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A. Engler

IV. III

Nepenthaceae

mit 95 Einzelbildern in 19 Figuren

von

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NEPENTHACEAE

von

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Character. Flores dioeci, apetali, inconspicui, virides aut purpurei, entomophili, saepe odore foetido. Sepala 4, rarius 3, distincta v. rarissime basi connata, hypogyna, imbricata, sed in paria duo aequalia v. rarissime inaequalia disposita, extus zt pubescentia, intus glandulosa et nectarifera. Stamina 24—4, filamenta in columnam connata, antherae in capitulum congestae, uniseriatae v. subbiseriatae v. biseriatae, parallelae v. :żr convolutae, biloculares, extrorsae, longitudinaliter dohiscentes; pollen trilobatum. Carpella 4, rarissime 3, sepalis opposita; ovarium sessile v. breviter stipitatum, ovatum v. oblongum, cylindricum v. tetragonum, dz pilosum, intus 4—3-loculare; stylus 0 v. rarius brevis, crassus, stigma discoidcum planum v. medio depressum, 4- rarissime 3-lobatum, lobis solidis v. ± lobatis; ovula oo anatropa, angusta et elongata, multiseriata, ascendentia, placentis centralibus affixa. Fructus capsularis, sessilis v. breviter stipitatus, fusiformis usque ovatus, coriaceus, 4- rarius 3-gonus, fusco-nitidus, loculicide dehiscens; valvae lanceolatae v. ovatae medio septiferae, apice lobis stigmaticis planis v. depressis, simplicibus v. bilobatis coronatae. Semina oo imbricata ascendentia filiformia, funiculo tenui placentis affixa; testa membranacea bicaudata breviter v. longe elongata, circum embryonem *dr.* relaxata et sinuosa, raphe filiformi ascendentia; albumen carnosum, embryo cylindraceus rectus in axi albuminis; cotyledones lineares in germinatione demum virides et epigaeae, radicula brevis infera.

Suffrut'ices fruticesve, prostrati erecti v. scandentes, ad 0,5—15 m alti. Caulis cylindricus usque trigonus, nudus vel prolongationibus ab basibus foliorum decurrentibus alatus, glaber v. it hirsutus, simplex v. ramosus. Folia altèrnantia, rarissime ad V2 plerumque ad $^2/_5$ spiraliter disposita, integra, exstipulata, sessilia v. petiolata, membranacea, herbacea v. saepe coriacca; folia adulta in petiolum, laminam, cirrhum, ascidium et operculum divisa; petiolus ubi formatus zb elongatus alatus, basi saepe amplexicaulis; lamina alabastro involuta pubescens rarius glabra, demum lanceolata ovalis v. obovata, nervis longitudinalibus 2 —15 parallelis, e costa v. e basi folii egredientibus, nervis transversis parallelis v. irregulariter areolatis, versus costam transversis v. oblique ascendentibus; cirrhus ab costa valida laminae prolongatus, tenax, saepissime convolutus et scandens, apice in basim ascidii ampliatus; ascidia monomorphia dimorphia v. trimorphia, inferiora saepe ampullacea usque ventricosa alis ventralibus ± expansis et ciliatis, ascidia superiora vel solum evoluta cylindracea alis reductis, summa infundibuliformia alis saepe ad nervos prominentes reductis, os transversum v. obliquum, saepe in collum postice productum, margine ± transverse expansa, coriacea, nitida striata et in peristomium formata, ascidium intus per totum nitidum glandulosum et »detinens« (p. 20) v. parte superiore eglandulosum glaucum opacum et »deducens« (p. 20); operculum ovatum ellipticum v. orbiculare, primum os claudcns demum expansum et inclinatum erectum v. reflexum, postice versus os ascidii articulatum, intus

sparse v. copiose glandulosum et nectarifcrum; costa folii parte posteriore oris ascidii et insertione opcrculi in calcar simplex, v. rarius 3—5-fidum, producta. Inflorescentia terminalis et folio opposita, cymosa, paniculata, cymis densis composita vel ad racemum simplicem reducta, pedicelli tenues, bracteolati vel cbracteolati.

Vegetative Organs (Vegetationsorgane). Germination of the seeds of *Nepenthes* takes place readily and abundantly within 5 to 6 weeks after they are ripe, if kept in moist surroundings such as the surface of *Sphagnum* or amid loose humus. They also require a temperature of 25° to 30° C. The seed-coat ruptures along one side from elongation of radicle and hypocotyl, and from curvature of the latter and of the cotyledons into a saddle that gradually straightens till the linear green cotyledons are set free from the seed cavity. The radicle of the seedling steadily lengthens during the first year till it may be 10—15 cm long. Lateral rootlets are formed acropetally on it, and in considerable number. These incline to grow obliquely downward or even horizontally, since thorough aeration is essential to their welfare. The entire root system of the plant is therefore formed near the surface of the soil, and is most perfectly developed when amid loose decomposing vegetable humus, decaying fibrous roots of other plants or open gravelly soil that is permeated by decaying vegetable material, as indicated by Korthals, Burbidge and Scott-Elliot, and as practised in successful greenhouse cultivation.

The annual growths of fine fibrous roots, in about \ 5 species studied, are greenish-yellow round the growing apex, but soon they assume a black-brown color. They are closely beset with brown absorptive root hairs, all of which remain functional throughout the season. Subsequent annual development results in the production of a copiously branched root system. Some authors have stated that average root-development in *Nepenthes* is comparatively poor and feeble. In healthy well grown plants this is not so. The active absorptive root-hair system is also exceptionally rich and abundant. By subsequent formation of a root cambium and associated tissue, the brown epidermal layer and subjacent cortex become split and ultimately shed in older roots. These then assume a yellow or flesh color that may be retained for years, but finally they become yellow-brown.

