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SPECIMEN

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OF

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JAMES EDWARD SMITH, M. D. F. R. S.

MEMBER OF THE ROYAL ACADEMIES OF TURIN, UPSAL, STOCKHOLM AND LISBON; CORRESPONDENT OF THOSE OF MONTPELLIER AND DAUPHINY, &c. &c.

PRESIDENT OF THE LINNÆAN SOCIETY.

THE FIGURES BY JAMES SOWERBY, F. L. S.

"Tendebantque manus ripæ ulterioris amore." VIRG.

VOL. I.

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THOMAS WILSON, ESQ. F. L. S.

AT WHOSE PERSUASION

THIS WORK WAS UNDERTAKEN,

AND

ON WHOSE FRIENDLY COMMUNICATIONS

IT IS FOUNDED,

THE FOLLOWING PAGES

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PREFACE.

AN attempt to make the Public acquainted with fome of the productions of a country of which they have lately heard fo much, and in which they are now as a nation fo deeply interested—a country too fo extremely unlike all those best known to Europeans, cannot fail to be acceptable, however imperfect in its extent. The present work must be considered only as, what it pretends to be, a Specimen of the riches of this mine of botanical novelty. It may inform the cultivators of plants concerning what they have already obtained from New Holland, as well as point out fome other things worthy of their acquisition in future. As the author intends it for the use of his countrymen and countrywomen, it is written in their own language a language every day growing more universal, and which many circumstances now seem to point out as likely to become the most so of any modern one.

The

The effential characters alone are given in Latin, as well as in English. The figures are taken from coloured drawings, made on the spot, and communicated to Mr. Wilson by John White Esq. Surgeon General to the Colony, along with a most copious and finely-preserved collection of dried specimens, with which the drawings have in every case been carefully compared.

December 1793.

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BILL'ARDIERA fcandens.

Climbing Apple-berry.

PENTANDRIA Monogynia.

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GEN. CHAR. Petala quinque, foliolis calycinis alterna. Nectarium nullum. Stigma fimplex. Bacca fupera, polyfperma.

Petals five, alternate with the leaves of the calyx. Nectary none. Stigma fimple. Berry fuperior, with many feeds.

Spec. Char. B. pedunculis folitariis unifloris, foliis fubbirfutis.

Flower-stalks solitary, single-flowered. Leaves somewhat hairy.

AMID all the beauty and variety which the vegetable productions of New Holland display in such profusion, there has not yet been discovered a proportionable

tionable degree of usefulness to mankind, at least with respect to food. This is our first and most natural enquiry in a fcene of fuch novelty; but it is an enquiry natural to all the lower orders of fenfible beings, as well as to man. It may perhaps mortify his pride to think how much more quickly and certainly inferior animals judge upon fuch a fubject. Their powers however reach no farther. It is the peculiar privilege of reasoning man, not only to extend his enquiries to a multiplicity of attainable benefits to himfelf and his fpecies, befides the mere animal necessity of food, but alfo to walk with God through the garden of creation, and be initiated into the different plans of his providence in the construction and economy of all these various beings; to fludy their dependencies upon one another in an infinitely complex chain, every link of which is effential; and to trace out all those various uses and benefits to every branch of the animal creation, of which each animal is a judge only for himfelf. this point of view no natural production is beneath the notice of the philosopher, nor any enquiry trifling under the guidance of a scientific mind.

In compliance however with those who do not look so deep into natural knowledge, we here introduce to their acquaintance almost the only wild eatable fruit of the country we are about to illustrate. It may serve as an olive-branch, to procure their patience as we proceed together hereafter through the consideration of

less conspicuously interesting objects. Nor will the scientific botanist find the plant before us unworthy of his most accurate attention.

Its genus is eafily characterifed in the Linnæan fystem by the many-seeded berry above the flower, and may stand somewhere between *Escallonia* and *Mangisera*. We cannot certainly tell what genera are its natural allies, especially as we have no knowledge of the fruit and seeds except from a drawing. May it be akin to the *Capparides* of M. de Jussieu?

The name Billardiera is given it in honour of James Julian la Billardiere, M. D. F. M. L. S. now engaged as botanist on board the French ships sent in search of M. de la Peyrouse. His Icones Plantarum Syriæ rariorum, the fruits of a journey to the Levant in 1786, justly entitle him to such a distinction.

We have acquired two species of this genus from New South Wales. The root of the present is woody and zigzag, with a reddish inner bark. Stems several, twining among other shrubs, branched, woody, round, downy when young, destitute of leaves except on the young branches. Leaves alternate, sessile, lanceolate, bluntish, mostly entire, but undulated and revolute in such a manner as to appear dentated, which they sometimes really are, paler beneath, slightly veined, most hairy when young. Stipulæ none. Flowers solitary, enveloped in long leaves, terminating the young branches, on short downy footstalks, drooping, of a pale lemon-colour, without

without bracteæ. Calyx regular, of five equal, narrow, pointed, leaves, hairy and ciliated. Petals five, twice as long, equal, lanceolate, pointed, attenuated at the base, inferted into the receptacle. Stamina five, as long as the calyx, and opposite to it, equal, subulate, smooth. Antheræ arrow-shaped. Germen altogether superior, oblong, very hairy. Style short, erect. Stigma simple. Berry cylindrical, yellow, very obtuse at both ends, downy, terminated by the permanent style, and said to have a very fine slavour, not unlike a roasted apple. Seeds numerous, horizontal, blackish.

EXPLANATION OF TAB. I.

1. Calyx. 2. A Petal. 3. Stamina and Piftillum. 4, 4. Ripe Fruit. 5, 5. Footstalks. 6. Seeds.

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Tetratheca juncea.

TETRATHECA juncea.

Rushy Tetratheca.

OCTANDRIA Monogynia. Fl. complete.

GEN. CHAR. Cal. quadrifidus, inferus. Cor. tetrapetala. Capsula bilocularis, bivalvis; valvulis medio septiferis. Semina subbina.

Cal. four-cleft, inferior. Cor. of 4 petals. Caps. of two cells and two valves, with the partition from their middle. Seeds about two in each cell.

Spec. Char. T. glabra, foliis alternis lanceolatis, caule acutangulo, ramis elongatis nudiusculis.

Smooth. Leaves alternate, lanceolate. Stem with sharp angles. Branches elongated, and almost naked.

TO this pretty genus, three species of which have been sent from New South Wales, we have given the name Tetratheca, on account of the curious structure of

its

its anthera, each of which confifts of four cells, communicating with one common tube, the excretory duct of the pollen. In the construction of this name we run counter indeed to a precept of Linnæus (Crit. Bot. p. 44), and we do fo because in that instance we think him in the wrong. After objecting, with reason, to generic names too fimilar in found to each other, he is fomewhat unmerciful in stigmatizing almost all that have any fyllables in common, and wonders at Vaillant for using the termination theca at all. The word surely in itself is unexceptionable; and as all the generic names of Vaillant constructed with it, even Tetragonotheca (which Linnæus at first retained), are now laid aside, and therefore there can be no ambiguity, we hope to be excused for adopting theca, as it so precisely suits our purpofe.

