Stamina 3 segmentis interioribus opposita in tubum perianthii inserta, filamentis brevibus filiformibus, antheris lanceolatis basifixis basi sagittatis. *Ovarium* inferum triloculare ovulis in loculo pluribus; stylus subulatus, profunde 6-fidus, ramis 3 elongatis, 3 brevissimis. *Capsula* oblonga glabra indehiscens, seminibus multis minutis globosis.

1. *P. HYPOXIDOIDES*, *Harv. loc. cit.*—*Ixia* minuta, *Linn. fil. Suppl.* 92; *Thunb. Diss. Ixia*, no. 2, tab. 1. fig. 1; *Prodr.* 9; *Fl. Cap.* i. 216.—*Galaxia* minuta, *Ker in König & Sims Ann.* i. 241; *Gen. Irid.* 71.—*Romulea* minuta, *Eckl. Verz. Topog.* 19.—*Hypoxis triandra*, *Pappe, MSS.*—*H. nana*, *E. Meyer in Herb. Drège.* Cormus annuus globosus 2-3 lin. crassus collo elongato, setis copiosis coronatus. Folia producta 6-12 glabra linearia graminoides acuminata multifaria 1-2 poll. longa. Pedunculi 3-6ni 1-2 poll. longi gracillimi glabri uniflori, bracteis minutis setaceis. *Ovarium* glabrum clavatum 1 lin. longum. Perianthium album 3-4 lin. longum, tubo infundibulari segmentis 2-3plo brevior. Genitalia ex tubo protrusa. Capsula $1\frac{1}{2}$ -2 lin. longa. *C. B. Spei*, Thunberg! Burchell 8448! Pappe! Drège! &c.

Plants to be altogether excluded from Hypoxidaceæ.

- HYPOXIDOPSIS PUMILA*, *Steud. in Hohenack. Pl. Canar.* no. 1313, = *Iphigenia indica*, *Kunth*.
HYPOXIS SCHNITZLEINIA, *Hochst. in Regensb. Flora*, 1844, p. 31, is a species of *Xerophyta*.
HYPOXIS FASCICULARIS, *Linn.* (*Monocaryum fasciculare*, *R. & S.*) is a form of *Colchicum montanum*.
HYPOXIS RAMOSA, *Lodd. Bot. Cab.* t. 1936, belongs to *Iridaceæ*, and is probably a *Romulea*.
H. SPICATA, *Thunb.*, = *Aletris japonica*.

On some Genera of the Olacaceæ. By JOHN MIERS, F.R.S.,
 F.L.S., &c., Dignit. et Commend. Ord. Bras. Imp. Rosæ.

[Read March 21, 1878.]

(PLATES V.-VII.)

Myoschilos, *Arjona*, and *Quinchamalium* are referred by the authors of the 'Genera Plantarum' to *Santalaceæ**, whereas I had previously placed them in *Olacaceæ*†. I now propose to

* Benth. & Hook. *Gen. Plant.* i. p. 345.

† In *Lindl. Veg. Kingd.* p. 444 a.

justify this conclusion by evidence founded on my own observations upon the living plants, made many years ago. These closely allied genera may be united into a distinct tribe (Arjoneæ), the distinguishing character of which is that each flower is supported upon a calycle, which, though sometimes small, is always distinguishable.

MYOSCHILOS.

This genus of the 'Flora Peruviana,' little known and less understood, was established in 1794 by Ruiz and Pavon, under some misconception; for at first* they described its fruit as crowned by the persistent perianth, a mistake repeated by every succeeding botanist; afterwards they corrected this error, delineating it as surmounted by a ring of 5 acute teeth†. I have still the original analysis of the fruit, made 57 years ago; and many specimens of this fruit are still preserved. Upon good data, therefore, the following diagnosis of the genus is given.

MYOSCHILOS, *R. & P.* Char. emendatus.

Calyculus imo hemisphæricus, latere externo in lamellam acuminatam productus. *Calyx* ei insitus, bisepalus, parvus, cum calyculo immutatus et persistens. *Corolla* tubulosa, carnosula, purpurea; *tubus* campanulato-cylindricus, imo ad ovarium arcte adglutinat, supra medium 4-5-partitus; *segmenta* acute oblonga, carnosula, patentim reflexa, æstivatione valvata, paullo sub apicem ungue mucroniformi extus munita, serius decidua. *Stamina* 4-5, segmentis opposita æquilonga; *filamenta* subulata, erecta, e margine disci orta, glabra; *antheræ* ovatæ, 2-loculares, sine connectivo, antice dehiscentes. *Discus* epigynus, carnosus, conice convexus. *Stylus* subulatus. *Stigmata* 3, minuta, divaricata. *Ovarium* obovatum, basi corollæ vestitum, disco coronatum, 1-loculare. *Ovula* 3, apice placentæ liberæ filiformis suspensa. *Drupa* baccata, ovata, apice styli vestigio et linea circulari (e margine disci) notata; *nux* conformis, testacea, 1-locularis, monosperma; *semen* loculum implens, e placenta nunc laterali cum ovulis abortivis suspensum; *integumenta* nulla; *albumen* carnosum album; *embryo* axilis, hoc brevior; *radicula* teres, supera; *cotyledones* 2, parvæ, compresse orbiculares multoties breviores.

Arbuscula subhumilis Chilensis, valde ramosa; rami subvirgati, subbreves, iterum iterumque ramulosi, glabri; folia tarde devoluta, parvula, oblongo-ovata; flores spicati, præcociter ante folia evoluti, minimi, amentiformi-imbricati.

* Prodrômus, p. 41, and tab. 34. § 3. fig. 7.