The young stem is at first closely beset by leaves placed in rosette fashion (Fig. \ C), since its internodes are almost suppressed. With increasing age the internodes gradually lengthen in most species. But in *N. ventricosa, N. Northiana* and others the internodes remain short, and so the adult leaves are inserted in close proximity to each other. If *N. Smilesii* and *N. Alicae* are mature species — and all present evidence is in favor of this — their stem attains a length only of 20—30 cm and is upright. In *N Veitchii,* from the seedling stage onward, the stem as originally described by Burbidge is prostrate, and creeps epiphytically along the branches of trees. It then forms its leaves in close succession and in two-ranked order, but it seldom attains a greater length than \ — 1,5 m in the living part, while the posterior portion tends to die away. This habit is perfectly retained under cultivation, and when plants are grown in a soil of fibre and sphagnum roots may grow down from the crowded nodes. In *N. ampullaria, N. melamphora* etc.., the main stem may elongate, and by aid of the leaf-tendrils may climb to a height of 2—6 m. But in these and other species if the main stem or lateral branches fail to reach a support, they may lie along the ground, root abundantly at the nodes, and there produce on short lateral branches dense clusters of leaves with reduced lamina but large and often richly colored pitchers (Fig. 13 p. 32). The largest and heaviest stems of the group are those of *N. Rafflesiana, N. Burbidgei, N. Boschiana* and JV'. *bicalcarata* which attain a height of 6—20 m, while the last may be 3 cm across. In color the stem and branches are green during the first few months of growth as a rule. In such species as *N albo-marginata* and *N anamensis* they may vary from green to dark claret. With age all become brown and somewhat •rittle in consistence. They are usually

cylindrical, lull muv !«.' **sharply** in-gonous a* in ***N,*** *tentaculata* and *N. Bongso,* or 3 ***—i~*** gonous as in .V. ***gracilis,*** wln-re **the** wings from mi" Wl **above mai he** in-ulimged downward *tAmw* ***tin*** **ugles of tha** ;ms I'nr 5—8 **era to** UJ--'-I Uie next leaf ln.-|ow. **The young *item* and brandies ate often clothed with a demo pubeseenca of a** ferruginous **or more** rarely **of a** pale **hue.** Tlii« **usually i willdii a few weeks, though it may persist** for a much **longer period** us in A". *hirsuta.* Main- **r the epi** nlliirii!.t[r] **bon** glands |-. 1 *i}* ou **the** young Hiiliuil **shoots.** TIIPSO LTIMIHIS **appear** as SOJUII {lapiJIni[1] **in the centre** 11 ;i **circular or elliptic area, and** iiiay **be** ft! a i-riuison line. 1hey are never abundant, are tisnully scattere**•I,** but, may be **prominent in** *N. biejdearafa* etc.

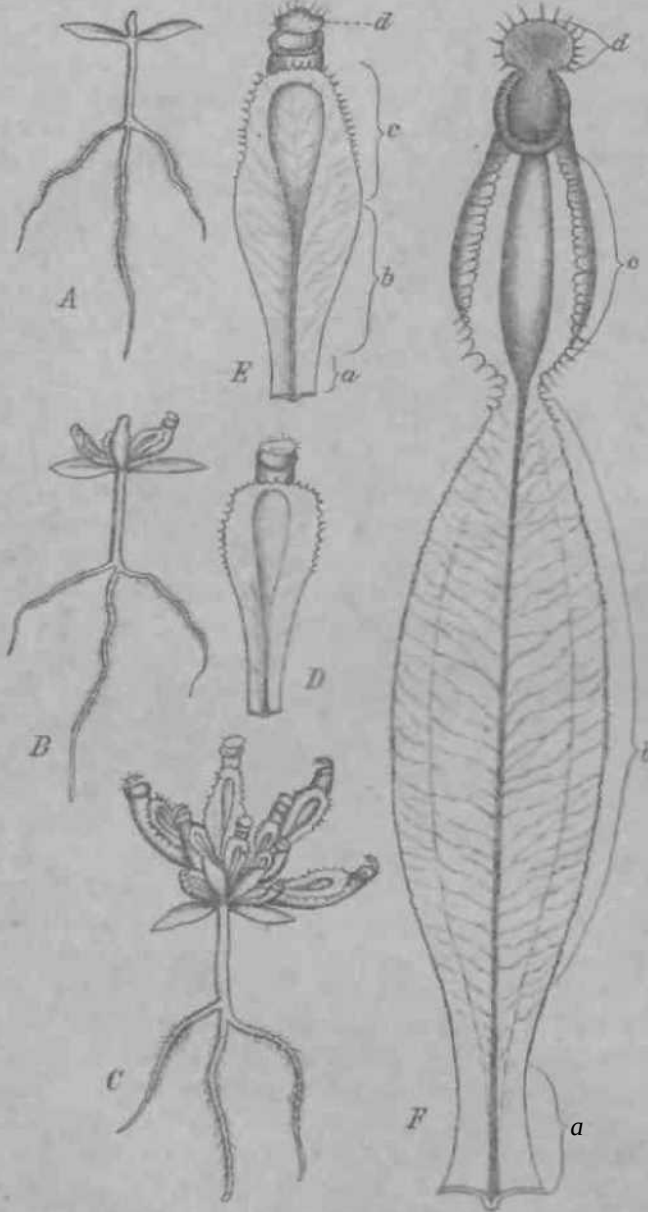


Fig. •. So. .Hi:gs of *Ne psMthe*. A* Cotyledtinory **ttage.** *B* Seedling with first pitcher-leaves. *C* Later stage. *D* Early seedling leaf. *E* Tenth le**if from** •otyledons. *F* Transition leaf between early seedling and adult **loa/; *a*** potiolB, ***b*** **lawl**na, *e* pitcher with wings, *d* lid **or opercoltuD< Icon.** *tuA*g.

As in **I In-** *Sarraceniaceae,* s o in **the** *Nepentftaccae,* **the** •otyledonary **leaves are** green, and are retained wiliiisi Ilic nllaiiiti'Li of the seed till this is abs**[orbed. The** i:otyledona **in *U*>\\\ romilies cloeely rc-Bamble each other,** li»i ihiis<ion.be .V;*enthaceae* **are lypkally elliptic** (Fig. **I.I. \> in thl***e Sarraceniaceae* they ***art*** **succeeded by pitch*** red seedling leaves, of w**bich 8—10 thai** resemble each other may !» **Formed as a tittle rosette *«u* the grouu-i.** Each becomes increasi*i.jiiy In-*ger **than** its **predecevBOi** -*Via.* **1** B, *C*) .tint, *at* r?ni|ili{i«izcd liv **Boofeer** and **Dtelcson, tbej supgesl decided affinity** wild **lesrea** of *Sarracenia.* They are still more nearly related to those of *Heliamy>hara.* Each of Utr **6** to 8 **learei On) produced** consists **of u ab<**thing petiolar **rib that is grailosllj prolonged op^**ard **into ;i broad lamlnai-** rtiiilri!> **whose** upper extremity **is bollow**ed out f:'oni **abort dowaward.** "lie **peiiplar rib** bea**n hi I** era] wiiu'j. ihiti **broaden** out. **.in.!** are continued **i]>\\;ir.| MS liiini-BHI** expansic'its **of th>- raidrib, 'I be** fron[1] **or ventral** |mrt **of** ilie **laminar midrib** i> >uint™liat tlal and ▷•ears the laminar ex"ftneion* ol either -i.i", so Hint **the pftcher aj**ppears as H liollnw **appesdl**ge to th**il** under surface (Fig. 4 *C, D*). As dev**slopment** proves, **Ihc pitcher is an inpouching** I'm h; transv:rse growth in **froni of** ami **belov the pitcher orifice the laminar expansioDi mtj form** a **peltate** union, as **described** ▷v **Booker and** bv Dick> on, an4 HI obsenred *by* **Ui« wri**ter in three sets of **hybrids. Goebel however failed to mflfre surh a pi**ltation in speciemens studied by **iirm.**