Tetratheca probably belongs to M. de Juffieu's order of Erica, not indeed that it answers well to his characters of that order, but it is allied to some of its genera, especially Pyrola. All its species are small shrubs with red flowers (varying to white), which retain their colour when dried.

Tetratheca juncea has a finall woody root, which has fome appearance of that of an annual plant. The flem is much branched, even from the base; the branches alternate, long and slender, very acutely triangular, and almost winged. Leaves mostly small and not numerous, alternate, lanceolate, entire. Stipulæ none. Each branch produces

produces a fimple feries of drooping flowers, in a race-mose order, on simple capillary red footstalks, with a small leaf at the base of each. Calyx deeply cloven, obtuse. Petals obovate, crimson, paler on the outside, entire. Stamina equal; the filaments very short; antheræ slightly curved, with four blunt angles, and four surrows, brown, tipped with a pale simple tube, into which the four cells of the anthera open. Germen very small, obovate, compressed. Style short and simple. Capsule pendulous, obovate, compressed, pointed. Seeds two in each cell, one above the other, cylindrical, standing on a white twisted pedicle.

Every part is fmooth. We have specimens of a variety with white petals, but the calyx and footstalk remain red.

EXPLANATION OF TAB. II.

- 1. Calyx and Footstalk. 2. Petal. 3. Stamina.
- 4. A Stamen magnified. 5. The fame cut across.
- 6. Capfule. 7, 7. Seeds.

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CERATOPETALUM gummiferum.

Three-leaved Red-gum Tree.

DECANDRIA MONOGYNIA.

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GEN. CHAR. Cal. 5-partitus, staminiferus, persistens. Petala 5, pinnatisida. Anthera calcaratæ. Caps. in fundo calycis, tecta, bilocularis.

Cal. 5-cleft, bearing the stamina, permanent. Petals 5, pinnatifid. Antherae with a spur. Caps. in the bottom of the calyx, covered, two-celled.

WHEN a botanist first enters on the investigation of so remote a country as New Holland, he finds himself as it were in a new world. He can scarcely meet with any certain fixed points from whence to draw his analogies; and even those that appear most promising, are frequently in danger of misleading, instead of informing him. Whole tribes of plants, which at first fight seem familiar to his acquaintance, as occupying links in Nature's chain, on which he has been accustomed to de-

pend, prove, on a nearer examination, total strangers, with other configurations, other economy, and other qualities; not only all the species that present themselves are new, but most of the genera, and even natural orders.

The plant before us justifies the above remarks. botanical characters are fo new, we can scarcely tell to what tribes it is allied; and although, from the peculiar felicity of the Linnæan fexual fystem, founded on parts which every plant must have, we are at no loss to find its class and order in that which is an artificial system, we still fearcely know what genera are its natural allies. It, however, feems most nearly related to Dictamnus and Ruta, of all the Decandria Monogynia, and may be fafely inferted near them. We dare not positively fay it belongs to M. De Jussieu's natural order of Rutacea; but for the present it may be so considered, till future discoveries shall authorise us to constitute a new one. The generic character above given certainly diffinguishes it from all other genera, and the name applies to the very unufual horn-like divisions of the petals, like those in the leaves of the Ceratophyllum of Linnæus. One species only is already known.

This, Mr. White informs us, is one of the trees (for there are feveral, it feems, befides the *Eucalyptus refinifera*, mentioned in his Voyage, p. 231.) which produce the red gum. He further remarks, that it is the only wood of the country that will fwim in water.

The

The tree is of a confiderable height, upright, much branched, and of a beautiful appearance when the flowers are come to maturity, or rather about perfecting their feed, as in the specimen here figured. Every part is quite fmooth. Branches opposite, round, slightly angular at the top. Leaves opposite, on footstalks, ternate. Leaflets feffile, nearly equal, lanceolate, obtufe, ferrated, veiny, shining, paler beneath. Stipulæ none. Panicles terminal, first oppositely, and then alternately branched, with a fmall pointed glutinous bractea at the base of each partial flower-stalk. Flowers at first expanding fmall, but the calyx afterwards becomes much enlarged, whitish, tinged with red, and all their parts continue permanent till the fruit is ripe. The Calyx is inferior, five-cleft; its fegments lanceolate, acute, flightly ribbed; its margin at the base of the segments furrounded with a ring bearing the petals and stamina, as in icofandrous plants. Petals alternate with its fegments, at first equal to them in length, then much fhorter, irregularly and unequally pinnatifid; their divisions linear and acute. Stamina shorter than the petals, awl-shaped. Anther e roundish, of two oval cells, and with a spur at their base. Germen in the bottom of the calyx, globular, ten-ribbed. Style awl-shaped, fhort. Stigma cloven, acute. Capfule in form like the germen, fmall, with a coriaceous covering, originally two-celled, but one fide feems always abortive, and the feed in the other pushes the partition from the centre.

We

We have only feen the fruit half ripe, and the imperfect feeds were withered, but they appear to be folitary.

EXPLANATION OF TAB. III.

- 1. A bunch of young flowers, of their natural fize.
- 2. The more advanced calyx laid open, with its petals and stamina in their proper situations.
- 3. A petal and stamen separate.
- 4. The fame magnified.
- 5. Back of the filament and anthera.
- 6. Germen in a young state.
- 7. Its coriaceous covering.
- 8. Stigma.
- 9. Germen fomewhat farther advanced, cut across to shew the cells.

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Banksia spinulosa

BANKSIA spinulosa.

Prickly-leaved Banksia.

TETRANDRIA Monogynia.

GEN. CHAR. Receptaculum commune elongatum, squamosum. Cor. tetrapetala. Stamina limbo inserta. Capsula bivalvis, disperma, interjecto seminibus dissepimento mobili.

Common receptacle elongated, fcaly. Cor. of 4 petals. Stamina inferted into the limb. Capfule with two valves, two feeds, and a moveable partition between them.

Spec. Char. B. foliis linearibus revolutis mucronulatis apicem versus denticulato-spinosis.

Leaves linear, revolute, with a little sharp point, and with spinous denticulations towards the top.

THIS hitherto non-descript species of *Banksia* has a woody branched stem, the *branches* commonly three or more together, curved upwards. *Leaves* irregularly scattered, closely covering the branches, on very short footstalks, but little spreading, from an inch and half to two inches in length, linear, very narrow, revolute in the margin, green and smooth above, white and downy beneath, ending very abruptly, tipped with three

three little spines, and having several of the same kind hooked upwards, in the margin, particularly towards the top. The young leaves are very downy. Flowers thick set in a cylindrical erect spike, arising from the divarications of the branches. Their common receptacle is cylindrical, rather obtuse, covered with closely imbricated downy scales, some of the lowermost of which terminate in a long downy pointed arista, and from among the rest the slowers come out in pairs. The structure of the flower is well expressed in the annexed plate. We suspect the fruit sigured in Mr. White's Voyage, page 225, fig. 1, may belong to this species, but we have no positive authority to affert it.

Our Banksia spinulosa differs from B. ericæsolia of Linnæus (Herb. Linn.) in having leaves at least four times as long, obtuse, but with a small central sharp point from the mid-rib between the other two terminal points, as well as in having a greater or lesser number of small sharp-hooked lateral teeth towards the end of each least.

