Magzoub, M. (1975) Toxicology 4, 347. (Jatropha)
- Adams, C.D., Magnus, K.E. & Seaforth, C.E. (1963) "Poisonous Plants in Jamaica". University of the W. Indies, Jamaica. (Crotalaria, Spigelia)
- Adams, R. & Whaley, W.M. (1950) J. Am. Chem. Soc. 72, 375-9. (Quassia)
- Adolf, W., Chanai, S. & Hecker, E. (1983) J. Sci. Soc. Thailand 9(2), 81-8 via Chem. Abs. 100(2): 12469n. (Euphorbia)
- Agarwal, S.S. et. al. (1970) Pharmacol. Res. Commun. 2(2), 159-63. (Abrus)
- Ahmad et al. (1979) J. Oil Technol. Assoc., India 11(3), 70-2 via Chem. Abs. 92: 211823h. (Ruellia)
- Akhori, A. & Yasuda, I. (1965) Schronogi and Co. Ltd. Appl. Jpn. 24, 626, Oct 27. Appl. Apr. 29, 1963 4pp. (Smilax)
- Akinrimisi, E.O. & Akiwande, A.I. (1976) West Afr. J. Pharmacol. Drug. Res. 3(2), 141-8 via Chem. Abs 87(20): 157069g. (Eugenia-Clove)
- Ali, M.E. & Rahman, M.E. (1966) Sci. Research (Dacca), 3(2), 84-9. (Scoparia)
- Altman, L.J. & Zito (1976) Phytochemistry 15(5), 829-30. (Artocarpus)
- Andriamasy, J., Pelissier, Y. & Fouraste, I. (1978) Trav. Soc. Pharm. Montpellier 38(1), 77-80 via Chem. Abs. 89(2): 12037t. (Diospyros)
- Aoyagi, N., Kimura, R. & Murata, T. (1974) Chem. Pharm. Bull. 22(5), 1008-13 via Chem. Abs. 81(15): 86167s. (Passiflora)
- Armstrong, J.G. (1967) Cancer Chemother. Rep. 37-45. (Catharanthus)
- Asai, F., Iinuma, M., Tanaka, T. & Matsuura, S. (1982) Yukagaku Zasshi 102(7), 690-4 via Chem. Abs. 97(16): 133416q. (Strychnos)
- Asprey, G.F. & Thornton, P. (1953-55) "Medicinal Plants of Jamaica" (4 parts) West Indian Med. J. 2(4), 3(1), 4(2-3). (General)
- Atallah, A.M. & Nicholas, H.J. (1972) Phytochemistry 11(5), 1860. (Euphorbia)
- Atta-ur-Rahman, M.B. (1983) Planta Med. 49, 124. (Catharanthus)
- Atta-ur-Rahman, M.B. & Chaudhury, M.I. (1984) Z. Naturforsch, B. Anorg. Chem.; Org. Chem. 39B (9), 1292-3. (Catharanthus)
- Atta-ur-Rahman, M.B., Kaleem, S. & Fatima, T. (1983) Phytochemistry 22(4), 1021. (Catharanthus)

- Atta-ur-Rahman, M.B., Kaleem, S. & Fatima, T. (1984) *Z. Naturforsch, B. Anorg. Chem; Ord. Chem.* 39B(5), 695-700 via Chem. Abs. 101: 87451y. (Catharanthus)
- Aubert, L. & Anthoine, P. (1985) *Eur. Pat. Appl. EP 147331 A2* via Chem. Abs. 103(22): 183548x. (Passiflora)
- Avadhoot, Y. et al. (1980) *Indian Drug & Pharmaceutical Industry* 15(11), 19-20. (Lantana)
- Baghlaif, A.O., El-Bech, F.K.A. & El-Tawil, B.A.H. (1983) *Herba Hung.* 22(1), 39-42 via Chem. Abs. 100(2): 12498q. (Eucalyptus)
- Banerji, A. & Chadda, M.S. (1970) *Phytochemistry* 9, 1671. (Achyranthes)
- Banerji, A. et al. (1971) *Phytochemistry* 10(9), 2225-6. (Achrynanthes)
- Banerji, J., Das, B., Chatterjee, A. & Shoolery, J.N. (1984) *Phytochemistry* 23(10), 2323-7. (Jatropha)
- Banerji, R., Prakash, D., Misra, G., Nigani, S.K., Soevena, A.K., Mathur, A.K., Sinha, J.N. & Bhargava, K.P. (1981) *Indian Drugs* 18(4), 121-4. (Costus)
- Bardouille, J.V. & Cox, M. (1977) *Guyana J. Sci.* 5(2), 61-70. (Pityrogramma)
- Bardouille, V. et al. (1978) *Phytochemistry* 17, 275-277. (Pityrogramma)
- Baslas, R.K. & Agarwal, R. (1980a) *Indian J. Chem. Sect. B.* 19B(8), 717-18 via Chem. Abs. 93: 235133e. (Euphorbia)
- Baslas, R.K. & Agarwal, R. (1980b) *Curr. Sci.* 49(8), 311-12. (Euphorbia)
- Baslas, R.K. & Agarwal, R. (1980c) *Indian J. Pharm. Sci.* 42(2), 66-7 via Chem. Abs. 94(4): 109172z. (Euphorbia)
- Batsford, S., Klutha, R. & Vogt, A. (1980) *Planta Med.* 39(3), 234-35. (Aristolochia)
- Batta, A.K. & Rangaswami, S. (1973) *Phytochemistry* 12, 214-216. (Achyranthes)
- Batta, S.K. & Santhakumari (1971) *Ind. J. Med. Res.* 59, 777-781. (Hibiscus)
- Battersby, A.B. & Hodson, H.F. (1968) *Alkaloids* 11, 189-204. (Strychnos)
- Belkin, D.B. et al. (1952) *J. Natl. Cancer Inst.* 13, 139-55. (Cassia)
- Berman, D. (1985) *Eur. Pat. Appl. EP133151 A2* Feb. 13 via Chem. Abs. 102(20): 172664k. (Capsicum)
- Bernardi, L.C. & Goldblatt, L.A. (1969) In "Toxic Constituents of Plant Foodstuffs" (I.E. Liener ed.) pp. 211-267; Academic Press, New York. (Gossypium)
- Bhakuni, D.S., Dhar, M.L., Dhar, M.M., Dhawar, B.N. & Mehrotra, B.N. (1969) *Indian J. Exp. Biol.* 7, 250. (Annona)
- Bhakuni, D.S., Tiwari & Dhar (1972) *Phytochemistry* 11(5), 1819-22. (Annona)

- Bhargava, K.K. et al. (1970) Indian J. Chem. 8(7), 664. (Eclipta)
- Bhargava, K.K., Krishnaswamy, N.R. & Seshadri, T.R. (1972) Ind. J. Chem. 10, 810. (Eclipta)
- Bhargava, K.K. & Seshadri, T.R. (1974) J. Res. Ind. Med. 9(1), 10-14. (Eclipta)
- Bhat, S.V., De Souza, N.J., Dornauer, H., Bhattacharya, B.K. & Dohadwalla, A.N. (1977) Germany AI 2557784 Dec. 22 1975, via Chem. Abs. 87(14): 106735e. (Coleus/Plectranthus).
- Bhat, S.V., Bhattacharya, B.K., De Souza, N.J., Dohadwalla, A.N. & Dornauer, H. (1979a) Hoechst Pharmaceuticals Ltd. India Appl. 76/BO234, 15 Jul. 1976, via Chem. Abs. 92(12): 99564w. (Coleus/Plectranthus)
- Bhat, S.V., De Souza, N.J. & Dornauer, H. (1979b) Hoechst Pharmaceuticals Ltd. India Appl. 76/BO245, 21 Jul. 1976, via Chem. Abs. 92(24): 203575p. (Coleus/Plectranthus)
- Bhat, S.V., De Souza, N.J., Dornauer, H., Bhattacharya, B.K., Dohadwa, L., Alihusein, N. & Hoechst, A.G. (1980) Fed. Rep. Ger. 75/BO243, 6 Sep. 1975, via Chem. Abs. 93(26): 245443v. (Coleus/Plectranthus)
- Bhatia, V.K., Gupta, S.R. & Seshadri, T.R. (1969) Indian J. Chem. 7(2), 123-4 via Chem. Abs 71(5): 19523k. (Tamarindus)
- Bhaumik, P.K., Mukherjee, N., Juneau, J.P., Bhacca, N.S., Mukerjee, R. (1979) Phytochemistry 18(9), 1584-6. (Annona)
- Bhutani, K.K., Kapoor, R. & Atal, C.K. (1984) Phytochemistry 23(2), 407-10. (Cissus)
- Billot, J. (1974) Phytochemistry 13(12), 2886. (Passiflora)
- Bioser, M.G. & Phillipson, J.D. (1971) Lloydia 34(1), 1-60. (Strychnos)
- Birecka, H., Di Nolfo, T.E., Martin, W.B. & Frohlich, M.W. (1984) Phytochemistry 23(5), 991-7. (Heliotropium)
- Boakye-Yiadom, K., Fiagbe, N.I.Y. & Ayim, J.S.K. (1977) Lloydia 40(6), 543-5 via Chem. Abs. 88(16): 110432s. (Xylopi)
- Boakye-Yiadom, K. (1977) Quart. J. Crude Drug. Res., 15, 201-203 (Bryophyllum, Kalanchoe)
- Boe, J.E., Winsnes, R., Nordal, A. & Bernatek, E. (1969) Acta Chem. Scand. 23(10), 3609 via Chem. Abs. 72(18): 93301y. (Euphorbia)
- Boettner, F.E. (1984) U.S. US4,458,082 Jul. 3, via Chem. Abs. 101: 157665x. (Heliotropium)
- Bohlmann, F. & Le Van Ngo (1977) Phytochemistry 16(5), 579-81. (Wedelia)
- Bohlmann, F. et. al. (1979) Phytochemistry 18(9), 1489-93. (Pentaclethra)

- Bos, R., Hendriks, H. & Van Os, F.H.L. (1983) Pharm. Weekbl. Sci. Ed. 5(4), 129-30 via Chem. Abs. 99(22): 181332x. (Coleus/Plectranthus)
- Boukef, K., Balansard, G., Lallemand, M. & Bernard, P. (1976) Plant. Med. Phytother. 10(1), 24-9 via Chem. Abs. 85(4): 25311v. (Eucalyptus)
- Boum, B. PhD Thesis, Paris-Sud. (1978) in "A guide to the Medicinal Plants of Trinidad & Tobago", 1983, Commonwealth Secretariat. (Carica)
- Bourdoux, P., Mafuta, M., Hanson, A. & Ermans, A.M. (1980) "Role of Cassava in the Etiology of Endemic Goitre and Cretinism" (Ermans, A.M., Mbulamoko, N.M., Delange, F. & Ahluwalia, R. eds.) Intl. Dev. Res. Centre, Ottawa, Canada, pp. 15-27. (Manihot)
- Broker, R. & Bhatt, J.V. (1953) Indian J. Pharm. 15, 309-10. (Cynodon)
- Bulhoes, G.C. et al. (1977) Anais Fac. Farm. Univ. Fed. Pernambuco 15, 39-41. (Cecropia)
- Burdick, E.M. (1971) Econ. Bot. 25, 363. (Carica)
- Butler, G.W. (1965) Phytochemistry 4, 127-131. (Manihot)
- Calixto, J.B., Yunes, R.A., Neto, A.S.O., Valle, R.M.R. & Rae, G.A. (1982) Braz. J. Med. Biol. Res. 17(3-4), 313-21. (Phyllanthus)
- Carle, R. (1981) Plant. Syst. Evol. 138(1-2), 61-71 via Chem. Abs. 95(23): 200595w. (Solanum)
- Carrick, J. et al. (1968) Chem. Pharm. Bull. (Tokyo) 16(12), 2436-41. (Stachytarpheta)
- Cassinori, C-G. et al. (1966) Ann. Ist. Super Sanita 2(2-3), 414-6. (Quassia)
- Catalfamo, J.L., Martin, W.B. Jr. & Birecka (1982) Phytochemistry 21(11), 2669-75. (Heliotropium)
- Caughey, I. & Kekwick, R.G.O. (1982) Eur. J. Biochem. 123(3), 553-61. (Persea)
- Cesario de Malo, A. et al. (1978) Acta Physiol. Latinoan 28(4-5), 171-8 via Chem. Abs. 82: 72719p. (Solanum)
- Chemistry Abstracts (1977) "Composition of fatty acids of P. macrophylla" 51830z. (Pentaclethra)
- Chen, C.M. & Chen, M.T. (1976) Phytochemistry 15(12), 1997-9. (Scoparia)
- Chi, H.J. & Kim, H.S. (1985) Arch. Pharmacol. Res. 8(1), 15-20. (Phytolacca)
- Chiu, S.Y.C., Dobberstein, R.H., Fong, H.H.S. & Farnsworth, N.R. (1982) J. Nat. Prod. 45(2), 229-30 via Chem. Abs. 97(16): 133415p. (Siparuna)
- Chow, S.Y., Chen, S.M., Yang, C.M. & Hsu, H. (1974) J. Formosan Med. Assoc. 73, 729. (Scoparia)