always well developed and of great tensile strength. Thus the tendril of *N. Rafflesiana* may be loaded with a weight of six kilos without rupture. Like other tendrils they are sensitive to contact stimulus when young, and may then coil round supports by two or three spirals, after which it is difficult to displace them. Only in short upright or in creeping species such as *N. rajah* and *N. Veitchii* do the tendrils remain straight and uncoiled. They are rarely uniform in thickness, usually they enlarge suddenly or gradually as they near the pitcher base. An interesting biological condition of the tendril is seen in *N. bicalcarata,* the structural relation of which was first explained by Beccari and Burbidge. Like the tendrils of most *Nepenthes* this has alluring honey glands, but here they are exceptionally large and numerous, appearing as evident papillae over the surface. Opposite the middle or lower half of the pitcher, where these glands are most numerous, a swelling that is about twice the thickness of the tendril above or below, is seen in wild specimens, and a similar though more reduced swelling is seen in cultivated specimens (Fig. 1 4). The swollen area is hollowed out and occupied as a formicary by ants. About the middle of the area is a circular hole, the entrance of the formicary (Fig. 14). The hole seems, at least in some cases, to have been the duct of a honey gland that the ants have gnawed into and enlarged while sipping its nectar. The liquid contents of the pitcher cavity, filtering upward through the cells of the tendril, can be sipped by the insects in safety. This constant liquid supply has caused enlargment and watery hypertrophy of the area. Its central cells break down or are destroyed by the ants, and the cavity thus formed becomes a formicary. As Beccari has shown it may vary in size from 2—6 cm X 1 cm. From the standpoint of plant heredity it is significant to note that the swelling always persists in cultivated plants, though these are not frequented by, nor perforated by, appropriate ants.

The next area of leaf specialization is *{d)* the pitcher or ascidium. The constituent parts of this have been very variously interpreted by different botanists. Their views are in part set forth by Bower and the writer [Ann. of Bot. III. (1839) 239, 254; IV. (1890) 165; VII. (1893) 450]. The adult pitchers in some species are all uniform or monomorphic, in other species dimorphic types of pitcher are produced, while several are triinorphic in that three distinct forms of pitcher develop at different heights on the plant. Alike from evolutional^, embryological and morphological evidence, the primitive type seems to be the tubular pitcher, that approximates in shape to pitchers of some species of *Sarraceniaccac.* This shape is retained in most of the monomorphic species such as *N. gracilis* (Fig. 2), *N. khasiana,* and *N* phyllamphora.* But possibly through weight of the liquid contents of the lower or terrestrial pitchers while these rested on the ground, some species bear ampulliform or goblet-shaped pitchers below, while the upper suspended or cauline ones are tubular or tubular ventricose (Fig. 15). *N. alata, N. ampullaria, N. anamensis, N. melamphora* and others show such dimorphic conditions. But in *N. Boschiana, N. maxima, N. Vieillardii* and less strikingly in a few other species, the lowest pitchers are ampulliform, those above are tubular, while toward the upper part infundibuliform or cornucopioid pitchers are alone produced. Gradation types between all of these are usually noted.

As study of the seedling pitcher in relation to the adult pitcher shows (Fig. *%A*—D), the often wide and almost flat area that intervenes between the wings of the pitcher on the ventral surface, is the expanded upper or ventral side of the midrib. The remainder of the pitcher wall is the inflated lower or dorsal side of the midrib. As is proved by successive stages in the evolution of seedling leaves, the pitcher wings represent the upper lobes of the originally continuous lamina, that become completely separated from the inferior or basal halves, by intercalary growth of the midrib region that becomes the tendril. These wings are usually well developed as lateral often ciliated expansions that traverse the length of the pitcher in the terrestrial type of the dimorphic species cited above. Their often richly ciliated margins are in striking contrast

in the straight margins of the narrow or ridge-tike n of s seD usually in ihe tulmlor" or fonnel-ahaped opper pitchers.

Ttie color *i*'\' Hie pitcher surface, including lk<> wings, vorjes greatly in different species, and *may* even win much in different pitchers ol the tame Individtu, according to age, exposure to light, and soil conditions. l» *X. am*pullaria, *N. Veitchii, N. dis*'iUatoria Ihe pitcher is often uniformly green; in A", *gn*oilis, *N. khasiana* and iV. *hirsuta* ii js green 'uiii lirii-ly spotted or even siUTuKi-il with red or crftnaon; in A^T. *maxima*, .V. *XorthititPi* aad .Y. /A*fflesian*' ii is !ight gree u with sharply defined and often extensive spots or blotc]es of a deep crinwon bne; while in JV! *outguinea*, *N. Edwardsiana* and -V. IWHOM it is largely or wholly i f a rich sewtal or uimson color. JV. /*afflesiana* var. *nivea* nil *K* fl*idge*• bear pitcher* thai are typical! y of a porcellanous white color with deep crimson blotches. Si me species may be dim orpbic in color as well as shape. Tbua the rela'!\.-l\ laigi lower or soil pHehera ot .*N. ampullaria* are itiV-n in Ihe wild stale richlj blotched with crim> son, wliilf tlii- aerial and sn La&er pit-chers• iiiin be almoet or wholly green. Similar variation is seen in *N. ntata*, *N. Macfarlonei)* *N. rajah*. Green and red varieliea of the same species are not mlfreqnent, as in *N. bic*•*tlcarata*$_1$ A". *dissiiUatoria*, and to -\ certain degrse -V. *Saffiesiana*. SeTersJ travellers Itave commenIed he fact that the lit*–al, more shaded and even most-covered pitchers of such species as -Y. *r-ijah* ami X fiiicn*ardsiana* are muc b more li*ghly col*i'!'i'1 ihimarcUui >iiu-i>x]]ost'il cauJine pitdiers, itiough Lhe exad explanation of Hits does not yd seem to have Iwen given.