The natives of New South Wales call it Wattangre.

EXPLANATION OF TAB. IV.

- 1. A fcale of the receptacle.
- 2. A flower unexpanded.
- 3. The fame expanded.
- 4. Stigma.
- 5. Tip of a petal magnified, shewing one of the stamina in its natural situation.
- 6. Stamen separate.

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GOODENIA ramofiffima.

Branching blue Goodenia.

PENTANDRIA MONOGYNIA. Fl. of one petal, superior.

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GEN. CHAR. Caps. bilocularis, bivalvis, polysperma; dissepimento parallelo. Semina imbricata. Cor. supra longitudinaliter fissa, genitalia exserens; limbo quinquesido, secundo. Antheræ lineares. Stigma urceolatum, ciliatum.

Caps. with two cells, two valves, and many feeds; partition parallel to the valves. Seeds imbricated. Cor. longitudinally cloven on the upper fide, exposing the organs of fructification; limb five-cleft, leaning one way. Antherce linear. Stigma cupshaped, ciliated.

SPEC. CHAR. G. foliis lineari-lanceolatis fubdentatis cauleque hispidis, stylo apice hirsutissimo, corolla extus pilosa.

F Leaves

Leaves linear-lanceolate, flightly dentated, rough as well as the stem. Style very hirfute at the top. Corolla externally hairy.

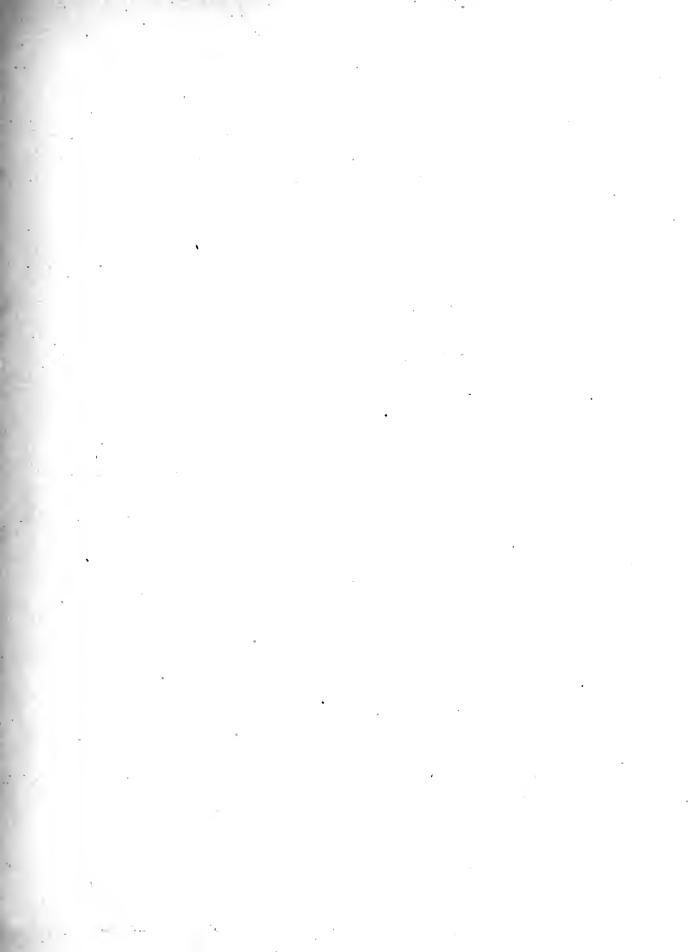
Syn. Goodenia ramofiffima. Linn. Trans. Vol. II. 349.

WE refer the reader to the Linnæan Transactions above quoted for the history of this genus, which is named in honour of the Rev. Dr. Goodenough. Eight species are there enumerated, of which this is one of the most striking.

The stem is herbaceous, two or three feet high, much branched and straggling, round, rough with short stiff hairs, as are also the *leaves*. The latter are of a narrow lanceolate form, mostly entire, but sometimes dentated, and even sinuated. *Stipulæ* none. *Flowers* solitary, terminating the branches, and appearing in October. The plaits of the *corolla* are externally hairy. The *antheræ* very minutely bearded. *Style* very hairy in its upper part. The *fruit* of this species we have not seen ripe, but the enlarged *germen* is oval and hairy.

EXPLANATION OF TAB. V.

1, 2. Two different views of the Style. 3. Stamen. 4. Anthera magnified.





PLATYLOBIUM formofum.

Orange Flat-Pea.

DIADELPHIA DECANDRIA. Stamina all connected together.

GEN. CHAR. Cal. campanulatus, quinquefidus; laciniis duabus fupremis maximis, obtufis. Legumen pedicellatum, compressum, dorso alatum, polyspermum.

Cal. campanulate, five-cleft; two upper fegments very large and obtufe. Pod on a footstalk, compressed, winged along the back; seeds many.

Spec. Char. P. foliis cordato-ovatis, germine piloso. Leaves cordato-ovate. Germen hairy.

Syn. Platylobium formofum. Linn. Trans. Vol. II. 350. Cheilococca apocynifolia. Salisb. Prod. 412.

THIS genus may be found in the Linnæan Tranfactions along with the preceding, and it is needless to repeat the minute description there given of the species. It will be more useful to give the character of another species very lately received from New Holland, and which we at first considered as a variety of that here sigured, but now believe them to be distinct.

PLATYLOBIUM parviflorum.

P. foliis lanceolato-ovatis, germine glabro. Leaves lanceolato-ovate. Germen fmooth.

THIS agrees with the preceding in habit, but the flowers are fmaller and lefs beautiful; the leaves longer and narrower; the germen quite fmooth.

Both these shrubs promise to be extremely ornamental to our greenhouses, as they produce abundance of bloom, and are among the most elegant of all their tribe.

EXPLANATION OF TAB. VI. P. formofum.

1. Calyx. 2. Bracteæ. 3. Standard. 4. One of the Wings. 5. Keel. 6. Stamina. 7. Germen. 8. Ripe pod.

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Embothrium speciosifsimum.

Sindon Libberhad Cot. 1 995 by T. Sowerby & C. S. Ze March Place.

EMBOTHRIUM speciosissimum.

Great Embothrium, or Waratah.

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TETRANDRIA MONOGYNIA.

- GEN. CHAR. Cor. tetrapetala. Stamina limbo inferta. Folliculus polyspermus. Semina alata.

 Cor. of 4 petals. Stamina inferted into the limb.
 - Cor. of 4 petals. Stamina inferted into the limb. Follicle containing many winged feeds.
- Spec. Char. E. foliis obovatis obtufis inæqualiter ferratis, fpicâ fubcapitatâ, involucro polyphyllo.

 Leaves obovate, obtufe, unequally ferrated. Spike fomewhat capitate. Involucrum of many leaves.

THE most magnificent plant which the prolific soil of New Holland affords is, by common consent both of Europeans and Natives, the Waratah. It is moreover a favourite with the latter, upon account of a rich honeyed juice which they sip from its flowers. Our figure was taken from a coloured drawing made from

the

the wild plant, compared with very fine dried specimens fent by Mr. White. Only one garden in Europe, we believe, can boast the possession of this rarity, that of the Dowager Lady de Clifford, at Nyn Hall, near Barnet, who received living plants from Sidney Cove, which have not yet flowered. The seeds brought to this country have never vegetated.