- Collier, W.A. et al. (1950) *Rev. Med. Vet. y Parasitol* 11, 11-30. *Cronica Naturae* 106, 73, 1954. (Clibadium)
- Conn, E.E. (1969) *J. Agric. Food Chem.* 17, 519-526. (Manihot)
- Costa de Aguiar, F.J. & Lins, L.J.C. (1958) *Anais Fac. Med. Univ. Recife, Brazil*, 193-7, 263-8. (Anacardium)
- Cuca-Suarez, L.E. et al. (1980) *Farmaco Ed. Sci.* 35(9), 796-800 via *Chem. Abs.* 93: 182824x. (Tephrosia)
- Da Silva, C.A.C. & Paiva, M.Q. (1970) *Anais Fac. Farm. Porto* 30, 5-18 *Cent. Estud. Farmacol., Inst. Alta, Cult, Porto, Portugal.* (Pentaclethra)
- Dahiya, J.S., Strange, R.N., Bilyard, K.G., Cooksey, C.J. & Garratt, P.J. (1984) *Phytochemistry* 23(4), 871-3. (Cajanus)
- Das, P.C. (1976) Oral Contraceptive (long-acting) PATENT *Brit.* 1, 445, 599 (Cl. A. 61 K35/78) Aug. 11. (Abrus)
- Das, R.P. (1980) *Indian J. Exp. Biol.* 18, 408-409. (Carica)
- Dasfur, J.F. (1977) "Medicinal Plants of India and Pakistan" D.B. Taraporvala Sons & Co. Private Ltd., India, p. 174. (Vernonia)
- Dasgupta, B. & Pandey, V.B. (1970) *Experientia* 26(5), 475-6 via *Chem. Abs.* 73(8): 38475d. (Costus)
- Delle, M.F. et al. (1967) *Ann. Ist. Super Sanita* 3(2), 190-2. (Strychnos)
- Delle, M.F., Cosio, E., Rossi-Cartioni, C., Carpi, A. & Marini-Bettolo, G.B. (1970) *Lloydia* 33(3), 279-83 via *Chem. Abs.* 74(18): 91114g. (Strychnos)
- Delle, M.F. et al. (1977) *Lloydia* 40(2), 201-8. (Lonchocarpus)
- Delle, M.F. et al. (1980) *J. Nat. Prod.* 43(4), 487-94 via *Chem. Abs.* 92: 200956y (Vismia)
- Del Pillar, A.P.M. (1971) *Ann. Inst. Farmacol. Espan.* 20, 299-387 via *Chem. Abs.* 79(5): 27286r. (Asclepias)
- Demagos, G.P., Baltus, W. & Hoefle, G. (1981) *Z. Naturforsch B.: Anorg. Chem., Org. Chem.*, 36B(9), 180-4 via *Chem. Abs.* 96(2): 11549u. (Morinda)
- Desai, V.B. & Sirsi, M. (1966) *Indian J. Pharm.* 28(6), 164-5. (Abrus)
- Deshpande, V.Y., Mendulkar, K.N. & Sadre, N.L. (1980) *J. Postgrad. Med. (Bombay)* 26, 167-180. (Azadirachta)
- Dhar, M.L., Dhar, M.M., Dhawan, B.N., Mehrotra, B.N. & Ray, C. (1968) *Indian J. Exptl. Biol.* 6, 232 (Anacardium, Vernonia)
- Dixit, S.N. & Tripathi, D. (1982) *Bokin Boai* 10(5), 197-9 via *Chem. Abs.* 97(9): 68956Z. (Allamanda)

- Dixit, V.P. et al. (1978) *Planta Med.* 34, 280-86. (*Momordica*)
- Dorsett, P.H., Kerstine, E.E. & Powers, L.J. (1975) *J. Pharm. Sci.* 64, 1073-75. (*Gossypium*)
- Dosseh, C. et al. (1980) *Plant. Med. Phytother.* 14(3), 136-42 via *Chem. Abs.* 94, 1981. (*Byrsonima*)
- Du, C.T., Wang, P.L. & Francis, F.J. (1975) *J. Food Sci.* 40(2), 417-18. (*Punica*)
- Durand, E. et al. (1962) *J. Pharm. & Pharmacol.* 14, 562-66. (*Artocarpus, Stachytarpheta*)
- Elliger, C.A. (1984) *Phytochemistry* 23(5), 1199-201. (*Gossypium*)
- El-Naggar, L., Beal, J.L., Parks, L.M., Salman, K.N., Patil, P. & Schwarting, A.E. (1978) *Lloydia* 41(1), 73-5. (*Euphorbia*)
- Emmanuel, J. & Ghosh, M.N. (1966) "Isolation and properties of alkaloid from seeds of Crotalaria" *Indian J. Pharm.* (*Crotalaria*)
- Espinel, D.G. & Guzman, P.I. (1971) *Rev. Colomb. Cienc. Quim. Farm.* 1(4), 95-118 via *Chem. Abs.* 76(16): 89994s. (*Erythroxyllum*)
- Evans, F.G. & Schmidt, R.J. (1980) *Planta Med.* 38(4), 289-316. (*Capsicum*)
- Falasca, A., Franceschi, C., Rossi, C.A. & Stirpe, F. (1980) *Biochem. Biophys. Acta* 632(1), 95-105 via *Chem. Abs.* 93: 202451d. (*Hura*)
- Fanshawe, D.B. (1947) *Carib. Forest.* 8(3), 171. (*Tetracera*)
- Fanshawe, D.B. (1950) *Forest Products of Guiana Part II - Minor Forest Products* pp. 44-56. Forest Dept. British Guiana. (*Simaba, Strychnos*)
- Farkas, A. (1967a) U.S. US 3,360,510 via *Chem. Abs.* 68(16): 72261n. (*Aloe*)
- Farkas, A. (1967b) *Australian* 273, 574 via *Chem. Abs.* 69(16): 61539d. (*Aloe*)
- Farkas, A. & Mayer, R.A. (1968) U.S. US 3,362,951 via *Chem. Abs.* 68(20): 89874n. (*Aloe*)
- Fellows, L.E. et al. (1977) *Phytochemistry* 16(12), 1957-9. (*Lonchocarpus*)
- Feng, P.C., Haynes, L.J. & Magnus, K.E. (1961) *Nature* 191, 1108. (*Persea*)
- Fodstad, O. et al. (1979) *J. Toxicol. Environ. Health* 5(6), 1073-84. (*Abrus*)
- Forgacs, P., Desconclois, Provost, Tiberghien & Touche (1980) *Phytochemistry* 19(6), 1251-2. (*Annona*)
- Francois, T. & Boquel, G. (1947) *Proc. 11th Intl. Congr. Pure & Applied Chem.*, London, 3, 85-92. (*Lonchocarpus*)

- Fugita, K., Yamada, Y., Azuma, K. & Hirozawa, S. (1978) *Antimicrob. Agents. Chemother.* 14, 132 via *Chem. Abs.* 89:141102. (Aloe)
- Funayama, S. & Hikino, H. (1979) *Chem. Pharm. Bull.* 27(1), 2865-8. (Diospyros)
- Gaind, K.M. et al. (1966) *Indian J. Pharm.* 28(9), 248-50. (Cassia)
- Gaind, K.M. & Gupta, R.L. (1972) *Indian J. Pharm.* 34(1), 20. (Bryophyllum, Kalanchoe)
- Gallo, P. & Valeri, H. (1954) *Rev. Med. Vet. y Parasitol.* 12, 119-24. (Cassia)
- Garg, H.S. & Bhakuni, D.S. (1984a) *Phytochemistry* 23(9), 2115-18. (Azadirachta)
- Garg, H.S. & Bhakuni, D.S. (1984b) *Phytochemistry* 23(10), 2383-5. (Azadirachta)
- Garg, S.C. & Kaseera, N.L. (1984) *Fitoterapia* 55(3), 131-6. (Anacardium)
- Gawienowski, A.M. & Gibbs, C.C. (1969) *Phytochemistry* 8(12), 2317-19. (Punica)
- Geevaratne, M., Rolfsen, W. & Bohlin, L. (1977) *Acta Pharm. Suec.* 14(1), 43-6, Sweden via *Chem. Abs.* 86(26): 195126b. (Strychnos)
- Geevaratne, M. & Verpoorte, R. (1978) *Planta Med.* 34(3), 264-73 via *Chem. Abs.* 90(14): 109841j. (Strychnos)
- Ghosal, S., Banerjee, P.K., Rathore, R.S. & Bhattacharya, S.K. (1972) via *Chem. Abs.* 77(18): 118146v. (Desmodium)
- Ghosal, S. & Dutta, S.K. (1971) *Phytochemistry* 10(1), 195-8. (Abrus)
- Ghosal, S. Srivastava, A.K., Srivastava, R.S., Chattopadhyay, S. & Mantora, M. (1981) *Planta Med.* 42(3), 279-83. (Justicia)
- Giesbrecht, A. et al. (1980) *Phytochemistry* 19 (2), 313-15 via *Chem. Abs.* 93: 150445h. (Simaba)
- Ginde, B.S., Hosangandi, B.D., Kudav, N.A., Nayak, K.W. & Kulkarni, A.B. (1970) *J. Chem. Soc.* 9, 1285-9. (Cassia)
- Githens, T.S. (1948) *Drug Plants of Africa*, Univ. of Pennsylvania Press, Philadelphia, Pa. (Aframomum)
- Glotzbach, B. & Rimpler, H. (1968) *Planta Med.* 16(1), 1-7 via *Chem. Abs.* 68(19): 84967k. (Passiflora)
- Goerler, K., Molls, W., Wagner, H. & Woo, W.S. (1980) *Ger. Offen.* DE2840453, 3rd April 1980, 15pp via *Chem. Abs.* 93(8): 80047d. (Phytolacca)
- Gonzalez, G., Antonio, B.F. & Jose, L. (1972) *An. Quim.* 68(7-8), 1057-9 via *Chem. Abs.* 75(5): 26513e. (Phytolacca)
- Graham, K. et al. (1980) *Can. J. Zool.* 58(11), 1955-8 via *Chem. Abs.* 94: 1981. (Bidens)