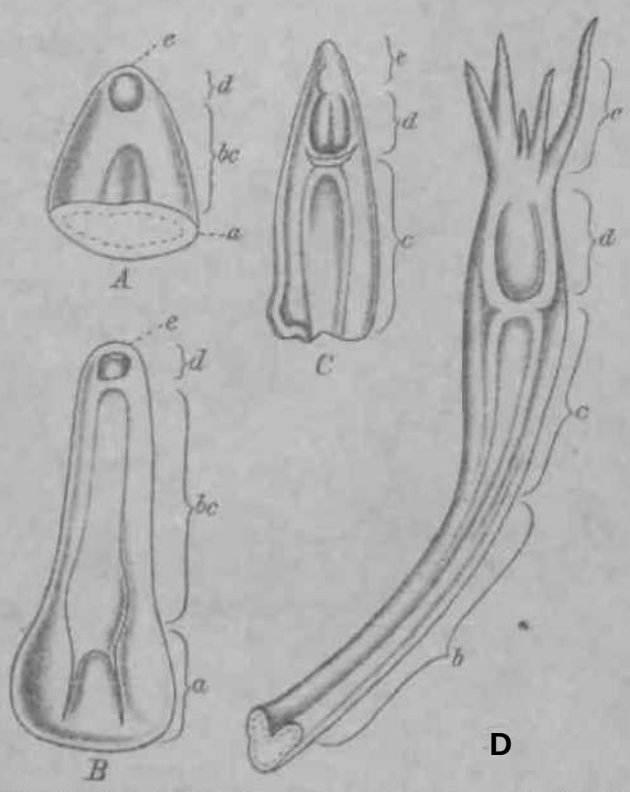


Fig. 3. 11 i*ntkt** loaf. *A* Foliar rudiment sho^tn^ c<Mitm«DCfo^ rJepref4>i"" for pit[1]her cavity. // More ulraoeed suge. *C* Terminal part of l<-iii. *0* Leaf eat above ji*etiole; *a* petiolar base, *be* lamin^r rutiiment ctwlinuou*s with pilchi*r wings, *d* pitche*r d«pr«&s<m uu]* UJ, *t* tenr*;pex, with lateral lobe*3 in 4. Al'ior Boo !;•*r f.)*

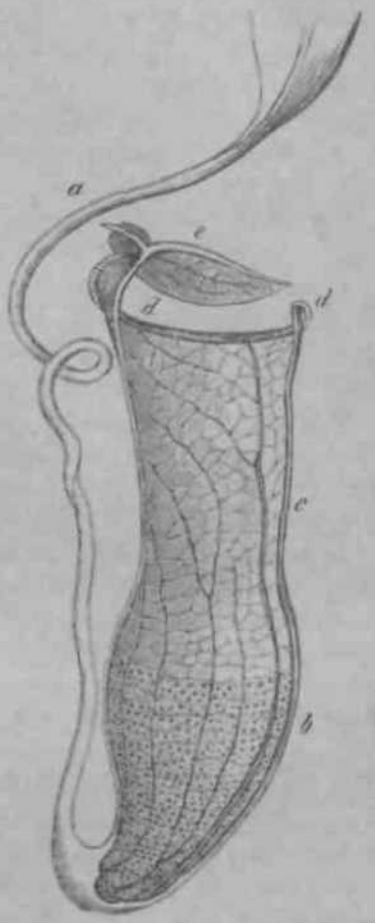
The I'uii'lium'ntal color ol thfl pitcher may be somewhat modified in appearance ▷y local or general hair cove.ings. Thus ihe green ptb*hers <>I ,\. •iiDjfiifliu••/'/ KOd A. /'•'•*suta*, also the crinwon-green pitchera ol" *N. villosa* may be ltixrwniah-green or browniibrcrinuoii in Lhi young state, owing lo Mr.- iiinindiini'c of long i-'ii'i-ginous hairs. In *X. atlHM"arginata* and to a le*s degree in iU probable hybrid *N. cincta*, H white belt of long stellile hairs in the former, and ol brownish-while bain in lhe lalter, surround tlie pUeher margin beneath the [icristome.

The iiisii-itmiion of veins throughout the pitcher waQ is in all cases copious. The circle of v*iBcol&r bundles that entm-s tbe lidse of the pitcher from the tendril, spn/ads out into two systems. One of theae, pursniuir n ventral or uppttr coui"se(consinU of two main lateral veins that ran upward along the edges •>! LU> nideneii-OQi rttntrai part of the pitcher. From these v.-ins pass outward fnta the ventral lamfnw lobi*s or win*ga when rach are well developed, and inward across the ventral ttea between Hie wings lo unite with "n^ m- more median veins Hint run up the front "i the i"[1]*her. I'Ue swoad and mo¥e a&unds&l system is composed >i* Dunvcrm*s veins that curve

outward and run upward along ilie lateral nnd dorsal sides of (lit; pitcher, till lliej approncli thi pitcher orifice. The laleral velns, as well as the upper ends of the ventral ones then carve graceful);) r>wnd toward the dorsal region, <md in tln-ir • *an* frive off minor bundles thai nm up into the «ib*l inice of the thick corrugated peristo[1D,e]- JJcr/' each bundle divide? ***n}<>n# th***>- inner margin *htu*> -**ijJ)** smaller brandies ilia' surround tin[1] nut:ginal glands of the rim. The recurved lateral and Ihe dorsal \ein8 converge and thi....d toward the pomi ef insertion • •! the Ed, into wbich they give off two liniin vohis. Their now attenuated extremities end in the dorsal spur, sHuuled bel::nd and near the point of insertion uf the lid. 'Ihis spur has therefore generally and rightly been regarded as the organit apex of the entire leaf system.

A i.otewort by relation oi the <eins of Lbe pitcher is Dial every gland, vrhether external or internal in position, Itus a bundle termination ending in or around it. This can be beautffallj demonstrated to Ihe naked eye, by macerating B pitcher in hot, potash solution for 20—30 minutes, and then removing the outer and inner epidermis in water; The tooter mesophyll tissue readltj washes away, and the bundle twtga thai supplied the L-littids a|,iji<'jH' us fine branch terminations of the vaecalar networlt ol the pitches.

The alluring glands of tliv leaf Bra readilj visitle to the naked eye, and ore moie or less develc>ped from the base of Uie petiole to the peristome and the outer Bd *surface. Their* microscopic structure is d*scribed later •p. n). In sucii spedes as A*, *amj nullaria* and *N. Raffiesiana* they are scarce over tin* petiole and lamina, bui » few maj be observed along the sides of the towei nidrib surfaci. u mimite papillnr swellings that exu•• a weel juice in fresh leaves. Thej are wmewhal moroabondanl over the pilcber winjs, less so o*ret* tlm dorsal part of the pitcher, in A. *Vctickii,* AT. *fchisiana*, and A. *maxima* they are Crequcnl over llio petiole ami Lower laininar sorfaoe. in *If, Xuitfu-ifff* and *N. sanguinea* tboj are also found on the upper lnniin.it surface, the Lendril and the pitched Hnl m A. *bicalcarata* they attain largest size and an quite abundan L flere they often form consjjiiin.ns **warti** along Ua* sides of the jetiole, the midri i. and Hi'- tendril. TUCKO glands, in conjunctioi i with lhe alluring glands of the stem, tempt insects upward by their secretion, to the *v*itcher mouth or to the litl. In hot (I rv weather ihe sweel secretion may even dry, so us to appear as a fine wiiit<- vermiform thread altfiched to the orifice ol the gland.