The shrub is 8 or 10 feet in height, with several wandlike fimple round branches, covered with a fmooth brown bark, and clothed with numerous large alternate leaves, without stipulæ. These leaves are from 4 to 6 or 8 inches long, obovate, not broad, blunt, but tipped with a fmall point, fmooth and veiny, paler and even glaucous beneath, more or less ferrated in their upper part with fharp unequal teeth, entire, and very much attenuated at the base, running down into a short rustycoloured footstalk. A very dense simple spike or head of flowers, appearing in October, terminates each branch, furrounded at the base with an involucrum of many large lanceolate acute leaves, of a most splendid crimson, downy on their upper fide. The flowers are very thickly fet round a conical receptacle, each on its own footstalk of half an inch in length. The petals cohere together at their base, except at the back of the flower, where the ftyle feparates them early. The antheræ are reniform, flightly pedicellated, sheltered by a concavity in the tip of each petal. Germen pedicellated. Style incurved. Stigma large, obtufe. Fruit a coriaceous follicle, or pouch of one piece, cylindrical, fmooth, recurved.

recurved, fplitting longitudinally along its upper edge, and containing many flattened *feeds*, each furnished with a membranous lanceolate wing.

EXPLANATION OF TAB. VII.

- 1. A flower fully expanded.
- 2. 2. Antheræ.
 - 3. Germen.
 - 4. Stigma.
 - 5. Follicle.
- 6.6. Seeds.

All of their natural fize.

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EMBOTHRIUM filaifolium.

Cut-leaved Embothrium.

TETRANDRIA MONOGYNIA.

GEN. CHAR. See Tab. 7.

Spec. Char. E. foliis tripinnatifidis: laciniis decurrentibus acutis, floribus spicatis geminatis pedicellatis.

Leaves tripinnatifid; fegments decurrent, acute. Flowers spiked, standing in pairs, on footstalks.

OF this new and very fingular species of Embothrium a plant brought from New Holland slowered last summer, for the first time, at Messrs. Grimwood's at Kensington, from which our sigure was drawn; the fruit only was taken from native specimens.

The root is perennial, and prefers a light fandy foil. Stems fomewhat shrubby, 3 or 4 feet high, erect, but little and alternately branched, round, slightly striated,

leafy.

leafy. Leaves alternate, on longish footstalks, spreading, smooth, thrice divided into narrow, decurrent, sharp, entire segments, sometimes three-cleft, of a dark green colour, and firm rigid substance, much resembling the leaves of Peucedanum Silaus. The upper and lowermost are more simple. Flowers inodorous, in a long, loose, terminal, simple spike; standing in pairs, back to back, each on its proper footstalk, with one lanceolate sharp bractea in common to the two. Petals white, much spreading, and revolute at the tip. Antheræ two-lobed. Germen with three remarkable glands at the base of its footstalk in front. Style much incurved. Follicle oval, slightly carinated. The seeds we have not seen, but they should seem to be very sew.

EXPLANATION OF TAB. VIII.

- 1. Corolla, the natural fize.
- 2. Anthera.
- 3. Glands.
- 4. Germen.
- 5. Stigma.
- 6. Follicle after its feeds are discharged.

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EMBOTHRIUM fericeum.

Silky Embothrium.

SPEC. CHAR. E. foliis ternatis integerrimis revolutis fubtus fericeis, fpica recurva, fructu tuberculato glabro.

Leaves ternate, entire, revolute, filky beneath. Spike recurved. Fruit tuberculated, not downy.

THIS shrub is said to form a bush four or five feet in height. Our knowledge of it is entirely from dried specimens and drawings, for it has not yet been raised from any seeds brought to Europe. In New South Wales it should seem to be not uncommon, slowering in October.

The *root* is perennial, thick and woody. *Stem* very much branched even from the bottom, round, the

younger branches angular, and clothed with fine filky down, as are likewife the flower-stalks, corollæ, and backs of the leaves. The *leaves* are for the most part ternate, covering the branches without any order, nearly feffile, the uppermost, or those which grow on the weaker branches, being fimple. Their form is mostly elliptical, fometimes linear, always tipped with a minute very fharp point, entire, revolute, three-nerved, and veiny, the lateral nerves running in a very peculiar manner very near the margin and along the sharp edge made by its being turned in; upper furface bright green, Stipulæ none. fmooth, and naked. Spikes terminal, folitary, fhort and denfe, recurved, fimple. Flowers on fhortish, alternate, solitary, simple footstalks, all directed upwards, without bractea or involucra. Corolla rofecoloured, filky without, clothed partly with very denfe erect hairs within, and fplit about half way down into four fegments. Antheræ small, yellowish, sessile in the hollow tips of the corolla, as in other species of this genus. Germen oval, green; flyle smooth, red; fligma hemisphærical, smooth. Follicle oval, black, tuberculated, deflitute of hair or down, brown within. Seeds two, flattish, attached by a very short wing to the upper end of the follicle.

There are three very remarkable varieties of this species, viz.

a minor. This is its most frequent appearance, and is what we have principally represented in the figure.

- β major. In all its parts twice as large, and fomewhat less filky.

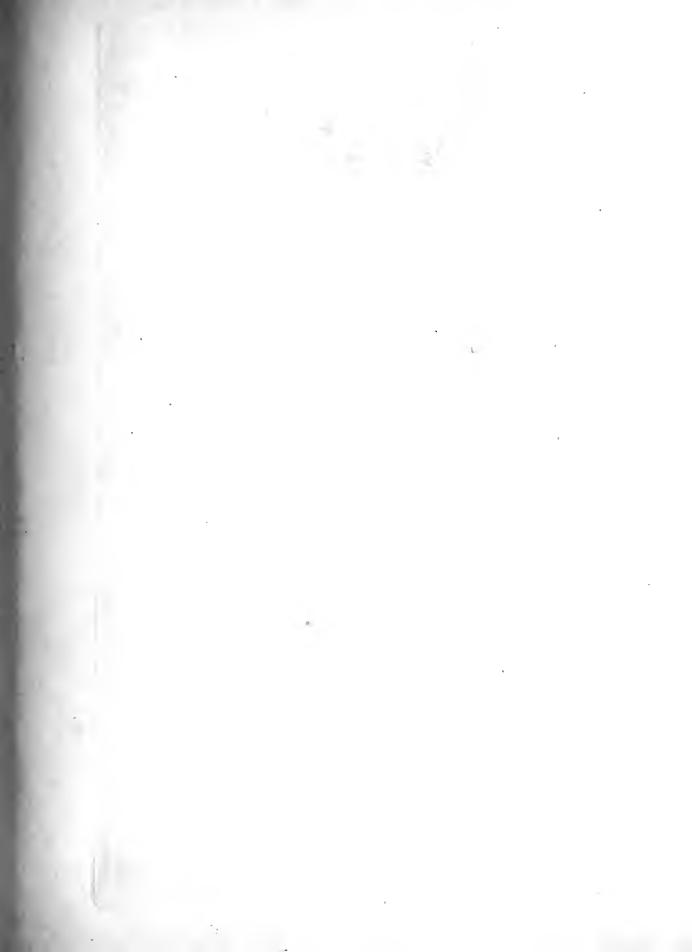
 γ angustifolia. With very long and linear leaves, and flowers like var. α .