- Groeneveld, H.W. & Van der Made (1982) *Acta Bot. Neerl.* 31(1-2), 5-10 via Chem. Abs. 96(17), 139744w. (*Asclepias*)
- Grote, I.W. & Woods, M. (1951) *J. Am. Pharm. Assoc.* 40, 189-92. (*Cassia*)
- Grover, G.S. & Rao, J.T. (1977) *Parfum. Kosmet.* 58(11), 326-8 via Chem. Abs. 88(15): 99651q. (*Ocimum*)
- Gulta, N.C., Singh, B. & Bhakuni, D.S. (1969) *Phytochemistry* 8(4), 791-792. (*Abrus, Allamanda*)
- Gunatilaka, A.A.L., Sotheeswaran, S., Balasubramaniam, S., Chandrasekara, A.I. & Sriyani, H.T.B. (1980) *Planta Med.* 39(1), 66-72. (*Sida*)
- Gupta, A.K. et al. (1980) *Planta Med.* 38(2), 174-6. (*Bauhinia*)
- Gupta, D.R. & Ahmed, B. (1984) *Shoyakuguku Zasshi* 38(3), 213-5 via Chem. Abs. 102(16): 137638h. (*Phyllanthus*)
- Hallim, M.M. & Collins, R.P. (1970) *Bull. Torrey Bot. Club* 97(5), 247-9 via Chem. Abs. 74(13): 61581q. (*Passiflora*)
- Han, G.Q. & Tien, C. (1981) *Pei-Ching I, Hsueh Yuan Hseuh Pao* 13(2), 81-3 via Chem. Abs. 95: 1384741. (*Crotalaria*)
- Harborne, J.B. (1969) *Phytochemistry* 8(2), 419-23. (*Tetracera*)
- Haribaran, V. & Rangaswami, S. (1970) *Phytochemistry* 9(2), 409-14. (*Achyranthes*)
- Harten, A.M. Van (1970) *Econ. Bot.* 24(2), 208-216. (*Aframomum*)
- Hartwell, J.L. (1969) *Lloydia* 32, 153. (*Jatropha*)
- Hassan, W.E. Jr. & Reed, H.L. (1952) *J. Am. Pharm. Assoc.* 41, 298-300. (*Asclepias*)
- Hatfield, G.M. et. al. (1980) *J. Nat. Prod.* 43(1), 164-7. (*Clathrotropis*)
- Hauptmann, H. & Mazario, L. (1950) *J. Am. Chem. Soc.* 72, 1492-5. (*Cassia*)
- Haynes, L.M. (1969) "Local Names of Plants in Guyana, South America, a Linguistic and Ethnobotanical Study". M.A. Thesis, University of the West Indies, Pp. 544. (*Lonchocarpus, Microtea, Momordica*)
- Hecker, E., Lutz, D., Weber, J., Goerttler, K. & Morton, J.F. (1983) "Proceedings of the XIIIth Intl. Cancer Congress, 8-15 Sept. 1982 - Seattle Washington" New York via *Phytochemistry* 23(1), 129-32. (*Jatropha*)
- Heidlas, J., Lehr, M., Idstein, H. & Schreier, P. (1984) *J. Agric. Food. Chem.* 32(5), 1020-21. (*Carica*)
- Henson, J.B., Dollahite, J.W., Bridges, C.H. & Rao, R.R. (1965) *J. Amer. Vet. Med. Ass.* 147, 142. (*Cassia*)

- Hernandez, N.M.R., Perez, C.D. & Perez, O.C. (1977) *Revista Cubana de Farmacia* 11, 249-255. (Catharanthus)
- Herrera, C.L., Sison, F.M. & Ramos, E.V. (1978) *Philipp. J. Biol.* 7(2), 153-158. (Vernonia)
- Hesse, G. (1972) *Ger. Offen.* 2, 128, 447 via *Chem. Abs.* 78(10): 62189n. (Aloe)
- Hesse, G. & Ludwig, G. (1960) *Ann.* 632, 158. (Calotropis)
- Hikimo, H. et al. (1971) *Chem. Pharm. Bull.* 19(2), 438-9 via *Chem. Abs.* No 74, 1971. (Achyranthes)
- Hiller, K. & Friedrich, E. (1975) *Ger. (East)* DD114256, 20 Jul. 1975 via *Chem. Abs.* 88(12): 83220a. (Eryngium)
- Hoang, Q.D. (1979) *Duoc. Hoc.* 5, 15-17 via *Chem. Abs.* 93(6): 53857m. (Coleus/Plectranthus)
- Hociota, D. & Motocescu, R. (1982) "Intreprinderea de Medicament - Biofarm" via *Chem. Abs.* 97(22): 188320j. (Eucalyptus)
- Hodge, W.H. & Taylor, D. (1957) "The ethnobotany of the island Caribs of Dominica" *Webbia* 12(2): 513-644. (General)
- Hoechst, A.G. (1977) in *Ger. Appl.* 2640275, 8 Sep. 1976, via *Chem. Abs.* 89(4): 30750z. (Coleus/Plectranthus)
- Hoechst, A.G. (1981) In *Appl. Ger.* 76/245, 21 Jul. 1976, via *Chem. Abs.* 95(12): 103308x. (Coleus/Plectranthus)
- Hollerbach, A. et al. (1970) *Monatsh Chem.* 101(1), 141-56 *Org. Chem. Inst. Univ. Goettingen, Germany.* (Pentaclethra)
- Hoque, M.S., Ghani, A. & Rashid, H. (1976) *Bangladesh. Pharm. J.* 5(3), 13-15 via *Chem. Abs.* 86(7): 40191v. (Heliotropium)
- Hunt, S.E. & McKosker, P.J. (1970) *Brit. Vet. J.* 126(2), 74-81. (Lantana)
- Iwu, M.M. & Ohiri, I. (1980) *Can. J. Pharm. Sci.* 15(2), 39-42. (Lonchocarpus)
- Jacob, M., Soediro-Soetarno, Puech, A., Casadebaig-Lafon, J., Pellecuer, J. & Baylac, G. (1984) 13(2), 107-10 via *Chem. Abs.* 101(18): 157529f. (Strychnos)
- Jaffe, W.G. & Seidl, D. (1969) *Experientia* 25(8), 891-2 via *Chem. Abs.* 71: 079308. (Hura)
- Jasper, C. et al. (1960) *J. Am. Pharm. Assoc. Sci. Ed.* 49, 692-4. (Cymbopogon)
- Jawad, F.H. & Doorenbos, N.J. (1980) *Egypt. J. Pharm. Sci.* 18(4), 511-14 via *Chem. Abs.* 93: 128740d. (Stachytarpheta)
- Jewers, K., Coppen, J.J.W., Manchanda, A.H., Paisley, H.M. & Castillo, A.V. (1975) *Pahlavi Med. J.* 6(1), 52-62 via *Chem. Abs.* 82(19): 121741u. (Allamanda)

- Jewers, K., Manchanda, A.H. & Castillo, A.V. (1970) *Asian J. Pharm.* 2(1), 5-8, 10 via *Chem. Abs.* 76(16): 89992q. (*Allamanda*)
- Jin, J., Yu, Z. & Zhong, M. (1982) *Yaoxue Tongbao* 17(6), 365 via *Chem. Abs.* 97(10): 78760v. (*Justicia*)
- Jordan, P. (1967) *Farm. Glas.* 23(1), 3-8. (*Asclepias*)
- Joshi, R., Sharma, G.P., Jain, N.K. & Garg, B.D. (1981) *Univ. Indore Res. J. Sci.* 7(1), 47-9. (*Bauhinia*)
- Kania, W. et al. (1980) *Org. Geochem.* 2(2), 99-101. (*Lantana*)
- Kaphai, B.K., Kapur, S.K. & Sarin, Y.K. (1977) *Indian J. Pharm.* 39(4), 74-6 *Chem. Abs.* 87(25): 197253k. (*Costus*)
- Kapoor, V.K. & Singh, H. (1966) *Indian. J. Chem.* 4(10), 461. (*Achyranthes*)
- Karawya, M.S., Wahab, S.M.A., Hifanawy, M.S. & El Gohary, H.M. (1980) *Egypt J. Pharm. Sci.* 21(3-4), 309-316. (*Asclepias*)
- Kawashima, S. & Shinno, M. (1979) *Japan Kokai Tokkyo Koko* 79, 151113 via *Chem. Abs.* 93(2): 13075y. (*Aloe*)
- Kelecom, A. (1984) *Phytochemistry* 23(8), 1677-9. (*Coleus/Plectranthus*)
- Keogh, M.F. & O'Donovan, D.G. (1970) *J. Chem. Soc.* 13, 1792-7. (*Punica*)
- Khafagy, S.M., Abdel, S.N.A., Mohamed, Y.A. & Mahmoud, Z.F. (1977) *Pharmazie* 32(8-9), 534-5 via *Chem. Abs.* 88(2): 11791b. (*Euphorbia*)
- Khan, M.R. & Kishima, M.A. (1985) in "Naphthoquinones and triterpenoids from some *Diospyros* spp". Seminar/workshop on Medicinal and Aromatic Plants Research in Africa June 3-7, 1985, Harare, Zimbabwe. (*Diospyros*)
- Khohlkute, S.D., Mudgal, V. & Deshpandey, P.J. (1976) *Planta Med.* 29, 151-155. (*Hibiscus*)
- Khohlkute, S.D. & Udupa, K.N. (1976) *Planta Med.* 29, 321-329. (*Hibiscus*)
- Khosla, M.K., Puspangandan, P., Thappa, R.K. & Sobti, S.N. (1980) *Indian Perfum.* 24(3), 148-52 via *Chem. Abs.* 94: 99827a. (*Ocimum*)
- Khrishnaswamy, N.R. et al. (1966) *Curr. Sci.* 35(21), 542. (*Eclipta*)
- Kiang, A.K. et al. (1968) *Phytochemistry* 7(6), 1035-7. (*Mikania*)
- Kim, H.L., Camp, B.S. & Grigsby, R.D. (1971) *J. Agr. Food Chem.* 19(1), 198-9. (*Cassia*)
- Kimura, R. Matsui, S., Ito, S., Aimoto, T. & Murata, T. (1980) *Chem. Pharm. Bull.* 28(9), 2570-9 via *Chem. Abs.* 94(7): 41144j. (*Passiflora*)
- Kingsbury, J.M. (1964) "Poisonous Plants of United States and Canada" Prentice Hall, New York. (*Jatropha*)

- Kirtikar, K.R. & Basu, B.D. (1975) "Indian Medicinal Plants " New Connaught Place, Dehradun, India p. 1322. (Vernonia)
- Koiman, P. (1967) *Phytochemistry* 6(12), 1665-73. (Annona)
- Kraus, W. & Cramer, R. (1981a) *Justus Liebigs Am. Chem.* 181. (Azadirachta)
- Kraus, W. & Cramer, R. (1981b) *Chem. Ber.* 114, 2375. (Azadirachta)
- Kraus, W., Cramer, R. & Sawitzki, G. (1981) *Phytochemistry* 20, 117. (Azadirachta)
- Krayer, O. & Briggs, L.H. (1950) *Brit. J. Pharmacol.* 5, 118-24. (Solanum)
- Krukoff, B.A. & Smith, A.C. (1937) *Am. J. Bot.* 24(9): 573-587. (Lonchocarpus)
- Kubitzki, K. (1968) *Ber. Deut. Bot. Ges.* 81(6), 238-51. (Doliocarpus, Tetracera)
- Kugelman, M., Liu, W.C., Axelrod, M., McBride, T.J. & Rao, R.V. (1976) *Lloydia* 39(2-3), 125-8. (Heliotropium)
- Kupchan, S.M., Knox, J.R. & Kelesely, J.E. (1964) *Science* 146, 1685-6. (Asclepias)
- Kupchan, S.M., Sigel, C.W., Matz, J.M., Renauld, J.A.S., Haltiwanger, R.O. & Bryan, R.F. (1970) *J. Am. Chem. Soc.* 92, 4476. (Jatropha)
- Kupchan, S.M., Dessertine, A.L., Blaylock, B.T. & Bryan, R.F. (1974) *J. Org. Chem.* 39(17), 2477-2482. (Allamanda)
- Kupchan, S.M. & Streelman, D.R. (1976) *J. Org. Chem.* 41(21), 3481-82. (Quassia)
- Kupchan, S.M. et al. (1976) *J. Am. Chem. Soc.* 98(8), 2295-300. (Jatropha)
- Kurokawa, T. et al. (1970) *Tetrahedon Letters* 33, 2883-6. (Elephantopus)
- Laboratories Laroche Navarron (1968) *Fr. M.* 6114 via *Chem. Abs.* 76(26):158336t. (Syzygium)
- Lal, J., Chandra, S., Raviprakash, V. & Sabir, M. (1976) *Indian J. Physiol. Pharmacol.* 20, 64 via *Chem. Abs.* 85: 104621. (Momordica)
- Lal, J. & Gupta (1973) *Phytochemistry* 12(5), 1186. (Cassia)
- Leboeuf, M., Lagueut, C., Cave, A., Desconclois, J.F., Forgacs, P. & Jacquemin, H. (1981) *Planta Med.* 42, 37-44. (Annona)
- Lee, K.S. et. al. (1975) *J. Pharm. Sci.* 64(9), 1572-3. (Elephantopus)
- Lee, P.L., Swords, G. & Hunter, G.L.K. (1975) *J. Agric. Food. Chem.* 23(16), 1195-9 via *Chem. Abs.* 83(23): 191569p. (Tamarindus)
- Levie, R. (1982a) *Brit. Pat. Appl.* Jul 21, 1982, via *Chem. Abs.* 97(18): 150757u. (Capsicum)