† Fl. Per. iii. p. 20, tab. 242 a. fig. 5.

MYOSCHILOS OBLONGA, *R. & P. Prodr.* p. 41, tab. 34; *Flor. Peruv.* iii. p. 20, tab. 242 a; *Lam. Dict. Suppl.* iv. p. 43.—*Myoschilos oblongum*, *Gay, Chile*, v. p. 327.—*Myoschilos oblongus*, *A. DC. Prodr.* xiv. p. 627. Chile in humidis: *v. v. et sicc. in herb. meo* ex Chile (nn. 259, 21,090) in flore et fructu, in flore (*Cuming* 738); Cordill. Chillan (19,557), in flore et fructu (*Germain*); Chiloë et Valdivia (7920), in flore (*Capt. King*).

I found this plant in 1820, when I made a coloured drawing of it, with copious analytical details. It grew upon the margin of the small river of Reñaca, about 12 miles to the north of Valparaiso. It is a small tree, about 6 feet high, slenderly much branched, bearing numerous flowers long prior to the appearance of most of the leaves. The leaves are alternate, about 1-3 lines apart, of a dull green colour, obovate, acute, mucronulate, with subrevolute margins, without apparent nerves, 4-8 lines long, 2-4 lines broad, on slender channelled petioles $\frac{1}{2}$ line long, very slightly puberulous on both sides; many lateral spikes at the ends of the still leafless young branchlets, alternate, 3-6 lines apart: peduncle 6-9 lines long, densely covered all over with numerous approximate flowers, rarely 1 line apart; calycle cupuliform, $\frac{3}{4}$ line long, $\frac{1}{2}$ line broad, with a frontal lateral erect acute extension 1 line long, pilose on both sides; sepals 2, seated within the calycle alternately with its expansion, linear, acuminate, pubescent all over, $\frac{3}{4}$ line long, $\frac{1}{2}$ line broad; corolla of a bright red colour, tube 1 line long, shortly adnate at its base to the ovary, limb 5- (rarely 4-) partite; segments acutely oblong, fleshy, sub-reflexed, $\frac{3}{4}$ line long, each furnished below the apex outside with a short hooked spur: stamens equal in number to the segments, opposite to them, included; filaments compressed, subulate, arising from the margin of the disk and partly adherent to the tube; anthers emitting a minute bright yellow pollen, and bursting longitudinally: style and stigma as long as the stamens: drupe of a dark purple colour, oval, 3 lines long, $2\frac{1}{2}$ lines broad, supported by the persistent calycle and sepals: rest as in the generic character.

I cannot detect any tangible specific difference between the specimens above quoted and obtained from such distant localities.

ARJONA.

This genus was established by Cavanilles in 1797. It consists of 8 species, all herbaceous plants, with several suberect stems

growing out of a napiform root often bearing edible oblong tubers. The stems are charged with alternate lanceolate leaves; and the inflorescence is terminal on a simple peduncle, bearing several alternately approximate flowers.

ARJONA, Cav. Char. emendatus.

Flores hermaphroditi. *Calyculus* brevissime stipitatus, imo cupulatus, margine exteriore in lamellam lanceolatam erectam productus, utrinque pilosulus. *Calyx* isti insitus, paulo brevior, 2-sepalus; *sepala* distincta, lineari-acuminata, subfalcata, lateraliter opposita, suberecta, utrinque pilosa. *Corolla* longe tubulosa; *tubus* tenuis, incurvus, ad nervos 5 angulatus, imo ad ovarium breviter connatus, faucem versus amplius, intus sub segmenta *lituris* totidem linearibus niveis squamulis minutis crebre pennatis instructis; *segmenta* 5, acute triangularia, recurvatim expansa, intus glabra. *Stamina* 5, fauce inclusa, segmentis opposita; *filamenta* tenuissima, antheris dimidio breviora; *antheræ* 2-lobæ, ad medium dorsi affixæ, lobis sublinearibus, sine connectivo, lateraliter adnatis, antice dehiscentibus, fuliginosis; *pollen* minutum, flavum. *Discus* epigynus, subconvexus, *glandulis* 5 radiatim prominentibus persistentibus coronatus. *Stylus* filiformis, longissimus, stamina attingens; *stigmata* 3, parva, acuta. *Ovarium** pyriforme, subpentagonum, viride, ad basin tubi corollæ adglutinatum, supra 1-loculare, infra pro maiore parte 3-loculare dissepimentis tenuissimis e placenta filiformi centrali productis; *ovula* 3, apice placentæ suspensa, uno in quoque loculo. *Fructus* ovatus, subparvus, glandulis 5 persistentibus coronatus; *pericarpium* fuscum, tenue; *nux* conformis, lutea, coriacea, abortu 1-locularis et monosperma; *semen* suspensum, nucem implens; *integumenta* nulla; *albumen* album, carnosum, pressione placentæ latere sulcatum; *embryo* centralis; *radicula* supera, teres; *cotyledones* 2, multoties breviores.

Herbæ vel fruticuli *humiles Americæ meridionalis*; radix *fusiformis*, fibrillis sæpe tuberiferis munita; caules *plurimi, suberecti, sæpe subramosi*; folia *alterna, rarius ternatim congesta, linearia, erecto-divergentia*. Flores in capitulum terminale spicato-aggregati.

1. ARJONA TUBEROSA, Cav. (non alior.) Icon. iv. pp. 57, 58, tab. 383; Lam. Dict. Suppl. i. 451, tab. 921; A. DC. Prodr. xiv. 627 (excl. synonym.).—Quinchamala patagonica, Spr. Syst. i. 537. Fretum Magalhães, ad portum Deseado (Née): non vidi.