From the most attentive consideration it appears these, however different in appearance and even in the figure of their leaves, are really not specifically distinct.

EXPLANATION OF TAB. IX.

A Branch of var. α.
 A Flower.
 Half-ripe Fruit.
 A Seed.
 Leaves of var. β.
 Ditto of γ.









Embothrium bucifolium.

EMBOTHRIUM buxifolium.

Box-leaved Embothrium.

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SPEC. CHAR. E. foliis ellipticis integerrimis revolutis fupra scabris subtus pubescentibus, floribus umbel-

Leaves elliptical, entire, revolute, rough above, downy beneath. Flowers in umbels. Fruit downy.

THIS, like the preceding species, is hitherto a stranger to our gardens. In its native country it flowers about November.

Root knobbed and woody. Stem much branched, three or four feet high; the branches round, clothed with harsh down, and thickly covered with very numerous alternate solitary leaves, about the fize of those of box, almost sessible, elliptical, with a little sharp point, entire, revolute, but destitute of the lateral nerves observable in E. sericeum, veiny, dark green, very rough

latis, fructu villoso.

above, with minute prominent tubercles, downy beneath. Stipulæ none. Flowers numerous, in folitary terminal erect umbels, without involucra. Flower-fialks fimple, round, thickly clothed with reddish brown hairs. Corolla clothed externally with the same coloured hairiness as the flower-stalks, and internally with white; its four segments cohere together, so that their four cells form one common cavity, destitute of hair, and of a brown colour, in which stand, in the form of a star, the four yellowish antheræ, each of two cells. Germen oval, with a gland at its base, very hairy, as is the style; stigma lateral, a little below the pointed apex of the style, prominent, blackish, not hairy, rugged. Follicle ovate, gibbous, black, covered with white hair. Seeds two, each attached by a very short wing.

EXPLANATION OF TAB. X.

1. A Flower feparate. 2. The fame with the fegments of its Corolla forcibly divided. 3. Anthera. 4. Pistillum. 5. Gland at the base of the Germen. 6. Ripe Fruit. 7. A Seed.

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Lineles limifolia

PIMELEA linifolia.

Flax-leaved Pimelea.

DIANDRIA Monogynia. Fl. inferior, of one petal, regular.

GEN. CHAR. Cal. nullus. Cor. quadrifida. Stamina fauce inferta. Nux corticata, unilocularis.

Cal. none. Cor. four-cleft. Stamina inferted into the orifice. Nut coated, of one cell.

Spec. Char. P. foliis lineari-lanceolatis, capitulis terminalibus involucratis, corolla extùs villofa.

Leaves linear-lanceolate. Heads of flowers terminal, furnished with an involucrum. Corolla hairy on the outside.

THIS elegant shrub flowered in the greenhouse of Lord Viscount Lewisham, in February 1794. The same

species flowered the preceding year at Sion House. is a native of the coast of New South Wales, among rocks, as we believe are all the species of Pimelea. The genus was first published by Forster in his Nova Plantarum Genera, and there called Banksia; but every species of which it is composed having been referred by the younger Linnæus to Passerina, and he having in the fame work named another tribe of plants after Sir Joseph Banks, Gærtner, in restoring the original genus of Forster, adopted the name of Pimelea from the manufcripts of Dr. Solander. It is derived from muenn, fat, but is rather a pleafantly founding, than a very apt denomination, unless there may be any thing oily in the recent fruit. In natural affinity *Pimelea* nearly approaches Passerina and Daphne, but their number of stamina being fo very different, furely justifies us in keeping it feparate from them. In this natural order we are not yet indeed quite clear upon what principles genera ought to be discriminated, and therefore dare not undertake to remove the great uncertainty in which all authors have left them.

Pimelea linifolia has a fmall zigzag root, from which arises a straight round smooth upright stem, branched irregularly for the most part, though sometimes appearing dichotomous, in consequence of the young branches springing in pairs from the upper part of the old flowering ones. The bark is reddish, cracking longitudinally; its inner layer remarkably silky, which is

characteristic of this natural order. Leaves clothing the younger branches, opposite, on very short footstalks, flightly fpreading, linear-lanceolate, varying much in breadth, sharpish, entire, with a simple nerve. Stipulæ Flowers in terminal heads, numerous, inodorous. Bracteæ four broad ovate entire leaves, close to the flowers. Corolla very flender, tubular, fnow-white, filky externally; the limb in four equal ovate spreading segments, with a red fpot at the base of each withinside. Stamina two, their filaments rather shorter than the limb. and inferted into the base of two of its segments, so that they are altogether without the tube, and not within it as in Daphne, Pafferina, &c; antheræ oblong, yellow. Germen fuperior, oval, green, very fmall, fmooth; fivle rather longer than the tube, fimple and capillary; fligma capitate, very fmall. Fruit a fmall oval dry berry or rather drupa, invested with the permanent base of the corolla, and containing a folitary hard feed or nut. Common receptacle clothed with numerous white permanent hairs.

EXPLANATION OF TAB. XI.

1. A Flower entire. 2. The same opened, to shew the stamina and style. 3. Pistillum. 4. Common receptacle after the fruit has fallen. 5. Fruit invested with the permanent base of the corolla. 6. Fruit naked.







Pultencea stipularis

PULTENÆA stipularis.

Scaly Pultenæa.

DECANDRIA Monogynia. Fl. of many unequal petals.

GEN. CHAR. Cal. quinquedentatus, utrinque appendiculatus. Cor. papilionacea: alis vexillo brevioribus. Legumen uniloculare, difpermum.

Cal. five-toothed, with an appendage on each fide. Cor. papilionaceous; the wings fhorter than the standard. Pod of one cell, with two feeds.

Spec. Char. P. foliis linearibus mucronulatis subciliatis, stipulis folitariis binerviis laceris.

Leaves linear, tipped with a fmall point, flightly ciliated. Stipulæ folitary, two-nerved, lacerated.

NEW Holland abounds with papilionaceous plants, mostly belonging to new genera, and many of them having perfectly distinct stamina, which therefore can

by no means be admitted into the class *Diadelphia*, but must come next to *Sophora* in that of *Decandria*. The plant before us is one among several species which constitute one of the most distinct of these genera, and to which we have given the name of *Pultenæa* in order to commemorate the merits of a very amiable and deserving English Botanist, Dr. Richard Pulteney, F.R. and F.L.S, of Blandford in Dorsetshire, well known by his *Sketches of the Progress of Botany in England*, and more especially by his Biography of Linnæus.

This genus differs materially from the true *Sophoræ*, in having a roundish pod of one cell, and only two seeds, instead of a long many-seeded pod divided into numerous cells; and although many of the Cape *Sophoræ* do indeed approach *Pultenæa* in their fruit, the last mentioned genus is essentially distinguished from them, and all others we have hitherto seen, by the two appendages to the calyx, affixed either to its base or sides.