- Levie, R. (1982b) Ger. Offen DE3101546A. Sept 82, via Chem. Abs. 97(20): 168949t. (Capsicum)
- Li, R., He, Y., Liu, H. & Wang, F. (1983) Beijing Yixueyuan Xuebao 15(1), 72-4 via Chem. Abs. 103(4): 27137g. (Euphorbia)
- Licastro, F. et al. (1979) Chem. Abs. 93: 180-238. (Momordica)
- Liebisch, H.W., Marekov, N. & Schuette, H.R. (1968) Z. Naturforsch 23(8), 1116-7 via Chem. Abs. 62(21): 84132e. (Punica)
- Lin, J.Y., Hou, M.J., & Chen, Y.C. (1978) Toxicon 16, 653-660 via Chem. Abs. 90(11): 83627s. (Momordica)
- Locksley, H.D., Fayez, M.B.E., Radwan, A.S., Chan, V.M., Cordell, G.A. & Wagner, H. (1982) Planta Med. 45(1), 20-2 via Chem. Abs. 97(8): 60872y. (Cymbopogon)
- London, I.E. (1950) J. Chem. Soc., 3431-40. (Quassia)
- Lotlikar, M.M. & Rao, M.R. (1966) Indian J. Pharm. 28, 129. (Momordica)
- Lotlikar, M.M. & Rao, M.R.R. (1967) Indian J. Pharm. 29, 223 via Chem. Abs. 58, 9537d. (Momordica)
- Lubowe, I.I. (1984) U.S. US 4,474,763 via Chem. Abs. 101: 216459h. (Aloe)
- Lutomski, J. & Malek, B. (1975b) Planta Med. 27(3), 222-5 via Chem. Abs. 83(20): 168367n. (Passiflora)
- Lutomski, J., Malek, B. & Rybacka, L. (1975a) Planta Med. 27(2), 112-21 via Chem. Abs. 83(6): 48112d. (Passiflora)
- Ma, Y., Liang, B., Hu, B. & Wu, X. (1982) Zhongcaoyao 13(5), 1-4 via Chem. Abs. 97(22): 188142c. (Citrus)
- Mabry, T.J., Baset, Z.A., Padolina, W.G. & Jones, S.B. Jr. (1975) Biochem. Syst. and Ecol. 2, 189. (Vernonia)
- Mahato, S.B., Das, M.C. & Sahu, N.P. (1981) Phytochemistry 20, 171-173. (Scoparia)
- Mahmood, V. & Thakur, R.S. (1980) Current Research on Medicinal and Aromatic Plants (Lucknow, India) II, 142-151. (Solanum)
- Maiti P.C., Mookherjee, S., Matthew, R. & Dan, S. (1979) Econ. Bot. 33(1), 75-77. (Solanum)
- Makamura, J. (1977) Ger. Offen. 2, 552, 630, July 2 1977. (Philodendron)
- Ma-Ma, N.K. & Khin, M.T. (1978) Toxicol. Appl. Pharmacol. 45, 723. (Eclipta)
- Manalram, R. (1980) Indian Drugs 17(6), 173-175. (Lantana)
- Manchand, P.S. & J.F. Blount (1980) J. Chem. Soc. (Perkin I), 264-268. (Leonotis)

- Maret, R.H. & Cobble, H.R. (1975) U.S. US3,878,197 via Chem. Abs. 83(6): 48187g. (Aloe)
- Marini-Bettolo, G.B. (1969) Bull. Soc. Pharm. 80, 5-22. (Strychnos)
- Marini-Bettolo, G.B. et al. (1978) Att. Accad. Naz. Lincei, Cl. Sci. Fis. Mat. Nat.; Rend. 6, 293-6. (Strychnos)
- Marini-Bettolo, G.B. et al. (1978) Att. Accad. Naz. Lincei, Cl. Sci. Fis. Mat. Nat.; Rend. 65(6), 302-6. (Vismia)
- Marion, L. (1960) in "The Alkaloids" ed. Manske, R.H.F. Vol. 6 Academic Press, New York p. 125. (Punica)
- Marsioli, A.J., Lectao, F.H. & De Paiva, C.J. (1975) Phytochemistry 4(8), 1882-3. (Hymenaea)
- Martin, R.T. (1970) Econ. Bot. 24, 422-438. (Erythroxyllum)
- Mathur, S.B., Chaves, S., Fermin, C.M. (1974) Int. Congr. Essent. Oils (pap) 6th 30, 6pp. (Clusia)
- Matsuura, I., Kawai, M., Nakashima, R. & Batsugan, Y. (1970) J. Chem. Soc. (C), 664-670. (Physalis)
- Mattock, A.R. (1967) J. Chem. Soc. 5, 329-31. (Heliotropium)
- Mattock, A.R., Schoental, R., Crowley, H.C. & Culvenor, C.C.J. (1961) J. Chem. Soc. 5, 329-31. (Heliotropium)
- Mayer, W., Goerner, A. & Andrae, K. (1977) Justus Liebigs Ann. Chem. (11-12), 1976-86. (Punica)
- Meade, N.A., Staat, R.H., Langley, S.D. & Doyle, R.J. (1980) Carbohydr. Res. 78(2), 349-63. (Persea)
- Mercer, H.D., Neal, F.C., Hines, J.A. & Edds, G.T. (1967) J. Amer. Vet. Med. Ass. 151, 735. (Cassia)
- Merck Index (1976) "An Encyclopaedia of Chemicals & Drugs" 9th edn. Merck Inc. New Jersey. (Abrus, Gossypium)
- Milhet, Y., Ferron, F. & Costes, C. (1978) Plantes medicinales et Phytotherapie, 12, 151-56. (Abrus)
- Mirvish, S.S., Salmasi, S., Lawson, T.A., Pour, P. & Sutherland, D. (1985) INCI, J. Natl. Cancer Inst. 74(6), 1283-90 via Chem. Abs. 103(9): 66527d. (Bidens)
- Mishima, H., Ogiso, A. & Kabayashi, S. (1977) Jpn. 75/145597, Dec 5 1975, via Chem. Abs. 88(6): 41661b. (Croton)
- Mishra, C.S. & Mishra, K. (1980) Planta Med. 38(2), 169-73 via Chem. Abs. 93(10): 101405m. (Eucalyptus)
- Misra, K. & Seshadri (1968) Phytochemistry 7(4), 641-5 via Chem. Abs. 69, 1968. (Psidium)

- Misra, T.N., Singh, R.S., Upadhyay, J. & Srivastava, R. (1984a) *Phytochemistry* 23(2), 415-17. (Vernonia)
- Misra, T.N., Singh, R.S., Upadhyay, J. & Srivastava, R. (1984b) *J. Nat. Prod.* 47(2), 368-72. (Vernonia)
- Misra, T.N., Singh, R.S., Upadhyay, J. & Srivastava, R. (1984c) *J. Nat. Prod.* 47(5), 865-7. (Vernonia)
- Moir, M. et al. (1973) *J. Chem. Soc. (Perkin Trans)* 1(3), 1352-7. (Cordia)
- Morita, N. et al. (1968) *Yakugaku Zasshi* 88(9), 12, 14-17. (Fagara)
- Morton, J.F. (1961) *Econ. Bot.* 15, 311-319. (Aloe)
- Morton, J.F. (1967) *Econ. Bot.* 21(2), 57-68. (Momordica)
- Morton, J.F. (1968) *Econ. Bot.* 22, 273-80. (Crescentia)
- Morton, J.F. (1981) *Atlas of Medicinal Plants of Middle America, Bahamas to Yucatan* (Thomas C.C. ed.) Illinois. (Cassia, Citrus, Jatropha, Persea)
- Muir, A.D. & Walker, J.R.L. (1979) *Chem. N.Z.* 43(3), 94-5. (Schefflera)
- Nair, A.G.R. & Subramaniam, S.S. (1974) *Curr. Sci.* 43(15), 480. (Ruellia)
- Nandi, R.C., Sarin, J.P.S. & Khanna, N.M. (1979) *Council of Sci. and Ind. Res. India IN 142042 via Chem. Abs.* 92(14): 112602d. (Tamarindus)
- Nazir, M., Riaz, H. & Bhatti, M.K. (1977) *Pak. J. Sci. Ind. Res.* 20(6), 380-3 via *Chem. Abs.* 91(2): 9402u. (Euphorbia)
- N-Dounga, M. et al. (1983) *Plant. Med. Phytother.* 17(2), 64-75 via *Biol. Abs.* 78041497; *Chem. Abs.* 100: 171592/21. (Bidens)
- Neidlein, R. & Koch, E. (1980) *Arch. Pharm.* 313(13), 199-207 via *Chem. Abs.* 211792x (Cecropia)
- Neubern de Toledo, T.A. (1949) *Anais Fac. Farm. e Odontol. Univ. Sao Paulo* 7, 105-13. (Cassia)
- Niranjan, G.S. & Gupta, P.C. (1973) *Planta Med.* 23(3), 298-300. (Cassia)
- Odebiyi, O.O. (1980) *Planta Med.* 38(2), 144-6. (Jatropha)
- Odebiyi, O.O. & Sofowora, E.A. (1975) *Proceedings of the 2nd Org. of African Unity/Scientific Technical Research Commission, Cairo, 1975, Nat. Pres. Lagos.* (Jatropha)
- Oelrichs, P.B. et al. (1980) *J. Nat. Prod.* 43(3), 414-16 via *Chem. Abs.* 93: 110578x (Wedelia)
- O'Hara, P.J., Pierce, K.R. & Read, W.K. (1969) *Amer. J. Vet. Res.* 30, 2173. (Cassia)

- O'Hara, P.J. et al. (1970) *Amer. J. Vet. Res.* 31(12), 2151-6. (Cassia)
- Okada, J. & Kawashima, Y. (1969) *Yakugaku Zasshi* 89(10), 1345-51. (Strychnos)
- Okonogi, T., Hattori, Z., Ogiro, A. & Mitsui, S. (1978) *Ger. Offen. DE 274996*, 11 May 1978, via *Chem. Abs.* 89(4): 30754d. (Diospyros)
- Okuda, T., Yoshida, T., Hatano, T. & Nitta, H. (1979) *Tennen Yuki Kagobutsu Toronkai Koen Yoshishu* 22, 323-30 via *Chem. Abs.* 93(7): 65938b. (Punica)
- Olaniyi, A.A. (1975) *Lloydia* 38, 361. (Momordica)
- Osman, S.F., Hart, S.F., Fitzpatrick, W. & Sinden, S. (1976) *Phytochemistry* 15, 1065-1067. (Solanum)
- Pai, B.R. et al. (1970) *Indian J. Chem.* 8(9), 851. (Allamanda)
- Pais, M. et al. (1968) *Bull. Soc. Chim.* 3, 1145-8. (Waltheria)
- Pakrashi, A. & Bhattacharya, N. (1977) *Indian J. Exptl. Biol.* 15, 856-858. (Achyranthes)
- Pakrashi, A. & Chakrabarti (1978) *Experientia* 34, 1377. (Aristolochia)
- Pakrashi, A. & Pakrashi, P. (1977) *Indian J. Exp. Biol.* 15, 256-259. (Aristolochia)
- Pakrashi, S.C., Dastidar, P.P.G., Chakrabarty, S. & Achari, B. (1980) *J. Org. Chem.* 45, 4765. (Aristolochia)
- Pan, B. & Pu, Q. (1981) *Zhongcayao* 12(6), 45 via *Chem. Abs.* 95(26): 225546u. (Cissus)
- Pareek, S.K. et al. (1980) *Indian Perfum.* 24(2), 93-100. (Ocimum)
- Parisheva, S.G. (1985) *U.S. Appl.* 591905, 22 Mar. 1984 via *Chem. Abs.* 102(24): 209471y. (Eugenia-Clove)
- Parkhurst, R.M. (1975) *Indian J. Chem.* 13(7), 757-8 via *Chem. Abs.* 83(11): 93896y. (Phytolacca)
- Parkhurst, R.M. & Stolzenberg, S.J. (1975) *U.S.* 3886272, 27 May 1975, 8 pp. via *Chem. Abs.* 83(22): 183387n. (Phytolacca)
- Pass, M.A. & Heath, T. (1977) *J. Comp. Pathol.* 87(2), 301-6. (Lantana)
- Pass, M.A. et al. (1979) *Toxicol. Appl. Pharmacol.* 51(3), 515-21. (Lantana)
- Pass, M.A. & Stewart, C. (1984) *JAT: J. Appl. Toxicol.* 4(5), 267-9 via *Chem. Abs.* 102:1597m. (Lantana)
- Patnaik, G.K. & Kohler, E. (1978) *Arzneim-Forsch/Drug Res.* 28(II), 1368-72. (Asclepias)
- Pavanasiviam, G. & Sultanbawa (1973) *Phytochemistry*, 12, 2725-6. (Artocarpus)