Pig. I. *SepentAtt graeilis* Korth. Extremity of lamina with midrib prolonged into a tendril or cirrhus (*a*). **lint «ipaodf mlo** a pitcher shown in section; *c* operculum in sectio**l**, *d* corrugated peristome, *e* deep co•nfhcting surface. *b* detentive and digestive mrfaee' «ith digestive gland**t.** (After Sachs.)

'"'"• periaUu.....*t* corrugBted rina of the pitcher (Pig. *"') is a conspicuous feature in nearly all species of the ffcnim. *ff, JjQwii* Pig, lit El thi only species in which H i^ ""developc-*l* the |itcher margin i>fii)K rititfgbi and somewhal raAexed. Along i' hiner margin *an iine parjXel* lon^itudinal ridges, Hint Indicate vascular bundles tr vers•n- Hi tntenn l tissue. Each ents below the edge in *a* deeply sunk mai gin ai gland thai opens by a **ta&\\ papiiar** pore. The porei coUectiyftlj form a dol ted line ah out i—6 mm beneath Ihe edge of Uie pitcher The lyplced pertiUnne is formed in part from incurving of the margin, vbich up to the period of opening ol the •oung pitcher is » ttslfonn rim thai project* upward under the ehwelj Dtting Bd. ta part

also it results from growth and recurving of a circular area below the rim, that appears as a circular swelling below and outside of the lid in the young pitcher. The zone of tissue just beneath the recurved portion often develops a copious felt of hairs that attain their maximum in *N. albo-marginata,* the rim of which is subtended by a white tomentose band. The convex surface of the mature rim is firm and shining, owing to heavy cuticularization of its epidermal cells. It is traversed by fine or prominent parallel ridges that are above and in line with vascular bundles. Its surface affords a very insecure foot-hold for insects. The ridges are usually prolonged beyond the infolded margin as teeth of varying length. While the ridges and teeth are very feebly developed in *N. Rcinivardtiana,* they become long evident processes in *N. melamphora, N. villosa* and iV. *Edivardsiana.* But their most striking development is reached in *N. echinostoma,* where the entire rim has become split up into a double row of incurved teeth that project toward the pitcher mouth. Round the infolded margin of the peristome, or toward the tips of the teeth are pores that correspond to those already mentioned in JV. *Loivii.* These open into longer tor shorter canals, that are in line with, and act as ducts for, the deeply embedded marginal glands. From these glands a sweet juice is discharged that is greatly relished by insects. In relation to the size of the pitcher, the widest and most perfectly inclined peristome is that of *N. ampullaria* (Fig. 13). Those of *N. Northiana, N. rajah,* A", *sanguinea* and *N. Veitehii* form a wide conspicuous often richly colored "frill" round the mouth. But more commonly the peristome is a nearly uniform circular collar, as in iV. *gracilis, N. khasiana* and iV. *phyllamphora.* It attains huge proportions in iV. *villosa* (Fig. 9) and *N. Edivardsiana* (Fig. 16, p. 53) where it is a broad cylinder elevated at rather distant intervals into plate-like ridges that are continuous with the long marginal teeth. In several species, notably A[r]. *Hemsleyana* and *N. Bafflesiana* the peristome and pitcher wall are greatly elevated posteriorly into a high neck that bears the lid. The upper halves of the peristome, in the latter species, are widened out, while the ridges and teeth are decurved toward the pitcher orifice. This becomes more pronounced in *N. bicalcarata,* where the uppermost parts of the peristome are lengthened out, decurved, and tapered into two hard sharp pointed spurs or spines that overhang the pitcher orifice (Fig. 14). Burbidge's explanation of their significance seems good. He observed in North Borneo that the pitchers of many species are visited by the small rodent *Tarsius spectrum.* Perched on the pitcher margin, it bends in its head and neck, scoops out the caught insects and devours them. But if it attempts such action with *N. bicalcarata* the two sharp spines often transfix it by the nape of the neck, and tumble it into the pitcher, or frighten it from attempting such action on other pitchers of the species. Another suggested explanation of the spines has recently been made, by supposing that they exude honey drops by their tips from a few marginal glands that are so placed as to cause an insect that attempts to sip, to drop off into the pitcher cavity. Such may be a partial reason for their gradual evolutionary selection and development, but Burbidge's view seems more natural.

The lid or operculum (Fig. *be)* is always developed, but it varies from a small narrow elliptic process as in A[r]. *ampiillaria* (Fig. \ 3) to large cordate or reniform expansions as in A[r]. *rajah* and A[r]. *bicalcarata* (Fig. 14). Bower and the writer have both suggested, from embryological (Fig. 3 c) and morphological evidence that the lid is to be viewed as two peltately fused laminar lobes or leaflets. Bower regards them as leaflets that are distinct in morphological value and continuity from the laminar lobes in front of the pitcher, and from the basal laminar halves. The writer views them as lobes of the primitively continuous lamina, that have early become rounded off and fused in peltate fashion in front of the spur to form the lid, while later and less perfect separation of the pitcher wings and the laminar lobes has occurred. Each lid shows, in most species, two strong and somewhat approximated veins running into it, and distributing minor median and lateral veins. Its apex is often emarginate or indented. Its external surface closely agrees with that of the outer pitcher wall, alike

in color, in hair-development, and in the presence of occasional alluring glands. Its internal surface may be entirely devoid of nectar glands as in the rudimentary lid of *N. ampullaria,* but in most species it is richly studded with glands whose sweet secretion is attractive to insects. In iV. *alata, N. Boschiana, N. Burbidgei, N. Veitchii* and *N. maxima* (Fig. \ 8) the inner base of the lid is expanded into a vertical crest that is copiously covered with glands, while in *N. maxima* an additional tongue-shaped or at times filiform outgrowth starts from near the lid apex. Two species only, *N. Loivii* (Fig. 19) and *N. Macfarlanei* develop long attenuate hairs from the inner lid surface, that are scattered amongst the nectar glands. In *N. tentaculata* (Fig. 15) a few similar hairs spring from the outer lid surface, often near the margin, but such are absent in the var. *imbei'bis,* while the hairs may be few on the inner lid surface of *N. Maofarlanei.* In developing pitchers that have almost attained their full size, the lid is applied very closely to a circular or oblique area, beneath the as yet uniform margin of the pitcher, and above a slightly bulged part of it. So tightly is the lid applied, and so closely do the hairs of the zone interweave, that the pitcher is thoroughly air-tight, and considerable pressure is needed to force open the lid, or to burst the pitcher. At such a stage in development, one can readily see by shaking the pitchers of most species, that a considerable quantity of liquid has already accumulated at the bottom of the pitcher-cavity. This has exuded from the inner pitcher wall, and is neutral in chemical reaction.