The typical plant upon which Cavanilles founded this genus was collected by Louis Née in 1789, in his voyage round the world

* In *A. rigida* mihi visum et ex vivo pictum; in *A. tuberosa*, Cav., ut videtur subsemile; in reliquis speciebus 6 adhuc incognitum, sed analogice forsitan cum structura identica.

with *Malespina*. Née preserved a specimen, and made a coloured drawing of it while in a living state; from these ample materials Cavanilles drew his illustration and his excellent description. It is a small fruticose plant about 8 in. high, with a fusiform root 3 in. long, whose slender fibrils bear oblong tubers 10 lines long; the root at its summit throws out many erect simple or branching stems, about 6 in. high, striated and furnished with numerous approximated linear-lanceolate leaves, channelled and somewhat amplexicaul at the base, pungently cuspidate at the apex, somewhat recurvingly divergent, lower ones smaller, 6 lines long, upper ones 9 lines long, $1\frac{1}{2}$ line broad, tomentous: inflorescence terminal, spicately corymbose, bearing numerous subapproximate sessile flowers; calycle of each flower linear-lanceolate, subvaginant, sharply cuspidate, $4\frac{1}{2}$ lines long, $1\frac{1}{2}$ line broad; sepals 2, laterally placed, opposite, concave, oblong, acutely tridentate at the summit, the middle tooth longest, glabrous, embracing the base of the corolla: corolla yellow, tomentose outside; tube cylindrical, 6 lines long, slender; segments ovate-oblong, subacute, with a terminal short bristle, 3 lines long: stamens almost sessile within the mouth of the tube; anthers linear-oblong, yellow: ovary very small, green, crowned by the yellow 5-lobed epigynous disk; style filamentous, red, reaching the stamens; stigmata 2 or 3, lamellar; pericarp globular, crowned by the persistent disk, 1 line in diameter.

No mention is made of any hair or scales in the mouth of the tube. Née's specimen, I believe, is preserved in the herbarium of the Academy of Madrid.

2. *ARJONA PATAGONICA*, *Hombr. et Jacq. Voy. Astrolabe*, tab. 15 A, *sine descr.*; *Hook. Fl. Ant.* ii. 342; *Gay, Chile*, v. 324.—*Arjona tuberosa*, var. *patagonica*, *A. DC. Prodr.* xiv. 627. Ad fretum Magalhães portu Peckett: *non vidi*.

This species was collected by Hombron and Jacquinot in 1826: the New-Zealand portion of the plants obtained during the voyage was described by Richard in 1832; the other Phanerogamic plants were not described, but the illustrations of several of them were given by Dr. Hombron in the Atlas of plates accompanying the octavo volume of Richard. Dr. Hooker (*l.c.*) first described this species, in a short diagnosis, from Hombron's drawing; De Candolle, in 1856, enlarged this description from a plant of Lechler's.

It much resembles the typical species in size and habit, but is

everywhere glabrous; it has a similar root, but with smaller tubers; stems branching, erect, bare at the base; at first the lower leaves are only 1 line long, increasing upwards to a length of 4 lines, are shortly subulate, spreading, cuspidate at the apex, rigid, 5-nerved; the inflorescence is capitate, sericeo-tomentose; calycle concave, acute, half the length of the tube of the corolla.

3. *ARJONA PUSILLA*, *Hook. Fl. Ant.* ii. 342; *A. DC. Prodr.* xiv. 627; *Gay, Chile*, v. 323. Fretum Magellanicum, ad port. Cape Gregory: *v. s. in herb. meo*, Cape Gregory (*Capt. King*).

A low-growing, suffruticose species, with few branching erect stems 3 in. high, bare at the base, very glabrous; lower leaves barely 1 line long, increasing upwards to a length of 6 lines, and $\frac{1}{2}$ line broad, linear, subfalcate, channelled, 3-nerved; inflorescence terminal, flowers few, approximate: corolla yellow, subpuberulous outside; tube extremely slender, 5 lines long; segments acute, 2 lines long, $\frac{3}{4}$ line broad, subreflexed, glabrous: stamens included within the mouth.

4. *ARJONA APPRESSA*, *Philippi, Linn.* 33, p. 233. In Patagonia occidentali, Andibus de Rauco: *non vidi*.

Planta dense arachnoideo-lanata; radicellis filiformibus, tuberibus edulibus oblongis, 10 lin. longis et 5 lin. crassis præditis; caule elongato; ramis 4-5 poll. altis; foliis lanceolatis, 3-nerviis, inferioribus remotis, subreflexis, superioribus adpressis, fere imbricatis, 4 lin. long. $\frac{1}{2}$ lin. lat.; flores non adsunt.

A species evidently near *A. tuberosa*, differing in its smaller stature, covered with dense arachnoid tomentum, and in its smaller, imbricated adpressed leaves.

5. *ARJONA RUSCIFOLIA*, *Pöpp. secund. Meyer, Nov. Acta.* xix. *Suppl.* p. 412; *A. DC. Prodr.* xiv. p. 626.—*Arjona andina*, *Phil. Linn.* xxxiii. p. 232.—*Arjona tuberosa*, *Gay (non Cav.) Chile*, v. p. 322. In Chile prov. austro-centralibus: *v. s. in herb. meo*, 20,280, Cordillera de Maule (*Germain*); 20,662, Chile centr. (*Bridges 557*).