- Pereira, A.M. (1957-58) *Anais fac. farm. e Odontol. Univ. Sao Paulo* 15, 125-8. (Erythroxyllum)
- Persinos, G.J. (1972) PATENT U.S. 3,694,557 via *Chem. Abs.* 78(2): 7827u. (Croton)
- Petricic, J. & Radosevic, A. (1969) *Farm. Glas.* 25(3), 91-5 via *Chem. Abs.* 71(14): 64049w. (Smilax)
- Pettit, G.R. (1983) U.S. Appl. 348114, 11 Feb. 1982, via *Chem. Abs.* 99(12): 93724w. (Phyllanthus)
- Plotkin, G.M., Bendrick, C.J. & Wolf, G. (1985) U.S. US4,496,539A. 29 Jan., via *Chem. Abs.* 102(15): 125585a. (Ricinus)
- Plowman, T. (1969) *Econ. Bot.* 23, 97-122. (Philodendron)
- Plowman, T. (1979) *J. Psychedelic Drugs* 11, 103-117 via Novak, et al. (1984) *J. Ethnopharmacol.* 10, 261. (Erythoxylum)
- Polonsky, J. et al. (1980) *J. Nat. Prod.* 43(4), 503-9 via *Chem. Abs.* 93: 164357t. (Simaba)
- Pons, J.A. & Stevenson, D.S. (1943) *Pub. Health and Trop. Med.* 19, 196. (Momordica)
- Popp, F.D., Wefer, J.M., Rosen, G. & Noble, C.J. (1967) *J. Pharm. Sci.* 56, 7. (Eclipta)
- Prasad, P.N. & Ammal, E.K.J. (1983) *Curr. Sci.* 52(17), 825-6. (Costus)
- Preston (1977) in "A guide to the Medicinal Plants of Trinidad & Tobago". Seaforth, C.E. et al. 1983. Commonwealth Secretariat, p. 34. (Cajanus)
- Purseglove, J.W., Brown, E.G., Green, C.L. & Robbins, S.R.J. (1981) "Spices" Longman Group Ltd., Longman Ave, New York. 1,46-59 (Piper); 1,308-313 (Pimenta); 1,259-264 (Syzygium); 2,487-500 (Zingiber)
- Quadrat-I-Khuda, M., Ali, M.E. & Rahman, M.A. (1964) *Sci. Res. (Dacca, Pakistan)* 1(3), 57 via *Chem. Abs.* 66: 52949y (1966) & *Chem. Abs.* 60: 11047e. (Scoparia)
- Quercia, V., Turchello, L., Pierini, N., Cuozzo, V. & Percaccio, G. (1978) *J. Chromato gr.* 161, 396-402 via *Chem. Abs.* 90(8): 61301d. (Passiflora)
- Rai, P.R. (1978) *Curr. Sci.* 47(8), 271-72. (Cassia)
- Ramesh, P., Nair, A.G.R. & Subramaniam, S.S. (1979) *Curr. Sci.* 48(2), 67. (Scoparia)
- Rao, C., Krishna, V. & Ganapaty, S. (1983) *Fitoterapia* 54(6), 265-7. (Euphorbia)
- Rao, P.V. & Hahn, S.K. (1984) *J. Sci. Food Agric.* 35(4), 426-36. (Manihot)

- Read, G.W., Naguwa, G.S., Wiginton, T.J. & Lenney, J.F. (1964) *Lloydia* 27(4), 461. (Eucalyptus)
- Rheinhold, L., Harborne, J.B. & Swain, T. (eds.) (1978) "Progress in Phytochemistry" Vol 5, Pergamon Press, p. 299. (Catharanthus)
- Richards, J.F. (1968) *Cancer Chemother. Rep.* 52(4), 463-7. (Catharanthus)
- Richards, J.F. & Beer, C.T. (1964) *Lloydia* 27(4), 346-51. (Catharanthus)
- Ritchie, E.B. & Steele, J.W. (1966) *Planta Med.* 14(3) 247-60. (Guarea)
- Rivera, G. (1941) *Am. J. Pharm.* 13, 281. (Momordica)
- Rizvi, S. et al. (1971) *Phytochemistry* 10(3), 670 via *Chem. Abs.* 75, 1971. (Cassia)
- Roberts, M.F., Cromwell, B.T. & Webster, D.E. (1967) *Phytochemistry* 6(5), 711-17. (Punica)
- Robson, M.C., Heggers, J.P. & Hagstrom, W.J. (1982) *J. Burn. Care Rehab.* 3(3), 157-63. (Aloe)
- Rocha, A.B. & Benzani-Da Silva, J. (1969) *Rev. Fac. Farm. Odontol. Araraquara* 3(1), 65-72. (Petiveria)
- Rodway, J. (1885) "On some of the domestic medicines used in Guiana" *Timehri* 4, 294-300. (General)
- Roy, J. et al. (1976) *Arch. Biochim. Biophys.* 174(1), 359-61. (Abrus)
- Saenz, R. et al. (1970) *Rev. Biol. Trop.* 18(12), 129-38. (Quassia)
- Saifah, E., Kelley, C.J. & Leary, J.D. (1983) *J. Nat. Prod.* 46(13), 353-8 via *Chem. Abs.* 99(11): 85097d. (Cissus)
- Saito, M.L., De Oliveira, F. & Alvarenga, M.A. (1985) *Rev. & Farm. Bioquim. Univ. Sao Paulo* 21(1), 14-19 via *Chem. Abs.* 104(8): 56276c. (Cordia)
- Sankyo Co. Ltd. (1982) *Jpn Kokai Tokkyo Koko*, June 18, 1982. via *Chem. Abs.* 97(10): 78880j. (Hibiscus/Abelmoschus)
- Sankyo Co. Ltd. (1982) *Jpn* 81/23844, 20 Feb 1981, via *Chem. Abs.* 98(14): 113703y. (Croton)
- Sarg, T.M., Salam, N.A.A., El Domiaty, M. & Khafagy, S.M. (1981) *Sci. Pharm.* 49, 262-264. (Eclipta)
- Satoh, T. (1968) *Chiba Diagaku Fukai Kenkyusho Kokoku* 21, 127-32. (Solanum)
- Satyanarayana, K. (1969) *J. Indian. Chem. Soc.* 46, 765. (Scoparia)
- Schlatter, C. (1980) *Pure and Appl. Chem.* 52, 225-31. (Citrus)

- Sciancalepore, V. & Dorbessan, W. (1982) *Grasas Aceites (Seville)* 33(5), 273-5 via Chem. Abs. 98(6): 40399s. (Persea)
- Seaforth, C.E., Adams, C.D. & Sylvester, Y. (1983) "A guide to the Medicinal Plants of Trinidad and Tobago". Commonwealth Secretariat, London. (Clibadium, Petiveria, Pluchea)
- Segelman, F.H. (1975) Chem. Abs. 82, 135762p. (Petiveria)
- Segelman, F.P. & Segelman, A.B. (1975) *Lloydia* 38(6), 537. (Petiveria)
- Sengupta, A., Bhattacharya, D., Pal, G. & Sinha, N.K. (1984) *Arch. Biochem. Biophys.* 232(1), 17-25. (Calotropis)
- Sharma, O.P. et al. (1979) "Lantana - the hazardous ornamental shrub". FMR Parliament 14, 15. (Lantana)
- Sharma, O.P., Makkar, H.P.S., Pal, R.N. & Negi, S.S. (1980) *Toxicon* 18(4), 485-488. (Lantana)
- Sharma, S.C. & Chand, R. (1979) *Pharmazie* 34(12), 850-1 via Chem. Abs. 92: 1980. (Solanum)
- Sharma, V.N., Sogani, R.L. & Arora, R.B. (1960) *Ind. J. Med. Res.* 48(4), 471-477. (Momordica)
- Sharma, V. et al. (1982) *J. Chem. Soc. (Perkin)* 5, 1153-55. (Aristolochia)
- Shekhawat, P.S. & Prasada, R. (1971) *Sci. Cult.* 37(1), 40-1. (Ocimum)
- Shimada, T. & Funatsu, G. (1985) *Agric. Biol. Chem.* 49(4), 1175-80 via Chem. Abs. 102(25): 216596w. (Ricinus)
- Shoji, N., Iwasa, A., Takemoto, T., Ishida, Y. & Ohizumi, Y. (1982) *J. Pharm. Soc.* 71(10), 74-5. (Zingiber)
- Shrivastava, D.N. (1976) via Chem. Abs. 85: 2557. (Hibiscus)
- Siddiqui, B.S., et al. (1979) Studies in the steroidal constituents of the seeds of Abrus precatorius (scarlet variety). Postgrad. Inst. Chem., Univ. Karachi, Pakistan. (Abrus)
- Siddiqui, S., Siddiqui, B.S., Faizi, S. & Mahmood, T. (1984) *Phytochemistry* 23(12), 2899-901. (Azadirachta)
- Singh, B. & Rastogi, R.P. (1969) *Indian J. Chem.* 7, 1105. (Asclepias)
- Singh, J. et al. (1982) "Cultivation and Utilization of Medicinal Plants" Atal & Kapur eds. India pp. 284-85. (Catharanthus)
- Singh, P. & Philip, R. (1980) *Curr. Res. H. Medicinal & Aromatic Plants.* IV, 208-213. Lucknow, India. (Aristolochia)
- Smith, R.M. & Ali, S. (1979) *New Zealand J. Sci.* 22(2), 123-125. (Cassia)

- Soeda, M., Otomo, M., Ome, M. & Kawashima, K. (1966) *Nippon Saikingaku Zussai* 21, 609. (Aloe)
- Souza, M.P. et al. (1970) *Rev. Brasil. Farm.* 51(2), 67-70. (Byrsonima)
- Spencer, K.C. & Seigler, D.S. (1983) *J. Agric. Food Chem.* 31(4), 794-6. (Passiflora)
- Spencer, K.C. & Seigler, D.S. (1984) *Planta Med.* 50(4), 356-7 via Chem. Abs. 102(17): 146193m. (Passiflora)
- Spencer, K.C. & Seigler, D.S. (1984) *Am. J. Bot.* 71(10), 1444-7. (Carica)
- Spencer, K.C. & Seigler, D.S. (1985a) *Phytochemistry* 24(5), 981-6. (Passiflora)
- Spencer, K.C. & Seigler, D.S. (1985b) *Phytochemistry* 24(11), 2615-17. (Passiflora)
- Stinson, E.E., Osman, S.F., Heisler, E.G., Siciliano, J. & Bills, D.D. (1981) *J. Agric. Food Chem.* 29(4), 790-792. (Citrus)
- Subramaniam, S. et al. (1971) *Phytochemistry* 10(7), 1690. (Jatropha)
- Subramaniam, S.S. & Nair, A.G.R. (1972) *Indian J. Chem.* 10(4), 452 via Chem. Abs. 77(19): 123803m. (Azadirachta)
- Subramaniam, S.S., Nair, A.G.R. & Vendanthan, T.N.C. (1974) *Indian J. Pharm.* 36(1), 15-16 via Chem. Abs. 81(12): 68424u. (Stachytarpheta)
- Sucrow, W. (1966) *Chem. Ber.* 99, 2765. (Momordica)
- Suga, T. & Hirata, T. (1983) *Cosmetics & Toiletries* 98, 105-08. (Aloe)
- Sugathan, D. Santhakummari, G. (1979) *Indian J. Med. Res. via Chem. Abs.* 92: 152983k. (Cocos)
- Suong, N.N., Hanh, N.N. & Ha, T. (1984) *Tap. Chi. Hoa Hoc.* 22(1), 5-8 via Chem. Abs. 101: 69408k. (Catharanthus)
- Svanidze, N., Sanchez, A., Lanovenki, V., Soler, B., Rodriguez, P., Suarez, A. & Mendez, G. (1974) *Rev. Cubana Pharm.* 8(3), 309-14 via Chem. Abs. 82(14): 90005a. (Passiflora)
- Syamasundar, K.V., Singh, B., Thakur, R.S., Husain, A., Kiso, Y. & Hikino, H. (1985) *J. Ethnopharmacol.* 14(1), 41-4 via Chem. Abs. 104(5): 28822j. (Phyllanthus)
- Szejtli, J., Szente, L., Zilahy, T., Nagy, G., Galne, F.M. & Harangi, J. (1983) *Hung. Teljes Hu* 24895, 28, Apr. 1983, via Chem. Abs. 100(2): 12673f. (Eucalyptus)
- Takechi, M. & Tanaka, Y. (1981) *Planta Med.* 42(1), 69-74 via Chem. Abs. 95(8): 67850g. (Syzygium-Clove)
- Takeda Chem. Industries Ltd. (1981) *Japan Appl.* 79/97782 30 Jul. 1979, via Chem. Abs. 95(6): 49402h. (Eucalyptus)