. The calcar or spur is a short straight or more often curved process, that projects from the posterior apical part of the pitcher, behind the insertion of the lid. This has properly been regarded as the organic apex of the leaf, alike on embryological and morphological grounds. Thus in the embryo pitcher the spur is the terminal pointed apex, below and in front of which the future lid originates as a usually bilobed process, and the future pitcher cavity as a small depression (Fig. 31?, *C).* In the adult pitcher also the vascular system converges toward the spur and in part ends in it. It is usually a simple filiform attenuate process, but in several Australian species it is flattened from above downwards, while in *N. ampullaria* (Fig. 13), *N. tcntacu • lata* etc. it may bear several paired or unpaired lateral processes, that the writer views as greatly reduced leaflets.

Anatomy (Anatomische Verhältnisse). Root system. Transverse section of a young root extremity shows an epidermal layer with dark brown cell walls. The free face of each cell is considerably thicker than the lateral and inner faces. From this layer originate the abundant dark brown root hairs. The cortex consists of three rather irregular layers of rounded cells with brown slightly thickened walls. These contain many small single or aggregate or compound starch grains. The endodermis is a layer of nearly cubical cells containing small starch grains. The pericambium is a single layer of cells, and from it originate many lateral rootlets, but a considerable number fail to develop. The vascular bundle system is stated by Zacharias to be tetrarch in *N. Scdmii,* pentarch or hexarch in A[r]. *phyllamphoru.* But in any one species the vascular system of the tip is tetrarch, but by splitting of one or more of xylem and phloem arms higher up, it usually becomes hexarch! The 4—6 protophloem patches consist of a small central patch of phloem cells, surrounded by sieve tubes. The protoxylem consists of a few spiral tracheae at the tips of the arms, that are succeeded centripetally by elements that become greatly lignified, and constitute a central tracheidal patch. By cambial formation between the protoxylem and protophloem, metaxylem and at lirst a limited amount of metaphloem are laid down, along with 4 — 6 uniseriate medullary rays. Simultaneously the pericambium reorganizes as a cork cambium, and begins to lay down cork. Succeeding death, and sloughing off, of the cortex and epidermis occur. The cork developed consists of several layers annually, each formed of shallow cells of reddish-yellow hue, that give the characteristic color to the older rootlets. From the second year onward decided additions are made to

the metaphloem, which becomes a cylindrical zone of considerable width. The metaxylem develops the same elements as are to be treated of under the stem.

Stem system. The anatomy of the stem was studied by Schultz and Korthals, but more recently in a thorough manner by Zacharias. The following account confirms, and only in some points extends his observations, specially as pertaining to other species than those studied by him. Transverse sections of the stem of *N. Hookeriana* through the first internode beneath the expanding leaf, show a shallow epidermal layer with cuticularized walls. From it arise many multicellular hairs. Beneath are 3—4 layers of chlorophylloid cells with clear walls, succeeded by 12—14 layers of fibrous cells. These contain a few chloroplasts, and their walls are strongly thickened at the angles. Isolated spiral cells traverse the fibrous tissue at irregular intervals. Beneath this is a zone of loose cortex tissue, composed of very unequal cells. Some of the smaller ones enclose small starch grains, some conglomerate crystals, a few contain chloroplasts, and some are spiral cells of rather large diameter. The endodermis (Fig. 5") is a regular layer of cells with thin walls. The cells contain small starch grains. Internal to it are 2—3 angular small-celled layers, succeeded by a relatively broad zone of large spiral cells, that are linked together by small thin-walled ones. Though thus peculiarly modified, if we accept present histological classifications, this double zone must be regarded as a highly specialized pericambial layer. The remaining plerome tissue within the last, indicates commencing modification along various lines. A relatively large amount in the centre is converted into pith tissue. This differentiates in part into thin-walled cells, that later may become filled with starch grains, and into large spiral cells. All of this tissue, as it continues to mature, so strikingly resembles that of the cortex, as to suggest a common origin embryologically with it. But later methods of wall thickening develop in the pith that cause it to differ strikingly from the cortex, while the conglomerate crystal cells of the latter have no parallel in the pith cells. The marginal mass of tissue beneath the pericambium differentiates into a ring of cambioid tissue, in which arise the proto-rudiments of the bundles. These are widely apart from each other, though they are connected by a ring of flattened cambial cells. The number of bundle rudiments varies from 29 to 34, and each bundle consists at first of a few spiral tracheae and companion cells internally, with phloem cells and sieve tubes externally. But a noteworthy detail, not shown evidently in the material used by Zacharias, is the formation of a set of pith bundles (Fig. 5) out of strands of meristem cells. The tissue that originates these is either part of a wide cylinder, or of isolated strands embedded in the pith, and made up of small-celled elements, in the midst of which the bundles mature. Each of these pith bundles is wedge-shaped, collateral, and consists of the usual elements. Their number varies from 5 to 8, and while, one or two may arise toward the middle of the stem, the majority are disposed near or against the protomeristem zone. Growth in the normal cambial ring gives rise to interfascicular tissue that fills up the areas between the bundles, and to numerous uniseriate medullary rays, that run out between the vascular masses formed. The vascular tissue consists of narrow elongated tracheids with pitted lateral walls, of broad quadrangular indurated cells, and of pitted or porous vessels of varying diameter. One to six rows of this tissue may intervene between each pair of medullary rays. Division into annual rings of growth, is as a rule impossible, since tissue is laid down with perfect and more or less continuous uniformity. But the total number of elements in depth, even in a three-year-old stem, is not great. During the second year however, an interesting change takes place in the region of the pericambium. The outer cells begin to divide, and cut off a typical cork tissue (Fig. *§Bg)* composed of shallow pale-yellow cells, much resembling those of the root. This cork-formation causes gradual shrivelling, browning and decay of all the tissue outside. By the fourth or fifth year therefore, in such species as *N. ampullaria, N* gracilis* etc. this decaying tissue composed of epidermis, fibrous and cellular cortex, and endodermis, bursts lengthwise, then transversely and finally scales off. In such species as