Root slender, fusiform, 8 in. long, with fibrous radicels bearing edible small tubers; stems many, erect, simple or branched, 3-7 in. high; leaves glabrous, subimbricate, lanceolate, patently recurved, channelled, subamplexicaul at the base, pungently cuspidate at the apex, rigid, lower ones 5-nerved, 4 lines long, upper ones with 7 prominent nerves, 5-6 lines long: terminal corymb subcapitate, 1 in. in diameter; peduncle 6 lines long, yellow,

striolate, glabrous, bearing numerous aggregated sessile flowers; calycle ovate-lanceolate, cuspidate, villous outside, $3\frac{1}{2}$ –5 lines long, 1 line broad; sepals 2, erect, $1\frac{3}{4}$ line long, $\frac{1}{2}$ line broad, arachneo-tomentose: corolla of a yellowish red colour, sparsely invested with very long flexuose white hairs; tube slightly cylindrical, subincurved, $6\frac{1}{2}$ lines long; segments subacute, $2\frac{1}{2}$ lines long, $\frac{3}{4}$ line broad, subreflexed, glabrous within, except where they are each furnished at its base with a linear feather-like process densely pinnate, with shortish septiferous hairs; filaments slender, glabrous, reaching the mouth: anthers linear, 1 line long, verticillately attached dorsally in their middle, erect, half exserted; ovary oblong, $\frac{1}{2}$ line in diameter, surmounted by the usual disk and a very slender style reaching the stamens; stigmata 3, linear, lamellar, shortly hirsute.

6. *ARJONA RIGIDA*, nob.—*Arjona tuberosa*, *Philippi* (non Cav.), *Linn.* xxxiii. p. 231.

*Humilis, suffruticosa, caulibus gracilibus, striatis, glabris; foliis inferioribus minoribus, sparsis, superioribus majoribus, magis approximatis, linearilanceolatis, canaliculatis, imo amplexicaulibus, apice pungentiusculatis, rigidis, conspicue 5-nerviis, marginibus cartilagineis, patentim divaricatis, subrecurvulis, glabris, supra pallide viridibus, subtus flavide opacis, nervis prominentibus; inflorescentia terminali, laxe capitata; pedunculo brevi, sericeo-piloso; floribus sessilibus, subapproximatis; calyculo ovato-lanceolato, naviculari, acuminato, villosa; sepalis distincte 2, lateraliter oppositis, calyculo absconditis, acute oblongis, niveo-tomentosis; corolla aurantiaca, extus cano-villosa pilis retrorsis; tubo exigue cylindrico, striolato, fauce paullo ampliore; segmentis acute oblongis, subrevolutis, intus glabris, nisi ad lituris niveo-linearibus (ut in *A. ruscifolio*); staminibus fauce subinclusis; filamentis brevibus, tenuissimis; antheris linearibus, medio dorsi affixis; ovario breviter obconico, pentangulari, disco plano coronato; stylo filiformi, stamina attingente; stigmatibus 3, lamellatis, erecto-divergentibus. E regione Argentino, traversa del Desaguadero, inter provinc. Mendoza et San Luiz: *v. v. et sicc. in herb. meo* (410), cum icone ex vivo colorato; in traversa Mendozae (1064).*

Stems 3 in. high; lower leaves 2 in. long; upper ones $1\frac{1}{2}$ line apart, 6–8 lines long, $1\frac{1}{4}$ line broad; peduncles 4 lines long; laxly congested head of flowers 1 in. long, $\frac{3}{4}$ in. broad; calycle 4 lines long, $1\frac{1}{4}$ line broad; sepals 2 lines long, 1 line broad; tube of corolla 6 lines long; segments 2 lines long, $\frac{3}{4}$ line broad, each with a basal tomentous process 1 line long; linear anthers $1\frac{1}{4}$ line long.

7. *ARJONA LONGIFOLIA*, Philippi, *Ann. Univ. Chile* (1862), *Linn. xxxiii.* p. 232. Circa Mendoza (San Rafaël, *W. Diaz*): *v. v. et sicco. in herb. meo* (573, *cum icone ex vivo colorata*), circa Mendoza; *ex eod. loc.* (*Gillies*).

A suffruticose plant, with several alternate suberect branches 7 in. long, angularly striate, yellowish, glabrous, with axils $\frac{1}{2}$ –1 in. apart; leaves much elongated, linear-lanceolate, narrowed at the base, very acuminate and mucronate at the apex, divaricately patent, prominently 3–5-nerved, chartaceous (but not rigid), margins scabridly ciliate, sides folded together along the midrib, obsoletely pilose above, scabridulous beneath, 10–18 lines long, $1\frac{1}{2}$ line broad: inflorescence terminal, at first capitate, afterwards more laxly flowered and supported upon a yellow peduncle, deeply sulcate, bare at its base for a length of $1\frac{3}{4}$ –2 inches, head of flowers $1\frac{1}{2}$ in. long; flowers yellow, subapproximate; calycle acutely oblong, channelled, densely cano-villose, 3 lines long, $1\frac{1}{2}$ line broad; sepals 2, laterally opposite, acutely oblong, densely cano-pubescent, smooth inside, 2 lines long: corolla yellow, very tomentous externally; tube slender, narrowly cylindrical, sub-incurved, a little wider in the mouth, 6 lines long; segments sub-acute, tomentous outside, glabrous within except at the niveous streaks at their base, 3 lines long, $\frac{3}{4}$ line broad, subreflexed: stamens included in the mouth; anthers linear, fuscous, emitting a yellow pollen; ovary small, crowned by a flat disk marked by 5 reddish spots; style capillary, reaching the stamens; stigmata 3, lamellar, erecto-divergent.