- Takemoto, D.J., Dunford, C., Vaughn, D., Kramer, K., Powell, R.G. & Smith, A. (1982a) *Enzyme* 27, 179-188. (Momordica)
- Takemoto, D.J., Dunford, C. & McMurray, M. (1982b) *Toxicon*. 20, 593-599. (Momordica)
- Takemoto, D.J., Jilka, C., Rockenbach, S. & Hughes, J.V. (1983) *Prep. Biochem.* 13(4), 371-393. (Momordica)
- Takemoto, D.J., Kresie, R. & Vaughn, D. (1980) *Biochem. Biophys. Res. Commun.* 93, 332-339. (Momordica)
- Taylor, W.I. (1968) *Alkaloids II*, 99-124. (Catharanthus)
- Taylor, W.I. & Farnsworth, N.R. eds. (1975) "The Catharanthus Alkaloids" M. Decker I.C., New York. (Catharanthus)
- Tessier, A.M. & Paris, R.R. (1979) *Toxicol. Eur. Res.* 1, 5 via *Chem. Abs.* 92, 1980. (Maprounea)
- Thakur, S., Das, P., Itoh, T., Imai, K. & Matsumoto, T. (1984) *Phytochemistry* 23(9), 2085-7. (Calotropis)
- Thomson, R.H. (1971) in "Naturally Occuring Quinones" 2nd edn. Academic Press, London, pp. 399-400. (Aloe)
- Thuillier, Y. & Giono, B.P. (1971) *Ger. Offen.* 2,034,708 via *Chem. Abs.* 74(18), 91180a. (Anacardium)
- Thuillier, Y. & Giono, B.P. (1978) *Rom.* 63,588 via *Chem. Abs.* 92(10), 82416b. (Anacardium)
- Thuillier, Y. & Michel, P. (1972) *Ger. Offen.* 2,135,492 via *Chem. Abs.* 76(24), 144800c. (Anacardium)
- Tiwari, K.P., Masood, M. & Minocha, P.K. (1979) *J. Indian Chem. Soc.* 56(9), 944. (Allamanda)
- Tiwari, R.D. & Singh, J. (1977a) *Phytochemistry* 16(7), 1107-8. (Cassia)
- Tiwari, R.D. & Singh, J. (1977b) *Planta Med.* 32, 375-77. (Cassia)
- Torrance, S.J., Wiedhopf, R.M. & Cole, J.R. (1976) *J. Org. Chem.* 40, 1855. (Jatropha)
- Towers, G.H.N. et al. (1984) *Can* 1169767p 37pp. via *Chem. Abs.* 101: 146144/17. (Bidens)
- Tschesche, R. (1972) *Proc. R. Soc. London B*180, 187-202. (Asclepias)
- Tu, H. (1979) in *Appl.* 77/140786, 25 Nov. 1977, via *Chem. Abs.* 92(4), 28567p. (Eugenia-Clove)
- Tun, T. & Rin, Y. (1976) *Jpn. Kokai Jp.* 51/67714 June 11, 1976, via *Chem. Abs.* 85(26): 198159e. (Momordica)

- Tung, I. & Ming-Chang, L. (1960) The chemical components of the seed of *Abrus precatorius*. Hsueh Hui Tsa Chih, Taiwan. (*Abrus*)
- Tyler, V.E., Brady, L.R. & Robbers, J.E. (1981) "Pharmacognosy" Lea and Febiger, Philadelphia 8 edn. (*Carica*)
- Ulubelen, A. & Sankawa, U. (1979) Rev. Latinoan Quim. 10(4), 171-3 via Chem. Abs. 92(20): 169116c. (*Momordica*)
- Ulubelen, A., Topcu, G., Mabry, T.J., Dellamonica, G. & Chopin, J. (1982) J. Nat. Prod. 45(1), 103. (*Passiflora*)
- Upadhyay, R.R., Moizadeh, F., Bunakdari, A., Sedehi, F. & Samin, R. (1983) via Chem. Abs. 102(25): 216623c. (*Euphorbia*)
- Van Hoof, L., Vanden, B., Dirk, A., Hatfield, G.M. & Vlietinck, A.J. (1984) Planta Med. 50(6), 513-17 via Chem. Abs. 102(23): 197528g. (*Euphorbia*)
- Venkateswara-Rao, K. (1962) J. Indian Chem. Soc., 39, 749. (*Vernonia*)
- Verpoorte, R. (1978) Pharm. Weekbl. 113(48), 1249-61 via Chem. Abs. 90(14): 109840h. (*Strychnos*)
- Vichnewski, W. et al. (1977) Phytochemistry 16(12), 2028-9. (*Mikania*)
- Villaroya, M.L.E. & Bernal-Santos, R. (1976) Asian J. Pharm. 3(1), 10-12 & 17-24. (*Cassia*)
- Von Cuiv, J. et al. (1967) Nature 214 (5083), 35-9. (*Asclepias*)
- Von Reis Altschul, S. (1978) "Drugs and Foods from Little-known plants" Harvard Univ. Press, Cambridge, Massachusetts, p. 77. (*Siparuna*)
- Wagner, H., Iyengar, H.A., Seligmann, O., Horhammer, L. & Herz, W. (1972) Phytochemistry 11, 3036. (*Vernonia*)
- Wagner, H. & Proksch, A. (1985) In "Economic and Medicinal Plant Research" Vol I (Wagner, H., Hikino, H. & Farnsworth, N.R. eds.) Academic Press, New York, p. 128. (*Ricinus*)
- Waller, D.P., Zaneveld, L.J.D. & Farnsworth, N.R. (1985) In "Economic and Medicinal Plant Research" (Wagner, H., Hikino, H. & Farnsworth, N.R. eds.) Vol I, pp. 91-95. (*Gossypium*)
- Wang, X., Wang, Z. & Li, Y. (1981) Chih Wu Hsueh Pao 23(3), 222-7 via Chem. Abs 95(18): 156426r. (*Abelmoschus*)
- Waser, P.G. (1953) Helv. Physiol. et Pharmacol. Acta Suppl. 8, 84 pp. (*Strychnos*)
- Wasicky, R. (1967) Rev. Fac. Farm. Bioquim, Univ. Sao Paulo 5(2), 383-95. (*Tabebuia*)

- Wat, C.K., Biswas, R.K., Graham, E.A., Bohm, L. & Towers, G.H.N. (1979) *J. Nat. Prod.* 42(1), 103-111. (Bidens)
- Watt, J.M. & Breyer-Brandwijk, M.G. (1962) "The Medicinal and Poisonous Plants of Southern and Eastern Africa", 2nd edn. E.E. Livingston Ltd., London. (Anacardium, Artocarpus, Bidens, Jatropha, Psidium)
- Welter, A. & Delaude, C. (1975) *Bull. Soc. Sci. Luge* 44(9-10), 687-9. (Pentaclethra)
- White, E.P. (1969) *New Zealand J. Sci.* 12(1), 171-4 via *Chem. Abs.* 70(20): 90708j. (Tamarindus)
- Wiedhopf, R.M., Turnbull, R.M. & Cole, J.R. (1973) *J. Pharm. Sci.* 62, 1206. (Jatropha)
- Williams, A.H. (1967) *Phytochemistry* 6(11), 1584-8. (Smilax)
- Williams, C.A. et al. (1977) *Biochem. Syst. Ecol.* 5(3), 221-9. (Renealmia)
- Williams, R.T. (1967) "Biochemistry of Phenolic Compounds" J.B. Harborne ed. Academic Press, London. p. 237. (Vernonia)
- Wong, W. (1976) *Econ. Bot.* 30, 103-42. (Aframomum, Andira)
- Xu, S.B. et al. (1981) via *Chem. Abs.* 94. (Desmodium)
- Yamamoto, T., Iwasaki, Y., Konno, H. & Kudo, H. (1985) *J. Neurol. Sci.* 70(3), 327-37. (Ricinus)
- Yang, T.H. & Chi-Ming, C. (1972) *J. Chin. Chem. Soc. (Taipei)* 19, 149. (Annona)
- Yartzoff, A.G. (1970) In *Progress in Phytochemistry* "Tetrahydrogossypibetiline and gossypibetiline terpenes from Jatropha gossypifolia" 210 pp. (Jatropha)
- Yip, T.T., Fung, S.C. & Kong, Y.C., Akiyama, T. & Sankawa, U. (1980) Abstracts of 4th Asian Symposium on Medicinal Plants and Spices, Bangkok, Thailand, Sept 15-19, p. 63. (Achyranthes)
- Zebruk, R. & Rosito, C. (1971) *Phytochemistry* 10(5), 1166-7. (Guarea)

GLOSSARY OF TECHNICAL TERMS

(a)	Terms used in the Botanical Descriptions
accrescent	increasing in size with age, especially of the calyx after flowering
achene	a small dry single-seeded fruit, not splitting when ripe, e.g. a Sunflower 'seed'
acuminate	of a leaf-margin concave-sided behind the tip, e.g. leaf of <u>Capsicum</u>
acute	sharply pointed
adnate	of parts, usually of different kinds, attached along their whole length
adventitious	of roots, or rarely of buds, arising abnormally away from their usual location, but common for roots developed from stems in monocots
alternate	of leaves arranged successively in different positions as distinct from opposite or whorled
androgynophore	the floral axis elongated and bearing stamens beneath a stalked ovary
annual	plants having a life-cycle completed within one year, often used loosely for a short-lived plant propagating only by seed
annular	in a ring; of organs disposed in a circle
anther	the part of the stamen which contains the pollen
anthesis	the (time of) opening of a flower
antrorse	directed forward; opposite of retrorse
apiculate	with a short sharp point
appressed	of parts lying close by their surfaces
arborescent	of tree-like form
areole	a small area distinct on a larger surface; a portion of leaf-blade encircled by veins; location of spine-cluster in cacti
aril	an appendage, usually fleshy or leathery, derived from the seed-stalk and partly or wholly enclosing the seed
articulated	jointed, separating cleanly at a certain position
ascending	of branches or veins directed forward and outwards
attenuate	narrowed or tapered

awn, awned	referring to a fine bristle
axil	the angle between a leaf and the stem from which it arises on the upper side; axillary - positioned in or arising from the axil
axis	the central structure to which radially or spirally arranged organs are attached
baccate	referring to a berry, or provided with berries
barb	a backwardly directed bristle or spine
barbellate	with small barbs
bark	the outer secondary protective tissues of stem or root
berry	a soft fruit with several seeds embedded in pulp, e.g. tomato; the avocado is a single-seeded berry
biennial	referring to a life-cycle of two years
bifid	divided into two
bilobed	comprising two lobes
bipinnate	of a compound leaf with divisions of the second order of branching
bisexual	having both male and female reproductive parts in the same flower (or inflorescence) = hermaphrodite
biterminate	of a compound leaf-blade divided into threes twice
bole	the main trunk of a tree
brackish	of salinity in low concentrations
bract	a leaf forming part of an inflorescence
bracteole	a bract closely associated with a single flower
bulb	a storage and perennating organ comprising a short stem bearing several appressed overlapping fleshy leaf-bases, e.g. onion
bulbil	a plantlet formed as a unit of vegetative multiplication from an axil, inflorescence, leaf-surface or leaf-margin
buttress	the knee-like or flanged growth of the trunk or roots of some trees
caducous	soon falling off
calcarate	with a spur
calyculus	bracteoles resembling a small external calyx