We received a living specimen of this plant from Mr. Alexander Murray, gardener to Benjamin Robertson, Esq. at Stockwell, who raised it late in the autumn of 1792 from seeds brought from New South Wales. It first flowered in April 1794.

The stem is shrubby, variously branched, round; the wood hard and whitish; bark brown, covered more or less with withered bristly stipulæ: branches long and straight, pointing upwards, clothed with leaves, and terminated by round heads of handsome yellow inodorous flowers. The leaves surround the branches in great

numbers without any regular order, and are linear, very narrow, tipped with a little sharp point, entire, smooth, without any projecting vein or nerve, most frequently ciliated with fine stiff hairs. Footflalks very short, pale and fmooth, erect at night, by which the leaves become closely pressed to the branch, and imbricated one over the other, though in the day time, and especially in bright funshine, they spread horizontally. The very remarkable flipulæ stand solitary just above the insertion of each footflalk, erect, and close-pressed to the branch, whose bark they by that means completely conceal; they are brown, of a chaffy texture, lanceolate, cloven and fometimes laciniated, furnished with two parallel nerves. The flowers are about twenty or more, in a round head, among spreading leaves, and the branch they at first terminate is at length sometimes protruded beyond them, by which they become verticillate; each stands on a short, round, smooth flowerstalk, with bractee like the leaves, but fmaller, and likewife accompanied with flipulæ. Calyx flightly campanulate, red, divided half way down into five acute, spreading, ciliated teeth, of which the two uppermost are the shortest and broadest: between them and the next pair stand the two appendages which make a material part of the generic character, and which agree exactly in appearance with the proper teeth, except in being fomewhat narrower, and inferted, one on each fide, about half way down the entire part of the calyx, to which their lower end is closely applied, so that they make the calyx appear to

have seven teeth of equal length. Corolla of five petals. Standard with a firm horizontal claw, its limb erect, round, flightly notched, the two fides generally folded together, deep yellow, with a red femicircular line near the base. Wings nearly linear, obtuse, concave, with a large tooth at the base, deep yellow, horizontal, much shorter than the standard. Keel of two pale yellow, obovate, concave petals, as long as the wings, flrongly connected by their lower edge, and with a tooth near their base on the upper. Stamina all nearly equal, fomewhat shorter than the keel, a little declining; filaments inferted into the receptacle, cylindrical, tapering to a point; antheræ small, roundish. Germen small, green, oval, fmooth, tipped with a tuft of white hair, and containing the rudiments of two or three feeds; flyle longer than the stamina, subulate, recurved, smooth; fligma acute. Pod fcarcely longer than the calyx, roundish, pointed, turgid, brown, hairy at the extremity, of one cell, containing two feeds on short footstalks, inferted into the upper edge of each valve near the base.

The plant appears to abound with mucilage, especially the leaves.

EXPLANATION OF TAB. XII.

1. A Leaf with its stipula. 2. Floral leaf and the stipula which accompanies it. 3. Calyx. 4. Its appendages. 5. Standard. 6. A Wing. 7. Keel. 8. Stamina and Pistillum. 9. Pistillum alone. 10. Rudiments of Seeds. 11. Pod invested with the permanent calyx.

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Tublyhed by J. Sowerby. 232, Mead Place . Lambeth .

EUCALYPTUS robusta.

Brown Gum Tree, or New Holland Mahogany.

ICOSANDRIA MONOGYNIA.

GEN. CHAR. Cal. fuperus, perfiftens, truncatus, ante anthefin tectus operculo integerrimo, deciduo. Cor. nulla. Caps. quadrilocularis, apice dehiscens, polyfperma.

Cal. fuperior, permanent, truncated, covered before flowering with an entire lid, foon falling off. Cor. none. Caps. of 4 cells, opening at the top, containing many seeds.

Spec. Char. E. operculo conico medio constricto, umbellis lateralibus terminalibusque; pedunculis pedicellisque compressis.

Lid conical, contracted in the middle. Umbels lateral and terminal: general and partial flower-stalks compressed.

THE genus of *Eucalyptus*, established by the celebrated French botanist M. L'Heritier, of whose fate amid the present dreadful convulsions of his country we have

for some time been ignorant, was first published in the Hortus Kewensis, vol. 2. 157. The original species there mentioned is named obliqua, and a figure of it is given in M. L'Heritier's Sertum Anglicum, tab. 20; but the description has not yet appeared. Having lately received specimens from New South Wales of five more very distinct species, we shall now attempt to characterize them, first describing more fully that exhibited in our plate.

Eucalyptus robusta is one of the largest and loftiest of trees, frequently 100 feet in height; its wood hard, heavy and ftrong, of a reddish colour, and abounding with refin. Branches round below, covered with fmooth bark, very angular towards the extremity. Leaves alternate, on footftalks, firm, fmooth, with a strong rib and fine parallel veins, ovate, pointed, entire, generally oblique, and often a little unequal at the base, but not universally so. Stipulæ none. Umbels on flower-stalks, frequently from the axillæ of the leaves, and folitary, fometimes two or more together, forming a fort of alternate racemus, and fometimes fuch racemi terminate the branches. Bractea none. General flower-flalk an inch or more in length, compressed, two-edged, dilated upwards; partial ones about eight or ten together, nearly of the same form, but much shorter, fingle-flowered, dilated into the base of the calyx. Flowers yellowish, occasionally with a red tinge. Calyx obconical, fometimes round, often two- or even four-edged, entire; lid rather more than equal to it in length, fwelling above the base, then suddenly contracted, and terminating in a blunt, flightly curved, conical point. When the lid falls off, it discloses numerous stamina, which soon spread very wide. The style stands on sour cross ribs in the centre of the slower, which crown the germen; it is club-shaped, compressed or angular; stigma simple; germen in the bottom of the calyx. We have not seen the fruit ripe. Every part of this plant, and indeed of every other Eucalyptus we have examined, is void of all pubescence. This is not so highly aromatic as some other species, though very perceptibly so when rubbed, and it is likewise astringent and acrid. Its resin is an inferior sort of red gum, of a brown hue. The size and strength of the tree, like that of the European Quercus Robur, seem peculiarly to justify the name robusta.

EXPLANATION OF TAB. XIII.

I. I. A young flower.
 Calyx.
 Lid.
 Stamina not full grown.
 A complete flamen.
 Style.

CHARACTERS OF SOME OTHER SPECIES.

2. E. tereticornis, operculo conico tereti lævissimo calyce triplo longiori, umbellis lateralibus folitariis.

Lid conical, round, very smooth, thrice as long as the calyx. Umbels lateral, folitary.

The *lid* of this species is remarkably smooth and polished, not wrinkled even in the dry specimen; it often breaks off a little above the base, leaving its thin lower part like a loose ring round the *calyx*. The *leaves* are lanceolate.

3. E. capitellata, operculo conico calyceque angulofo fubancipiti, capitulis lateralibus pedunculatis folitariis.

Lid conical, and, as well as the calyx, angular, and fomewhat two-edged. Heads of flowers lateral, folitary, on flower-stalks.