8. *ARJONA LINEARIS*, *nov.*

Suffruticosa, ramosa; ramis suberectis, tenuibus, striolatis, fistulosis, flavescentibus, glabris; axillis remotiusculis; foliis anguste linearibus, ensiformibus, subrigidis, imo breviter amplexicaulibus, apice tenuiter pungentibus, trinerviis, marginibus cartilagineis, adpresse plicatis, utrinque vix pilosulis; inflorescentia terminali; pedunculo ad basin longe palato, sericeo-pubescente, superne multifloro; floribus superioribus capitato-congestis, inferioribus laxioribus. In jugo montium (Paramillo dictu) versus Mendoza: *v. v. et sicco in herbario meo* (no. 574), Villa Vicencio, altit. 5380 ped.

A species near the preceding, collected by me in 1826, when I made a coloured drawing of it. It differs in its narrower leaves, *more lax* inflorescence, with very sericeous flowers; its branches are 7–10 in. long, with axils 4–6 lines apart; leaves 12–21 lines long, $1-1\frac{1}{4}$ line broad when flattened; terminal peduncle very

slender, bare for a length of $1\frac{1}{2}$ in., the floriferous portion being $\frac{3}{4}$ -1 in. long; flowers many, alternate, crowded towards the summit, on short pilose pedicels; calycle ligulate, its external margin extended to a length of 3 lines, sericeous outside, glabrous within; 2 acute sepals, seated within the calycle, right and left, velvety sericeous outside, smooth inside, 2 lines long, $1\frac{1}{2}$ line broad, with the calycle persistent: corolla very sericeous outside, yellow; tube very narrow, somewhat funnel-shaped above, 6 lines long; segments acute, subreflexed, $2\frac{1}{2}$ lines long, $\frac{3}{4}$ line broad: rest as in the generic character: fruit oval, 2 lines long, $1\frac{1}{2}$ line broad, crowned by the 5 raised glands and the remains of the style; albumen ovate, filling the cell of the nut, with the usual embryo.

QUINCHAMALIUM.

This genus of the 'Flora Peruviana' differs from *Arjona* in the form of its calycle, in the shape of its calyx, and in its corolla with stamens wholly exserted, and in its fruit enclosed in the persistent calyx.

QUINCHAMALIUM, Feuillé.

Flores hermaphroditi. *Calyculus* depresso cupularis, margine lacerato.

Calyx globosus, lævis, 4-5-costatus, costis in dentes totidem terminatis, quorum unus externus paullo longior, persistens. *Corolla* tubulosa; *tubus* tenuiter cylindricus, subincurvus, ad faucem ampliat; *segmenta* 4-5, acute oblonga, subrecurva, extus sub apicem ungue mucroniformi singulatim munita, æstivatione valvata. *Stamina* 4-5, fauci inserta, segmentis opposita; *filamenta* compressa, antheris paullo longiora, glabra; *antheræ* oblongæ paullulo supra basin affixæ, erectæ, exsertæ, apice subacutæ, imo breviter cordatæ, 2-lobæ, lobis sine connectivo lateralibus, antice longitudinaliter dehiscentibus. *Discus* epigynus, subconvexus. *Stylus* filiformis, stamina attingens; *stigmata* 3, parva, terminalia. *Ovarium* ovato-globosum, ad corollæ basin agglutinatum, 1-loculare; *ovula* 3, ex apice placentæ centralis filiformis suspensa. *Fructus* ovatus; *pericarpio* fusco, tenui; *nux* lævis, tenuissime testacea, 1-locularis, 1-sperma. *Semen* conforme, loculum implens; *integumenta* nulla; *albumen* carnosum; *embryo* inclusus; *radicula* supera, teres; *cotyledones* 2, compressæ, orbiculares, multo breviores.

Herbæ, sæpe fruticulosæ; *Americæ australis*; radices fusiformes, fibrillosæ; caules plures, suberecti; folia alterna, linearia vel lineari-lanceolata; flores parvi, numerosi, sæpius in capitulum terminale congesti.

1. *QUINCHAMALIUM LINIFOLIUM*, *Feuillé* (*non Meyer*), sub "*Q. lini folio*," *Hist. pl. médicinales*, p. 57, tab. 44, et in *Observ. Append.* (vol. iii.) tab. 44.—*Quinchamali* chilense, *in parte* (*non Molina*), *Lam. Dict.* vi. p. 34. In Chile, primo ab auct. lectum in prov. Concepcion (lat. 37° 40' S.): *v. s. in herb. meo* (19556), pl. lecta in prov. Contigua, Talca (*Germain*).

The plant of *Germain* quite corresponds with the description and drawing of *Feuillé*. It has a similar branching root 2 in. long, throwing out about 9 suberect simple or branching stems 3-4 in. high, as in *Feuillé*'s drawing; leaves linear, narrow, mucronulate, patently divergent and curving, 2-3 lines apart, 4-8 lines long, $\frac{1}{2}$ line broad, glabrous; inflorescence terminal in a capitate head, about $\frac{1}{2}$ inch broad, upon a peduncle bare at its base for a length of 4 lines; calyces closely approximated upon the 4 faces of the peduncle, depressed, concave, with lacerated margins; calyx globular, with 5 unequal small teeth; corolla yellow, glabrous; tube slender, cylindrical, of a greenish hue, $4\frac{1}{2}$ lines long; segments acute, subreflexed, yellow outside, reddish within, 2 lines long, $\frac{1}{2}$ line broad.

2. *QUINCHAMALIUM CHILENSE*, *Molina*, *Saggio* (1782), edit. Brit. (1809) i. p. 123 (*non A. DC.*); *Lam. Dict.* vi. 34, *in parte* (1804); *Willd. Syst.* ii. 1217 (1799); *Hook. Voy. Beechey*, p. 44, *in parte* (1841). In Chile centrali: *v. v. et sicco in herb. meo* (no. 227), Conceon, prov. Valparaiso.