calyx	the outer floral envelope, consisting of, usually green, sepals
campanulate	bell-shaped
capitate	having a head, an expanded tip, or a capitulum
capitulum	the flower-head of Compositae, comprising several florets surrounded by an involucre of bracts
capsule	a fruit derived from an ovary of two or more carpels, opening when ripe by slits or pores or splitting by valves to release the seeds, e.g. <u>Gossypium</u> (Cotton)
carpel	the unit of construction of the female part of a flower; the ovary may comprise one or more carpels
caruncle	an appendage to a seed formed as an outgrowth near the point of attachment, e.g. <u>Ricinus</u> (Castor Oil); carunculate (adj.)
catkin	a spike comprising small, usually unisexual, apetalous flowers, often pendulous and sometimes deciduous
caudate	of a leaf-tip drawn out into a tail
censer	a form of capsule which sheds its seeds as it swings to and fro
ciliate	with a fringe of uniform hairs along the margin
circumscissile	a form of capsule of which the top is shed like a lid from a pot
claw	the slender base (stalk) of a broad-bladed petal
coccus	a single seed-bearing segment of a splitting fruit
coma	a tuft of hairs at one end of a seed, e.g. <u>Asclepias</u> (Red Head)
Compositae (or Asteraceae)	the Daisy family
compound	an organ of several similar parts, united or associated in a definite way; a compound (as opposed to a simple) leaf has several or many leaflets; a compound ovary comprises two or more carpels
connate	united; often used for parts of the same kind joined by their edges
contorted	with parts of a set, i.e. sepals or petals in a flowerbud, overlapping in the same direction, and sometimes also twisted
convolute	when one part is wholly rolled up in another
coppice	the new growth arising from the stools of cut trees
cordate	of a leaf-blade with a more or less deep notch at the base
cordulate	as cordate with a very small notch

corky	of bark of a soft and spongy kind
corm	a storage and perennating organ formed from a shortened and thickened stem, e.g. <u>Colocasia</u> (Eddoe); cormel, a small corm
corolla	the inner floral envelope, consisting of, usually thin, showy, white or coloured, petals
corona	a circle of appendages within the flower between the corolla and the stamens, e.g. <u>Passiflora</u> (Passion flower), <u>Nerium</u> (Oleander) and <u>Asclepias</u> (Red Head)
corymb	a flat-topped inflorescence in which flowers on stalks of different lengths are positioned more or less in the same plane; corymbose (adj.)
crenate	of a leaf-margin with blunt or rounded teeth; crenulate - with very small such teeth or crenation
crownshaft	the sheathing bases of palm leaves wrapped around each other in a single smooth column
crustaceous	of fragile or brittle texture
culm	referring to the erect leafy shoot of a grass or sedge
cuneate	wedge-shaped
cupule	a small cup, as of the calyx partly enclosing some fruits or the pappus crowning some achenes in Asteraceae
cuspid	of a (leaf-) tip with an abrupt broad-based dagger-like point; cuspidate (adj.)
cyathium	specifically the cuplike inflorescence of <u>Euphorbia</u> , with marginal glands, containing several male flowers and a single pistillate one
cyme	an inflorescence in which each subsequent branch is terminated directly by a flower, the oldest flower lying in a central position and the development being centrifugal; or cymose; cymule - a cluster of flowers of similar determinate pattern
cystolith	inorganic inclusions in the cells of epidermal tissues of certain families such as Acanthaceae, Moraceae, Rubiaceae and Urticaceae
deciduous	of the recurrent, usually seasonal, shedding of leaves
decompound	several times divided or compound
decumbent	of shoots or branches lying along the ground
deflexed	bent downwards or backwards

dehiscent	opening spontaneously, usually as a function of drying out, e.g. capsules or anthers
deltate	shaped like an equilateral triangle - the Greek letter delta
dentate	of a leaf-margin with triangular pointed, usually more or less equal-sided teeth
determinate	ending abruptly, as of the branches in a cymose inflorescence
dichasial	a form of branching in which two subequal lateral shoots develop below a flower which terminates the apex; a type of cymose branching in which bilateral symmetry is retained
digitate	of a compound leaf in which the leaflets diverge from the same point
dioecious	of a species of plant having unisexual flowers, the female on one individual and the male on another, e.g. <u>Carica</u> (Papaw)
disc or disk	the central tubular, usually hermaphrodite, florets in a capitulum of Asteraceae; a broad ring of tissue in some flowers from which stamens or glands develop; discoid (adj.)
distal	the part of an organ farthest from its point of attachment; the opposite of proximal
distichous	disposed in two vertical ranks
divaricate	divergent; widely forked
drupe	a soft fruit containing a single hard 'stone', the 'stone' being part of the fruit-coat; if derived from one carpel, the 'stone' contains a single kernel, the seed, e.g. <u>Mangifera</u> (Mango); if comprising several carpels, the single stone may have several chambers with a seed or seeds in each, e.g. <u>Spondias</u> (Hog Plum); drupaceous (adj.)
ellipsoid	a three-dimensional body of elliptical outline
elliptical, elliptic	of a flat organ, such as a leaf-blade, of elliptical outline
emarginate	notched at the tip
endemic	of a group of plants, or a species, known to occur only within a certain circumscribed area
endocarp	the inner layer of fruit-coat (pericarp); when hardened the 'stone' of a plum or cherry or the 'nut' of coconut
ensiform	shaped like the blade of a sword
entire	of a flat organ, i.e. leaf or petal, with a smooth margin uninterrupted by teeth or lobes

epicalyx	an involucre of bracteoles below a flower resembling an extra calyx, e.g. <u>Gossypium</u> (Cotton) or <u>Passiflora</u> (Passion flower)
epipetalous	borne on the petals, usually referring to stamens
epiphyte	a plant which grows on other plants, not parasitically
evergreen	of a plant which never loses all its leaves at one time
exocarp	the outer layer of fruit-coat, the 'skin'
exserted	protruded, as of stamens beyond the mouth of the corolla
falcate	sickle-shaped
fascicled	gathered into a bundle; fasciculate (alternative)
fern	a kind of flowerless plant with well developed stems, roots and leaves, reproducing by spores rather than by seeds
filament	the stalk of a stamen supporting the anther
fimbriate	a margin divided into short tapering twisted lobes or hair-like outgrowths
flabellate	fan-shaped
floret	a small flower comprising with others the specialised compound inflorescence of such as the capitulum in Compositae or the spikelet in grasses or sedges
flower	a reproductive organ comprising stamens or pistil or both with some protective envelope
flower-head	a compound inflorescence of several or many closely associated flowers; cf. capitulum and floret
-foliolate	a suffix referring to leaflets
follicle	a pod-like fruit derived from a single carpel and opening by one suture only
frond	a term usually applied to the leaf of a fern, sometimes to those of palms
fruit	the product of a female or hermaphrodite flower, normally after fertilisation and accompanying the formation and maturation of seeds
fusiform	spindle-shaped, tapering to both ends
girth	the distance around, circumference
glabrescent	becoming glabrous

glabrous	without hairs or other superficial appendages
gland	a secretory structure either superficial or embedded in tissue; a warty or fleshy outgrowth with or without a stalk and not necessarily performing a secreting role
glaucous	of a surface with a thin waxy, often pale or bluish, bloom
glomerule	a cluster of partial inflorescences
glume	one of the usually two outer envelope-scales of a grass spikelet, or a similar unit in sedges
gynostegium	the crown-like association of stamens and corona in Asclepiadaceae
herb	a plant with a soft non-woody impermanent stem
hermaphrodite	of a reproductive organ having the characters of both sexes; a flower with both stamens and pistils
hirsute	hairy with long distinct rather coarse hairs
hispid	referring to a covering of bristly hairs
hypanthium	a tubular elongation of the outer floral envelope raising the calyx
imbricate	overlapping as the tiles on a roof
imparipinnate	pinnate with an odd terminal leaflet
indehiscent	not splitting open at maturity, cf. dehiscent
indumentum	a covering of any kind, scales, hairs, etc.
inflorescence	the part of a plant bearing flowers, and the way the flowers are arranged
internode	the portion of stem between adjacent nodes, q.v.
interpetiolar	the position on the stem between the points of attachment of petioles at the same node, usually with reference to stipules
involucral bracts	the leafy units of the involucre in Asteraceae
involucre	a cup-like structure usually protective of a flower or flowers in an inflorescence, cf. capitulum, epicalyx
irregular	lacking in symmetry; a flower with bilateral symmetry is irregular, but one with radial symmetry is regular
keel	the two united anterior petals of a papilionaceous corolla; the midrib of a leaf sharply projecting on the lower side

kernel	the seed in a 'stone' fruit, cf. drupe
labellum	the unique midline petal in an orchid or other similar structure, for example, the enlarged staminode in Zingiberaceae
lacerate	torn or irregularly divided
lamina	the expanded part or blade of a leaf
lanceolate	a shape (e.g. leaf-blade) about four or five times as long as broad and broader in the proximal half
latex	the milky exudate of <u>Euphorbia</u> or other plant when the tissues are cut or broken
leaf	the expanded outgrowth of a stem, a usually thin, dorsiventral organ with green colour and photosynthetic function
leaf-axil	see axil
leaf-blade	the lamina or broad flat part of the leaf subtended by the petiole
leaflet	the laminar unit of a compound leaf
lemma	the principal flower-bearing scale within the glumes in a grass spikelet
lenticel	a secondary breathing pore in the bark
lepidote	beset with small scurfy scales
ligule	in the family Compositae, the outwardly directed corolla-limb of a ray-floret
limb	the distal, usually lobed, part of a tubular corolla or calyx
linear	long and narrow with parallel margins
lint	the mass of soft hairs developed on the seed-coat of Cotton
lip	the prominent upper or lower midlobe of the calyx or corolla of an irregular flower
lobe	the projecting portion of an indented surface or a cleft margin; opposite of sinus
loculus	the cavity containing the seeds in an ovary or fruit, or the pollen in an anther; -locular (adj.)
-merous	referring to the parts of an organ; 5-merous or pentamerous means of five parts
midrib	the central, usually thickened, vein of a leaf or leaflet blade

monoecious	of a species of plant having unisexual flowers borne on the same individual, e.g. <u>Ricinus</u> (Castor Oil) or <u>Zea</u> (Sweet Corn)
mucronate	ending abruptly in a short stiff point
nerve	the principal veins of a leaf diverging directly from the midrib
node	the point on a stem where a leaf, scale-leaf, bract or bracteole is or has been borne; also the site of branch origins and sometimes of roots; nodose (adj.)
nut	a dry indehiscent fruit with a hard coat
nutlet	a small dry one-seeded indehiscent fruit with a hard fruit-coat
ob-	a prefix used to indicate an inverse or opposite condition
oblanceolate	of lanceolate shape but reversed, i.e. broader in the distal half
oblong	of a (leaf) shape two or more times as long as broad with more or less parallel sides and usually rather blunt apex and base
obovate	of ovate shape reversed
obtuse	blunt, rounded or wide-angled
operculum	a lid or inverted cup, as in <u>Eucalyptus</u> calyx, or some kinds of capsule; see circumscissile
opposite	of leaves inserted two at the same node on opposite sides of the stem, also of branches; of organs positioned on the same radius, as of stamens in line with petals rather than alternating with them
orbicular	circular or nearly so in outline
ovary	that (female) part of the flower in which seeds are formed and which will become part of the fruit
ovate	a shape of the outline of an egg, up to about twice as long as broad and broader in the proximal half
ovoid	a three-dimensional body of ovate outline
palmate	lobed like a hand with spread fingers
panicle	a many-flowered inflorescence in which the main axis is branched, each branch bearing several flowers or being again branched; paniculate (adj.)
pappus	the scaly, bristly or hairy appendages surmounting the fruit (achene) of Compositae and serving as aids to dispersal
parasite	an organism living at the expense of another