The *leaves* are ovato-lanceolate, firm, aftringent, but not very aromatic. We have feen no other fpecies in which the *flowers* ftand in little denfe heads, each flower not being pedicellated fo as to form an umbel. The *lid* is about as long as the *calyx*. *Flower-ftalk* compreffed, always folitary and fimple.

The fruit of this species, standing on part of a branch whose leaves are fallen off, is figured in Mr. White's Voyage, page 226, along with the leaves of the next species.

4. E. *piperita*, operculo hemisphærico mucronulato, umbellis lateralibus subpaniculatis solitariisve; pedunculis compressis, ramulis angulatis.

Lid hemispherical, with a little point. Umbels lateral, somewhat paniculated, or solitary; flower-stalks compressed. Young branches angular.

SYN. E. piperita, White's Voy. p. 226, figure of the leaves only.

A fine effential oil, much like that of Peppermint, is obtained from this species, and every part of the dried plant exhales the same odour when rubbed.—We are now convinced this is distinct from the following, having compared the flowers of both. At the same time we have observed the minute white spots on the leaves (White's Voy. 228.) in E. piperita, as well as in the other.

5. E. *obliqua*, operculo hemifphærico mucronulato, umbellis lateralibus folitariis; pedunculis ramulifque teretibus.

Lid hemispherical, with a little point. Umbels lateral, solitary: flower-stalks and young branches round.

SYN. E. obliqua, Ait. Hort. Kew. v. 2. 157. L'Herit. Sert. Angl. t. 20.

From the only specimen we have seen of this, which is in Sir Joseph Banks's herbarium, it appears the branches are all round to the very top. General flower-stalks round, the partial ones only slightly angular, not compressed. Bark rough from the scaling off of the cuticle, but this may be an unnatural appearance. Leaves ovato-lanceolate, aromatic, but without the flavour of peppermint.

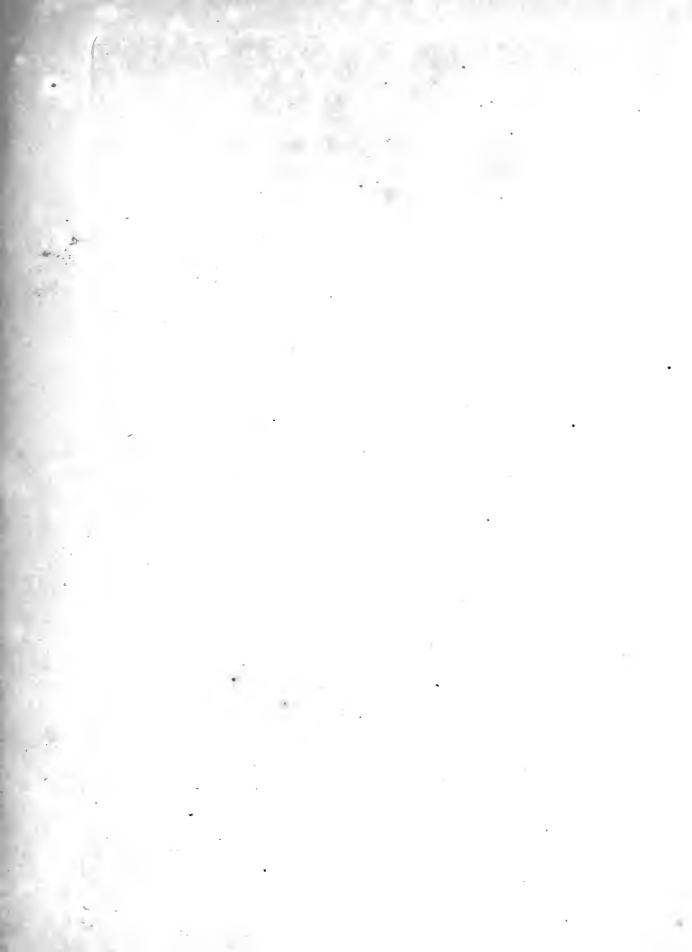
6. E. corymbofa, operculo hemisphærico mucronulato, umbellis corymboso-paniculatis terminalibus.

Lid hemispherical, with a little point. Umbels panicled in a fort of terminal corymbus.

This, when in flower, is the most magnificent of its genus. The *leaves* are lanceolate, astringent and acrid, but scarcely at all aromatic. *Flower-stalks* all compressed. *Lid* formewhat membranous.

All the species are destitute of hairiness or pubescence, the *leaves* simple, lanceolate, or ovato-lanceolate, pointed, entire, most frequently oblique, and often unequal at the base, on angular *footstalks*, without *stipulæ*. Stamina very numerous. Style and sigma simple.

There feems to be another species in the gardens, with narrow leaves, the young ones of a rich purple, but its flowers are as yet unknown.





ed Jan , 1745 by J. Sowerby No Mead Place. Lumbeth .

STYPHELIA tubiflora.

Crimfon Styphelia.

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PENTANDRIA Monogynia. Fl. inferior, of i petal, with feed-veffels.

GEN. CHAR. *Cal.* imbricatus. *Cor.* tubulofa. *Stam.* fauci inferta. *Drupa* quinquelocularis. *Semina* bina.

Cal. imbricated. Cor. tubular. Stam. inferted into its orifice. Drupa of 5 cells, with 2 feeds in each.

Spec. Char. S. corolla clavata longissima: limbo revoluto hirfuto, floribus axillaribus folitariis, foliis obovato-linearibus.

Corolla club-shaped, very long; limb revolute and hairy. Flowers axillary, solitary. Leaves linear, slightly obovate.

IT has lately been a complaint among cultivators of plants, that the vegetable productions of New Holland,

however novel and fingular, are deficient in beauty. We do not think the censure by any means just in general; and if it were so, the shrub here delineated might atone for a multitude of unattractive ones, by its own transcendent elegance, as well as by its resemblance to the favourite *Erica tubistora*. We hope it will one day be introduced into our gardens, and remain a perpetual affertor of the botanical honour of its country.

Our figure is taken from a drawing, obligingly communicated by the late Major Rofs, and affifted by very magnificent specimens from Mr. White. This species escaped the observation of Sir Joseph Banks and Dr. Solander, though several others of the same genus, which is an extensive one, were brought to Europe by them, as well as by Dr. Forster. The latter confounded the genus with his *Epacris*, as did the younger Linnæus after him; a mistake which Gærtner corrected, and called our *Styphelia* by the name of *Ardisia*; but that denomination having been previously given by Dr. Swartz and Mr. Aiton to another plant, we adopt Dr. Solander's original name, *Styphelia*, derived from superscript, harsh, hard or firm, expressive of the habit of the whole genus, and indeed of the whole natural order.

This shrub forms a thick bush, two or three feet in height, variously branched, firm and rigid in all its parts; the *branches* round, downy when young. *Leaves* scattered, sessile, spreading, of a narrow obovate figure, entire, tipped with a spine, smooth, marked with many

parallel veins beneath. Stipulæ none. Flowers about the middle of the branches, axillary, folitary, foreading, on very fhort, downy flower-flalks, furnished with two or three minute, pungent, downy bractea. Calyx imbricated, fmooth, striated, pungent; the five innermost leaves lanceolate, nearly equal; the three, four or five outer ones much shorter, broader, and gradually less-Corolla four times as long as the calyx, crimfon, tubular, fwelling upwards, externally fmooth, internally very hairy, especially just above the base; limb in five linear, revolute, hairy fegments. Stamina alternate with those fegments, and inferted at their base, projecting, simple, fmooth; antheræ versatile, incumbent. Germen small, globular, furrowed, fmooth, invested at the base with a fort of entire membrane, probably the nectarium of Solander; flyle capillary, longer than the stamina; fligma fmall, obscurely notched, fmooth. Fruit an oval fmooth drupa, which we have only feen half-ripe, but in that flate it plainly exhibited the generic character.