I found this plant in 1820, its vernacular name being *Quinchamali*. It is annual, with a stoutish, fistulose, herbaceous stem, about 5 in. high (sometimes, according to *Molina*, 9 in. in height), bare at its base for 1 inch, thence throwing up about 6 suberect alternate branches, again branched, all rising to the same level; leaves 4 lines apart, patently diverging and curving upwards, linear-lanceolate, acute at both ends, with subrevolute margins, glabrous, 1-nerved, with many transverse veins, 6-7 lines long, $\frac{1}{2}$ line broad, on a short slender petiole; inflorescence terminal, with numerous sessile flowers aggregated in a subglobular head $\frac{3}{4}$ inch in diameter; calyces cupuliform, with a lacerated margin, persistent, crowded upon the 4 faces of the acutangular peduncle; calyx globular, often caducous, 1 line in diameter, 4-costate, each nerve terminating in a short acute tooth, the outer one a little longer; tube of corolla slender, 3 lines long, shortly adnate at its base to the ovary; segments 5, acutely triangular, $2\frac{1}{2}$ lines long,

with valvate æstivation; stamens 5, altogether exserted, inserted in the mouth of the tube opposite the segments; filaments slender, as long as the anthers, which reach the top of the segments; anthers as in the gen. char.; style slender, 3-grooved; stigmata 3, roundish; ovary globular, 3-costate, crowned by the 5-glandular disk, 1-locular; ovules 3, suspended from the apex of a free central placenta; fruit globular, enclosed within the free calyx, its structure as in the generic character.

3. *QUINCHAMALIUM PROCUMBENS*, *R. & P. Flor. Peruv.* ii. p. 1, tab. 107 b.—*Q. chilense*, *Lam. (non Molina) Illustr.* ii. 135, tab. 142; *id. Dict. Suppl.* iv. p. 638, tab. 142; *A. DC. in parte, Prodr.* xiv. p. 625.—*Quinchamalium Dombeyi*, *Brongn. ex Hombron, Voy. Cog.* tab. 58, sine descript.; *A. DC. Prodr.* xiv. p. 626.—*Quinchamalium linifolium*, *Meyer (non Feuillé), Nov. Act.* xix. *Suppl.* p. 412. In Peruvia, prov. Tarma: *non vidi*.

As the details given by Brongniart and Meyer offer no characters at variance with those afforded by Ruiz and Pavon, all the above citations may be comprised under one species. Root fusiform, from which arise 7 or 8 stems, the 2 external ones procumbent, the others divergent or erect, 5 in. long, mostly simple, slender, glabrous, striate; leaves linear, sessile, acute at the apex, marked at the base by a purple spot, sparse, erecto-divergent, glabrous, 4-9 lines long, $\frac{1}{2}$ line broad; inflorescence terminal, bearing many spicately congested flowers in a dense head; calyces depressed, closely investing the faces of the quadrangular peduncle; calyx globular, with an oblique mouth, showing 4 small acute teeth, one of which is somewhat longer; corolla tubular, purplish red outside, yellow within, glabrous; tube cylindrical, pentangular, 9 lines long; segments 5, acutely oblong, 3 lines long, $\frac{3}{4}$ line broad, expanded; stamens inserted in the mouth, exserted; style slender, reaching the stamens; ovary small, globose, invested by the free calyx; pericarp globose, enclosed within the calyx, now somewhat enlarged.

4. *QUINCHAMALIUM MAJUS*, *Brongn. ex Hombron, Voy. Cog.* tab. 51 A, sine descr.; *A. DC. l. c.* p. 625; *Gay, Chile*, v. 319.—*Quinchamalium chilense*, var. *robustior*, *Hook. Voy. Beechey*, p. 44.—*Quinchamalium breviflorum*, *Presl, Epim. Bot.* p. 246.—*Quinchamalium rugosum*, *Phil. Linn.* xxxiii. p. 233. In Chile, prov. Central: *v. v. et sicc. in herb. meo* (227*), Quintero, prov. Valparaiso.

Stems slender, 2-4, flexuose, 8-12 in. high, shortly branching towards the summit, glabrous, bare below the middle; leaves spreading, acutely linear, sessile, glabrous, 6-12 lines long, $\frac{3}{4}$ line broad, upper ones minutely ciliate on the margins; inflorescence terminal; flowers spicate, subapproximate; calyces depressed-cupular, attached to the 4 faces of the peduncle in close order; calyx small, globular, rugose at the base, 4-dentate, teeth ovate, minute, except the external one, which is much longer, suddenly acute, with a red margin; tube of corolla slender, widening in the mouth, $3\frac{1}{2}$ lines long, glabrous, purplish; segments narrow, linear, acute, yellow, $2\frac{1}{2}$ lines long, 3-nerved at the base; stamens exserted; anthers narrow, linear; fruit rugous according to Philippi. A species much resembling *Q. gracilis* in habit.

5. QUINCHAMALIUM GRACILE, *Brongn. ex Hombon, Voy. Coq.* tab. 52, sine descr. (1825); *Gay, Chile*, v. 320 (1849); *A. DC. Prodr.* xiv. p. 625 (1856).—Quinchamalium chilense, var. gracile, *Hook. Voy. Beechey*, p. 44 (1841).—Quinchamalium ericoides, *Brongn. l. c.* tab. 52; *Gay, Chile, l. c.* p. 320 (1849).—Quinchamalium minutum, *Phil. Ann. Univ. Chile* (1862); *Linn.* xxxiii. p. 233 (1864).—Quinchamala tenuis, *Steud. Nomencl.* ii. p. 429 (1841). In Chile, prov. austro-centr.: *v. s. in herb. meo*, (n. 7934) ins. Chiloë (*Capt. King*), (n. 6630) Concepcion (*Dr. Miller*), (n. 21039) Chile (*Cuming*).