paripinnate	pinnate with an equal number of leaflets in pairs
pectinate	cut into segments like the teeth of a comb
pedicel	the stalk of an individual flower in an inflorescence
peduncle	the stalk of a solitary flower or the main (unbranched) stalk of an inflorescence or of a distinct partial inflorescence
pellucid	translucent
peltate	of a leaf where the stalk is attached to the undersurface rather than at the margin, e.g. <u>Colocasia</u> (Eddoe)
pentamerous	with parts in fives
perennial	plants having a life-span of indefinite duration greater than two years; all woody plants and those herbaceous ones capable of perpetuating themselves by new growth
perfect	a flower which is hermaphrodite, or an organ where all normal parts are present
perianth	the floral envelopes, calyx or corolla, or both
petal	the unit of the corolla, q.v.
petiole	the stalk of a leaf
pilose	having soft and distinct hairs
pinna	a primary division of a compound leaf where these are arranged along each side of a common rachis; pinnate (adj). A pinna may be a simple leaflet or it may be again divided, see bipinnate, tripinnate, etc.
pistil	the female organ of a flower, comprising an ovary containing ovules which after fertilisation become seeds, usually a style and stigma, and becoming all or part of a fruit; pistillate (adj.)
plaited	a form of folding lengthwise creating W or M sections or multiples thereof
-plinerved	referring to the nerves of a leaf which arise from the midrib above the base
pod	the typical fruit of leguminous plants, a capsule dehiscing along two sutures into two valves, sometimes explosively. Each valve bears a row of seeds positioned alternately with respect to the other valve
polygamo-dioecious	with unisexual flowers on different individual plants of the same species and some hermaphrodite flowers as well
polygamous	of a species which has male, female and hermaphrodite flowers, on the same or different individual plants

prickle	a pungent outgrowth of the epidermis or bark
prominulous	standing out a little way
proximal	the part of an organ nearest to its point of attachment; the opposite of distal
puberulous	covered with very short soft hairs; puberulent (alternative)
pubescent	covered with soft hairs
pulvinus	a swelling, usually at the base of a petiole, whereby leaf movements may be effected
punctate	marked with dots; punctulate (diminutive)
pyramidal	shaped like a pyramid
pyrene	a nutlet when several are formed by the same flower and comprise the same fruit
pyriform	pear-shaped
quadripinnate	of a compound leaf divided to the fourth order of branching
raceme	a simple, often elongated, inflorescence in which each flower is stalked and the first to open is at the base; the development of the axis is indeterminate, of the flowers centripetal, cf. cyme; racemose (adj.)
rachis	the main axis of a compound leaf, the continuation of the petiole to which pinnae or leaflets are attached; the main axis of an inflorescence (sometimes spelt <u>rhachis</u>)
raphe	an appendage to the seed
ray	of the marginal florets of a capitulum of a member of Compositae where these have ligulate corollas, hence ray-florets; cf. disk; of some kinds of inflorescence with long spreading branches
receptacle	the expanded top of the pedicel to which the flower-parts sepals, petals, stamens and ovary are attached; the modified top of the peduncle in Compositae to which involucre bracts, receptacle-scales and florets are attached in a flower-like inflorescence (capitulum) is also referred to as receptacle (or torus)
receptacle-scale	a small chaffy bracteole accompanying the florets in the capitulum of some Compositae
reduplicate	folded backwards (inverted V), e.g. the leaflet of <u>Cocos</u> (Coconut palm) in section
regular	uniform or symmetrical in shape or structure; of a flower with radial symmetry

reniform	kidney-shaped
repand	with an uneven margin, slightly less indented than sinuous
reticulate	netted or net-veined
retorse	directed backwards or downwards like a barb
retuse	with a shallow notch in a rounded apex
revolute	rolled back from the margin or tip
rhachis	see rachis
rhizome	an underground often horizontal stem producing erect leafy shoots and roots, organised into nodes and internodes and thus distinguishable from a root
rhombic, rhomboid	approximating to the shape of a playing-card diamond
rootstock	rhizome; sometimes loosely applied to the combination of stems and roots at ground-level
rosette	of leaves arranged in a radiating pattern at or near the base of the stem
rotate	wheel-shaped; applied to a regular lobed corolla with a very short tube
rugose	rough-textured surface, usually in the form of transverse or parallel wrinkles
saccate	bag-shaped
sagittate	shaped like the barbed head of an arrow with acute lobes at the base
samara	an indehiscent winged fruit or carpel
sap	fluid exuding from broken leaves or cut branches or roots from whatever internal source whether latex tubes, glands or conducting elements
sapling	a young tree
sarcotesta	a fleshy outer seed-coat
savanna	a tropical or subtropical grassland, sometimes with shrubs and scattered trees, experiencing seasonal drought
scabrous	rough to the touch; scabrid (alternative)
scandent	a general term for climbing by whatever means

scape	a leafless unbranched flower-stalk (peduncle), e.g. <u>Hymenocallis</u> (Spider Lily) or <u>Allium</u> (Onion); scapose (adj.)
scorpid	with the main axis coiled like the tail of a scorpion
seed	the main feature of multiplication and perpetuation of species of flowering plants is seed production; seeds are formed in the ovary of the flower after pollination and fertilization; they mature in and are dispersed by fruits
sepal	the unit of the calyx, q.v.
sericeous	with close-pressed soft straight hairs; silky
serrate	of a leaf-margin toothed like a saw
serrulate	serrate with very small teeth
sessile	without a stalk
seta	a stiff hair or bristle; setae (pl.); setose (adj.)
sheath	a broad clasping or enclosing structure, usually applied to the proximal part of grass leaves and to protective bracts or bracteoles, cf. also spathe
shoot	the growing branch with stem and leaves
shrub	a woody plant normally not more than 5m tall and branching at or very near ground level
simple	undivided, the opposite of compound; of a leaf comprising only one blade, or of an ovary or fruit derived from only one carpel, e.g. a legume pod
sinuate	of a flat structure (leaf-margin) with a wavy edge
sinus	the recessed portion of an indented surface or a cleft margin; opposite of lobe
slash	the bark-cut made by a forester to determine colour and texture of underbark, nature of latex, odour, etc. of a tree
spadix	a fleshy inflorescence axis with numerous compact sessile or short-stalked flowers
spathe	a specialised, often enlarged, leaf or bract enclosing an inflorescence or flower-cluster, cf. also sheath; spathaceous (adj.)
spathulate	spoon-shaped with a long-tapering base; spatulate (alternative)
spicate	arranged in a spike
spike	as of a raceme but the flowers are not stalked
spikelet	the specialised partial inflorescence of grasses and sedges

spine	a hardened woody sharp-pointed outgrowth, often derived from a branch, stipule or petiole
spiral	in reference to the insertion of parts on an axis, e.g. carpels in a primitive flower, florets in a capitulum or leaves in <u>Agave</u> (Century Plant); leaves in a loose spiral arrangement are often referred to as alternate
sporangium	the minute capsule-like organ which produces and discharges spores in ferns
stamen	the male organ in a flower, producing pollen; staminate (adj.)
staminode	a sterile or abortive stamen
standard	the posterior petal of a papilionaceous corolla
stellate	of hairs with radiating branches
stem	the main axis of a plant above ground from which all other organs arise
stigma	the structure on which pollen is received in the female part of the flower
stipe	the petiole of a fern leaf; the stalk of an ovary or carpel; stipitate (adj.)
stipule	an appendage to the leaf at or near its base or attached at the same node, usually itself leaf-like; stipular or stipulate (adj.)
stolon	a stem branch spreading and rooting across the surface of the ground; stoloniferous (adj.)
stone	the hard inner layer of an otherwise soft fruit containing the seed; cf. drupe
striate	marked with parallel grooves and ridges
strigillose	beset with very short stiff pointed hairs or bristles
sub-	a prefix meaning 'rather' or 'almost'
subulate	awl-shaped
succulent	juicy
suture	the line of junction in a carpel wall, often the same as a line of dehiscence
synonym	a superceded name (abbr. syn.)
taproot	the main downward growing root derived from the radicle after germination and often persistent

tendrill	a slender outgrowth of a climbing plant serving to form an attachment to a support usually by curling around it
tepal	the divisions of the perianth, particularly in monocots of both calyx and corolla homologues when these are very alike
ternate	in threes
terete	circular in transverse section
testa	the outer coat of the seed
tetramerous	of parts in fours
thorn	a short branch forming a spine, but sometimes an alternative for prickle, particularly when curved like those of roses
thyrsse	a mixed inflorescence with the main axis indeterminate and the lateral branches cymose
tomentose	densely covered with hairs; tomentellous (diminutive)
torulose	a cylindrical structure, for example a pod, with alternate constrictions and swellings
tree	a woody plant of indefinite height with a single main stem (trunk)
trifoliolate	with three leaflets
tripinnate	of a compound leaf divided to the third order of branching
truncate	cut off abruptly
tuber	a thickened subterranean branch of stem or root; tuberous (adj.)
tubercle	a small outgrowth or swelling; tuberculate (adj.)
twig	a shoot or small branch of a shrub or tree
umbel	an inflorescence in which all the flower-stalks arise from the same point
umbelliform	resembling an umbel
undershrub	a small shrub or herb with some woody characteristics
undulate	of a wavy surface
unilocular	of an organ with a single cavity
unisexual	a flower having stamens only (male or staminate) or ovary and stigma(s) only (female or pistillate)
vaginate	sheathed

valve	one segment of a capsule after dehiscence
vein	a strand of vascular tissue; venation - the pattern of veins in a leaf
verticil	an arrangement of parts around an axis at the same level; see whorl
villous	with a covering of long weak hairs, shaggy; villose (alternative)
vine	a climbing plant
weed	an adventive plant growing where it is not wanted
whorl	a cyclical arrangement of three or more structures (leaves) at the same node
wing	one of the two lateral petals of a papilionaceous flower
zygomorphic	of a flower that is bilaterally symmetrical and can only be divided into two halves in one vertical plane

(b)	Terms used under Medicinal Uses
abortifacient	an agent which induces abortion
amenorrhoea	absence of the menstrual flow
antiscorbutic	a substance that prevents or cures scurvy
anthelmintic	a drug which kills intestinal worms or causes their expulsion
anuria	inability to urinate (see oliguria)
aphrodisiac	an agent causing sexual arousal
astringent	a substance which helps to clear mucus from the throat
biliousness	a condition associated with the gall bladder, as in jaundice. It is caused by several factors and is usually characterized by vomiting, associated with gall bladder eructation, and sometimes headaches
Brights	nephrotic syndrome caused by malfunction of the kidney and infection leading to anuria
Buckley's White Rub	ointment with menthol and oils of peppermint (Mentha spp.) and wintergreen (Gaultheria spp.)
bush yaws	a non-venereal tropical disease - Leishmaniasis. The infection is caused by Leishmania brasiliensis and L. guianensis in Guyana. It is characterized by an initial lesion, followed by further multiple lesions of the skin
carminative	a drug which relieves flatulence
decoction	an aqueous solution of active principles made by boiling the plant or plant part
dropsy	drowsiness and listlessness which may be due to some other physical disorder but is usually associated with oedema of the face or feet or anasarca of the whole body due to excessive water retention in the tissues
dye lotion	either 1% tetrimide solution or flavine (known by commercial names acriflavine or aqua flavine) which are used as antiseptic solutions
dysmenorrhoea	painful menstruation
earache	inflammation of the ear (otitis)
emetic	a drug or substances that induce vomiting
emmenagogue	an agent that promotes menstrual discharge
filaria	a parasitic disease of the tropics, filariasis, caused by infestation of threadworms belonging to the genus Filaria ; chiefly Wucherichia bancrofti in Guyana

fresh fat	tallow from cattle
ground itch	fungal infection between the toes sometimes called Athlete's Foot
high wine	65% alcohol (ethanol)
Hoffman's drops	ether spirit (30% ether with 90% ethanol)
hypertension	high blood pressure
hypotension	low blood pressure
infusion	an aqueous or alcoholic solution of active principles prepared by pouring water or alcohol on the plant or plant part
jigger	irritating dermatitis caused by insect bites. The wingless bloodsucking ectoparasites have the power to burrow into the subcutaneous tissues of the sole of the foot causing itching. Pearly white or yellowish eggs are laid which form cysts
lactagogue	an agent which increases milk production in nursing mothers
lotta	fungal infection characterized by white or brown spots or patches on the skin
oliguria	a condition of too little excretion of urine
soft grease	paraffin ointment of astringent nature
sore eyes (red eyes)	conjunctivitis (inflammation of the conjunctiva)
steel drops	ferric chloride solution
tete	acute dermatitis caused by a mixed bacterial and fungal infection
thrush	fungal infection caused by Candida albicans occurring especially in the oral cavity of infants
wheezing	difficulty in breathing due to bronchitis (by infection) or asthma (by allergy)

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