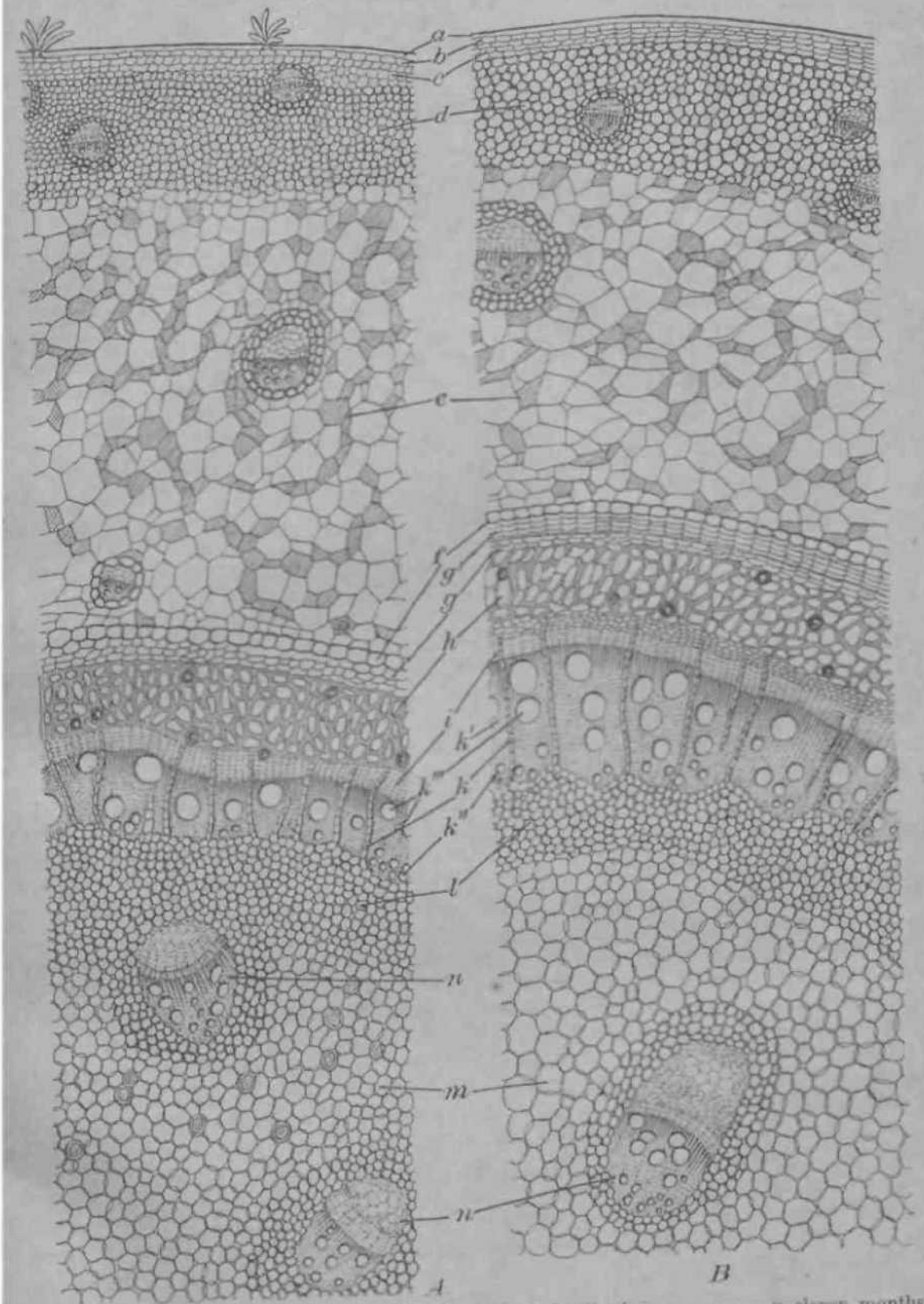


Fig. 5. Transverse Sections of Stem of *N. Hookeriana* Lindl. *A* Sectional^n eleven months three yea. *z* chlorophylloid cortex, *d* fibrous cortex with embed af-traces, *e* loose inner cortex, *f* ...dermis, *g* outer pari- cambial zone, *g'* (in *B*) cor ork-cambium, *h* inner pericambial zone with abundant spiral „11„ ;. puioe, *k* xylem, *k'* xylem tracheids, *k''* spiral tracheae, *k'''* pitted vessels, *l* outer or fibrous pith zone, *m* inner pith zone, *n* pith bundles. (Icon. orig. × 75°.)

X. bicalcarata this tissue only begins to separate by the 10th—12th year. Finally as the stem matures, rounded elements in the cylinder of spiral cells of the pericambium become increasingly thickened, till the lumen of each element is greatly reduced or almost obliterated (Fig. *hBh).* These elements are most abundant next the outer phloem, but are also scattered throughout the entire zone in some species. In *X. ampullaria* they form a discontinuous mass of greatly thickened scleroid elements around the phloem.

The stem and branches of many species may be abundantly covered with hairs of diversified structure, but as these resemble leaf hairs, they will be treated of under that heading. The nectar-glands of the axial parts however deserve special mention, not least from their striking resemblance to simple animal glands. Fig. *1 A,* is a section of a gland from the stem of *X. phyllamphora.* The epidermis has become deeply and sharply involuted. It has divided into three layers of gland tissue, of which the surface layer is deeply columnar. This lines a lumen that is lenticular below, constricted above, and that again widening, opens by a small circular orifice that discharges the sweet secretion. The three glandular layers of cells contain rich finely-granular protoplasm. Beneath these are two layers of bead-shaped cells, which in position and relation suggest resemblance to the membrana propria of animal glands. A vascular bundle given off from one of the accessory stem bundles ends in the base of the gland. A similar vascular supply exists for all the glands of *Nepenthes.* The axial glands attain their largest size in *X. bicalcarata,* where the glandular tissue may even undergo branching as seen in glands on the flower stalk.

The Leaf. The vascular connection and the course of the bundles in the stem and leaf, have been fully elucidated by Zacharias. The bundles that have bent out from the main cylinder as leaf-trace bundles, run into the cortex, and after branching and proceeding for a distance through it, they bend into the leaf-cushion as a double set of bundles, an inner and an outer. The inner ones are few in number, are of large size, and lie in part against, in part outside of the fibrous cortex ring. The outer are small, numerous, more or less alternate with the inner, and run between the inner bundles and the chlorophylloid cortex. Crossing and fusion occur between them, but higher up where the leaf cushion is prolonged into the petiole, the large inner bundles become mainly the strong upper or ventral bundles of the petiole, while the smaller ones in part become the arched set of bundles of the dorsal surface. Section of the middle or lower part of a petiole of *X. phyllamphora, X. bicalcarata* or others, shows within the epidermis and chlorophylloid cortex, a ventral plate of cortex sclerenchyma, that may or may not be continued round the petiole as a ring. Embedded on the inner side of it are the vascular bundles, either isolated or grouped into patches of 2—4, two such groups usually occurring along the ventral angles of the petiole. In *X. Veitchii* and others the cortex sclerenchyma is not continuous, but sclerenchyma rings exist round the individual bundles. All of the bundles that make up the plano-convex ring are oriented so that their xylem is toward the upper or ventral, the phloem toward the lower or dorsal side. The cellular tissue enclosed within the ring has one median dorsal *(X. phyllamphora, X. bicalcarata)* or several ventral vascular bundles *(X. Veitchii)* embedded in it. Its cells also may or may not contain conglomerate crystals.