EXPLANATION OF TAB. XIV.

1. Flower-stalk, bracteæ and calyx. 2. Calyx leaves. 3. A flower opened. 4. A magnified stamen. 5. Germen magnified, with its membrane. 6. Half-ripe fruit of its natural size.

The other fpecies which we have been able with certainty to determine, though we have incomplete fpecimens, or drawings, of feveral more, are

- 2. S. ericoides, corollæ limbo patente hirfutiffimo, racemis axillaribus breviffimis erectis, foliis lanceolatoellipticis revolutis.

 Limb of the corolla fpreading, very hairy. Clufters axillary, very fhort, erect. Leaves elliptical, fomewhat lanceolate, revolute.
- 3. S. *flrigofa*, corollæ limbo patente imberbi: fauce pilofa, racemis axillaribus terminalibusque brevissimis erectis, foliis subulatis.

 Limb of the corolla spreading, naked; the orifice hairy. Clusters axillary and terminal, very short, erect. Leaves awl-shaped.
- 4. S. fcoparia, corollæ limbo concaviuſculo imberbi, racemis axillaribus breviſſimis recurvis, foliis linearilanceolatis.
 Limb of the corolla ſomewhat concave, naked.
 Cluſters axillary, very ſhort, recurved. Leaves linear-lanceolate.
- 5. S. daphnoides, corollæ limbo patente fubpubescenti, floribus axillaribus solitariis, foliis ellipticis concaviusculis.

Limb of the corolla fpreading, flightly downy. Flowers axillary, folitary. Leaves elliptical, a little concave.

6. S. lanceolata, corollæ limbo revoluto hirfuto, racemis aggregatis terminalibus, foliis lineari-lanceolatis. Limb of the corolla revolute, hairy. Clusters aggregate, terminal. Leaves linear-lanceolate.

SYN. Epacris juniperina, Linn. Suppl. 138.

——- fasciculata, Forst. Prod. 13. Gen. 10.

Ardisia acerosa, Gærtn. Sem. vol. 2. 78. t. 94.
f. 2?

This in good fair specimens has no resemblance to Juniper, and the term *acerosa* is applicable to almost every species, as is that of *fasciculata* likewise to the following. We have therefore been obliged to find a name which might not mislead.

7. S. *elliptica*, corollæ limbo patente imberbi, racemis aggregatis fubterminalibus, foliis lanceolato-ellipticis.

Limb of the corolla spreading, naked. Clusters aggregate, mostly terminal. Leaves elliptical, somewhat lanceolate.

All these species have the leaves tipped with a sharp point, which in S. daphnoides is less pungent than in the rest.

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MIMOSA myrtifolia.

Myrtle-leaved Mimofa.

POLYGAMIA MONOECIA.

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GEN. CHAR. Hermaphr. *Cal.* quinquedentatus. *Cor.* quinquefida. *Stam.* 5 five plura. *Pifl.* 1. *Legumen.* Masc. *Cal. Cor. Stam.* ut in hermaphr.

Hermaphrodite fl. *Cal.* five-toothed. *Cor.* five-cleft. *Stam.* 5 or more. *Pifl.* 1. Fruit a *pod.* Male, *Cal. Cor.* and *Stam.* like the hermaphr.

Spec. Char. M. foliis fimplicibus elliptico-lanceolatis obliquis margine cartilagineis integerrimis, capitulis axillaribus racemofis, leguminibus linearibus margine incraffatis.

Leaves fimple, elliptico-lanceolate, oblique, entire, cartilaginous in the margin. Heads of flowers in axillary racemi. Pods linear, with a thick edge.

SYN. Mimosa myrtifolia. Trans. of Linn. Soc. v. 1. 252.

THIS fhrub is now not uncommon in our green-houses, having been raised in plenty from seeds brought from Port Jackson. It generally bears its fragrant flowers late in the autumn, and might then at first fight be sooner taken for a *Myrtus* than a *Mimosa*.

It grows to the height of three or four feet, the branches alternate, upright, angular, with a very tough, fmooth bark. Leaves of the young feedlings in pairs, pinnated; their leaflets oval: but when the flem rifes, the common footftalks of its leaves become dilated, the leaflets cease to appear, and the whole shrub is ever after furnished with fuch dilated naked footflalks, which we beg permiffion to call leaves, because they undoubtedly to all intents and purposes are so; these are alternate, vertical, lanceolate, narrow at each extremity, tipped with a little sharp point, entire and cartilaginous in the margin, fmooth, firm, glaucous. Stipulæ none. On their upper edge near the base is a small concave gland. Racemi axillary, solitary, erect, of about fix alternate heads, each of three or four fmall white *flowers*, whose calyx has only four fegments, and the *corolla* four petals. The *flamina* are very numerous. Germen roundish; flyle and fligma simple. Pod linear, pointed, zigzag, brown, with a very thick margin. Seeds about fix, oblong.

EXPLANATION OF TAB. XV.

1. A flower in front. 2. The fame feen behind, magnified. 3. A flamen. 4. Germen, natural fize and magnified. 5. Pod open, natural fize. 6. A feed.

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Pull Grad Jon J. 1798. by J. Sowert; N. 2. Mand Place, Lamboth.

MIMOSA hispidula.

Little harsh Mimosa.

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Spec. Char. M. foliis fimplicibus ellipticis obliquis utrinque margineque fcabris, ramulis hifpidopubefcentibus, capitulis folitariis.

Leaves fimple, elliptical, oblique, rough on each fide and at the margin. Young branches clothed with fhort harsh down. Heads of flowers solitary.

A more extraordinary *Mimofa* than even the preceding. We know no other species that has so much asperity about it; certainly every other simple-leaved one yet discovered is perfectly smooth. It has not appeared in the gardens, nor were any specimens sent till last year.

It feems to form a thick rigid bush, the *branches* numerous, alternate, spreading, round, very rough with a short, dense, rigid pubescence, especially when young. *Leaves* alternate, apparently vertical, sessible, elliptical, oblique, pointed, entire, extremely harsh with minute,

prominent, scattered points, especially on the rib and the cartilaginous margin, so that they might be called denticulate. *Stipulæ* in pairs, very minute, triangular, membranous. *Flowers* pale yellow, many together in little round heads, which stand solitary, on rough axillary flower-stalks shorter than the leaves, destitute of bractea. Calyx in four segments, ciliated. Petals four, concave-Pod compressed, broadish in proportion to its length.

EXPLANATION OF TAB. XVI.

1. Back of a magnified flower. 2. A stamen. 3, 3, Two pods, copied from a drawing done at Port Jackson. 4. A stipula magnified.

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