A very slender, flexuous, fibrilliferous root, $3\frac{1}{2}$ inches long, throwing up about 3 erect slender stems 2- $3\frac{1}{2}$ inches high; leaves very slender, linear, erecto-divergent, subfalcate, mucronate, glabrous, approximate, 4-9 lines long, $\frac{1}{4}$ - $\frac{1}{2}$ line broad, on a very slender petiole $\frac{1}{2}$ -1 line long; inflorescence terminal, in a small capitate head, consisting of many small, orange-coloured, approximated flowers; corolla tubular, divided for half its length into 5 acute segments; stamens included, style subexserted; fruit small, globular, 5-costate, of a lemon-colour, enclosed within the free calyx, which has 5 unequal small teeth.

6. QUINCHAMALIUM ELEGANS, *Presl, Epim. Bot.* p. 246 (1851); *Walp. Ann.* iii. 315.—Quinchamala tenuis, *Steud. Nom.* ii. p. 429, *ex plant. sub Q.* Chilense (*Bertero*, 581). In Chile, prov. Central.: *v. s. in herb. meo*, (20661) Chile (*Bridges*, 366), (21088) Chile (*Cuming*).

Stems several, slender, subdecumbent, curving upwards, $\frac{3}{4}$ line thick, striolated, glabrous, foliiferous from the base; axils 1-3 lines apart; leaves linear, almost filiform, with a pungent point, very

patent or deflected, 12–20 lines long, $\frac{1}{2}$ line broad; inflorescence terminal, capitate, subglobular, $\frac{1}{2}$ in. broad, upon a peduncle bare at its base for $\frac{3}{4}$ –1 in.; flowers numerous, sessile, very approximated; calycle depressed; calyx small, globose, $\frac{3}{4}$ line broad, 4-costate, with unequal, short, acute teeth, one being a little larger; tube of corolla cylindrical, curved, 3 lines long; segments oblong, acute, 2 lines long, $\frac{1}{2}$ line broad, yellow and glabrous inside, greenish outside, as well as the tube; stamens, style, and stigma exerted as far as the tips of the segments.

7. *QUINCHAMALIUM FRUTICULOSUM*, *Steud. Nom.* ii. p. 429; *A. DC. l. c.* p. 626 (*Bertero*, 1271), sine char.: *v. s. in herb. meo*, (19555) Chile, Cordillera de Chillan (*Germain*).

A suffruticose plant, with decumbent stem branching dichotomously or alternately; branches 5 in. high, slender, erect, subangular, finely striolated, glabrous; leaves 2 lines apart, younger ones closer and subimbricated, spathulately linear, sessile, obtuse at the base, mucronulate at the apex, curvingly patent, 1-nerved, with many thickish horizontal veins, 6–8 lines long, $\frac{1}{2}$ line broad; inflorescence terminal in a subcapitate head; flowers approximated; calycles crowded on the spicate peduncle; calyx small, globular, 4-dentate, the external tooth narrow, as long as the calycine tube; tube of corolla slender, striolated, obsoletely pilose, $2\frac{1}{2}$ lines long; segments acute, subreflexed, with the tube externally greenish, bright yellow and glabrous within, $1\frac{1}{2}$ line long, $\frac{1}{3}$ line broad; stamens inserted in the mouth; anthers half exerted.

These three genera were assigned to the *Santalaceæ* by Prof. A. DeCandolle in 1856*, and about the same time also by the authors of the 'Genera Plantarum'†, because of the supposed presence of a perigonium, which signifies that the calyx and corolla are combined into one body. But it is shown by the preceding details that in each of these instances there exists a calyx, which, though small, is invariably present, always free and distinct from the corolla, and in each genus supported by a free calycle. Thus it is manifest that these three genera cannot belong to *Santalaceæ*, and there can be no doubt whatever that they agree in all respects with *Olacaceæ*, with the addition of a

* Prodr. xiv. pp. 624, 626, 627.

† Gen. i. p. 345.

calycle in each flower, which places them in a distinct tribe of the family.

Prof. Baillon also places these genera in *Santalaceæ*, which, according to him, together with *Olacaceæ*, belong to a mere section of the *Loranthaceæ**: the validity of this view need not be here discussed, as his definitions are not consonant with the facts.

DESCRIPTION OF THE PLATES.

PLATE V.

- Fig. 1. Portion of a plant of *Myoschilos oblonga*: *natural size*.
 2. The calycle: *natural size*.
 3. The same, with the 2 free sepals seated within it, which embrace the base of the corolla;
 4. The corolla, seen from above: *both natural size*.
 5. The calycle: *magnified*.
 6. The 2 free sepals: *also enlarged*.
 7. The corolla, seen sideways;
 8. The same, showing the basal portion of its tube agglutinated to the ovary, its free portion being cut open to expose the 5 segments, leaving one of the stamens *in situ*;
 9. The five stamens, seated on the margin of the disk, all opposite to the segments: *all magnified*.
 10. One of the segments of the corolla, seen dorsally, to show the short mucroniform spur below the apex: *magnified*.
 11. A longitudinal section of the ovary, style, and stigma, showing its solitary cell, from the bottom of which arises the free filamentous placenta, from the apex of which 3 small ovules are suspended: *magnified*.
 12. The fruit, supported by the persistent calycle and sepals: *natural size*.
 13. The same, with half of the pericarp removed to show the enclosed nut.
 14. The solitary albuminous seed removed, having no integument, showing the persistent filiform placenta pushed on one side: *natural size*.
 15. The same: *magnified*.
 16. The persistent placenta, with the 2 abortive ovules: *magnified*.
 17. A longitudinal section of the albuminous seed, with the enclosed embryo: *magnified*.
 18. The embryo separated, with its superior radicle and 2 short cotyledons: *magnified*.

PLATE VI.

- Fig. 1. Drawing of a plant of *Arjona rigida*;
 2. The calycle, with its cupular base shown from the inside;
 3. A flower, supported by its 2 sepals: *all natural size*.
 4. The calycle: *magnified*.

* Adansonia, iii. pp. 114, 115.

- Fig. 5. The 2 sepals, removed from the calycle where they were seated ;
6. The corolla, which with the sepals are seated on the concave base of the calycle ;
7. The corolla, with its basal portion agglutinated to the ovary, the superior tubular portion cut open to show the hairy patches at the base of the segments : *all magnified*.
8. A stamen (enlarged), shown in three positions ; the 5 stamens are inserted in the mouth of the tube, opposite to the hairy patches.
9. A tetrahedral grain of pollen : *exceedingly magnified*.
10. The ovary, style, and stigma : *slightly enlarged*.
11. The ovary, crowned by the persistent, conical, 5-lobed disk ;
12. A longitudinal section of the same, showing it to be unilocular at the summit, trilocular below, with a central line up the middle, indicating the union of the three dissepiments, from the apex of which 3 minute ovules are suspended : *both magnified*.
13. The fruit : *natural size*.
14. The same, supported by the calycle and sepals, and surmounted by the persistent disk : *much magnified*.
15. A longitudinal section of the same, showing its solitary suspended seed, the placenta and 2 abortive ovules still remaining ;
16. The solitary albuminous seed without any integument ;
17. A longitudinal section of the same, with its included embryo ;
18. The embryo extracted, showing the superior radicle and 2 much smaller cotyledons : *all magnified on the same scale*.

PLATE VII.

- Fig. 1. A plant of *Quinchamalium chilense*.
2. A portion of the inflorescence : *natural size*.
3. Portion of the quadrangular peduncle, bearing on each of its 4 faces a row of persistent calycles, from which the flowers have fallen away ;
4. A concave calycle : *both somewhat magnified*.
5. A flower seated in its calyx ;
6. The flower removed : *both natural size*.
7. The 5-toothed globular calyx, one of the teeth longer than the others ;
8. The base of the tube of the corolla adnate to the ovary, enclosed within the free calyx ;
9. The corolla separated : *all magnified on the same scale*.
10. The upper free portion of the corolla cut open to show the 5 stamens placed opposite to its segments ;
11. A stamen, shown in front and sideway : *slightly magnified*.
12. A transverse section across the segments of the corolla, to show the manner of æstivation : *enlarged*.
13. A portion of the style and stigma : *much magnified*.
14. The ovary, surmounted by the persistent disk ;
15. A longitudinal section of the same, showing it to be unilocular, with a free central placenta rising from the base, bearing on its apex 3 suspended ovules : *both magnified*.
16. A fruit, enclosed within the persistent calyx ;
17. The fruit extracted : *both natural size*.

Fig. 18. The same: *magnified*.

19. The crustaceous pericarp of the same, with the nucleus taken away ;
20. The albuminous nucleus extracted, showing the persistent placenta ;
21. A longitudinal section of the same, showing the included embryo ;
22. The embryo extracted, shown in two positions: *all magnified on the same scale*.

The Fungi of Texas. By M. C. COOKE, A.L.S.

[Read April 4, 1878.]

(Abstract.)

THE communication of which the following is an abstract contained an enumeration of a small collection of Fungi made by Mr. H. W. Ravenal in a trip to Texas some few years since. In addition to this, all previously recorded species for that State were collated, and the result was the determination of a total of 149 species as all which, up to the present, have been recorded. This number is exceedingly small, and only serves to prove how very little is known of the mycologic flora of a state which probably is as rich in fungi as South Carolina.

The following twenty-five species are all that are absolutely new.

CORTICIUM CARNEUM, *Berk. & Cooke*.—Effusum, membranaceum vel subceraceum, ochraceo-carneum, ambitu albo-fibrillosum ; hymenio tenui, subglabro, lævi, siccitate rimoso.

On logs. Houston, Texas (*Rav.* 78).

The hymenium gives rise to fusiform rough cysts, such as are found in *Corticium cinereum*, which project above the surface, but do not occasion any velvety appearance, either to the naked eye or under a lens.

CYPHELLA CONVOLUTA, *Cooke*.—Sparsa ; pileo cupuliformi (1–2 m. m.) demum applanato, margine membranaceo, involuto, extus albo, intus carneo-rubro ; sporis oblongis (·007 m. m.).

On trunks. Houston (*Rav.* 295).

PHOMA HYSTERIIFORME, *Cooke*.—Gregaria ; peritheciis atris, elongatis, hysteriiformibus, ad basin applanatis ; sporis ellipticis, binucleatis, hyalinis (·01–·012 m. m.).

On herbaceous stems. Galveston (*Rav.* 224).

PHLYCTENA SMILACIS, *Cooke*.—Tecta, minuta, brunnea, dense gregaria, pauce elevata ; sporis filiformibus, elongatis, ad apicem curvulis (·02–·025 m. m.).

On *Smilax*. Houston (*Rav.* 208, 209).