The histology of the leaf will be treated of under the following sections, (a) epidermis, *[b)* epidermal hairs, *(c)* stomata, *(d)* epidermal glands, (e) mesophyll tissue, (*) vascular bundle tissue. The relation of these in the petiole and the basal lamina, in the tendril and in the parts of the pitcher will now be traced.

(a) The epidermis of the petiole and lamina, in the entire group, consists of a shallow layer of small cells, protected by a thin delicate cuticle. The cells of the upper epidermis of the lamina are typically polygonal and straight-walled, those of the lower epidermis are more or less sinuous in outline. In *X. Ilafflesiana* var. *nivea* the upper and lower epidermal cells are alike sinuous, and in size as well as shape

resemble each oilier. **The "Wiring modification undergoes by** Die epidermal cells of the **corrugated pitchei[1] rim i^ described below.**

(b) Tin- **epidermal** iwirs van **greatlj in structure and aspect Such *i*.....lea as** *N.* ***bicaicarata, X. NorOtuwa*** **and** \ *. ventricotn* may ***W*** **olnrasi devoid of** (linn, otbei' **spade*** liavf a **greate; or** It ss **abundance «t* '>*w* or tw<J rari** **my bear from I ibirt- to five.** Thi- must **wide); dislrih**uted, **aml apparent);** Hie mosl imporlanl **physiologically, are** th>' in-mui **peltate** liairs (Fig. r, . **These may N slightly** raised above, or on a levei with, **or somewhat** smili **below** Utr **level <<*i* the epidermis,** and il,,.i **persutj wen** in species **thai** art[1] **destitute nf other** nnir **covering^** as in **2v.** *centricosa.* **They** "tii'ti **becoBM promineni as small brown** ^i>*iis in **berbaritun sp<**ecimens. Ea**ill bair springs *from*** a **sli(iq.)|v depro»Be(] pwi of 'li>[i] eajdemtia, and coosirts <»f a** staIk-cell nf ttrii\siL **color** ttitil ijettrs a **rosette of -1, S or even IB ci**lls **accordutg to** thei **species** stiiili<'<t. **These rosette calls are levd ivil.li lh« epidermia** in **most species,**

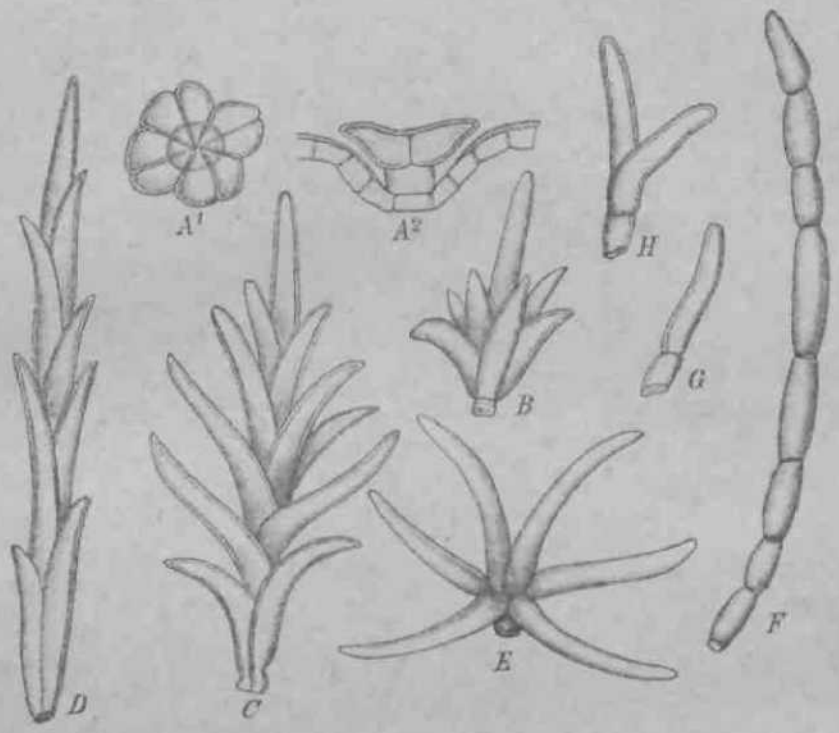


Fig. 6. **EpidBrmaJ hairs** of *Nepe>thes. A*[1] Sit;face viev.; [illegible] of brown peltate h.-nr. *B* Brown rosette fmir. (7 **Brownbroocbedttttlr.** /'! elongated brc **i\mbair,**—i? Oeur iliin-wttlled stellate ('•'") of *N. Veitchii* Hook. f. — /•' Itus- **ol** ,V, ***Burkei*** Miislttrs. — *G, H* Hairs of *N. madagascari*.y*s(i **Poin t,** l<m. •.:ig.)

ilify niriij in- fijuftJly aiiuudiiiii mi **both** suifan>s, **or more abundant on** Hie **lower** than **on** Hit' **upper ep)derod&** From **experimental eridence the** writer coasidors **that** they **act** as **moisture absorbent*,** mul **"I> resemble the atnaewhal rimiltu[1]** limr* **of** *Tillandsia* and **other Broroelloda, Re *nH* jrottog epidensal tiasuea** of some species are covered with **protruding bahw,** that arc **partiaUj or wholly shed as rauifl mctocea, but** in other speci••'* **the hairs peraist fa the roraaer cote circular epidermal cells, oflea** vriih thickened brown wnlKs, **reftreseal flw repon frooa which the hairs B»TS dropped^** Hardy **the bain an**: simple **and** nninelliiltu. tisuiiily they tut' **multicellnlar. In A. *tnar fagascari&uis, rkei Bu* and A.** *ventric**ma*** short **thiek-waned tuurs i»f 4—*I*** cells are **frequent [Kg. *G)** but **mterspersed** wiLh th(»s<> **are longer filiform** htiii'B **of &—8** i:ells, that ure either **cylindrical** or **branched. In *X. aBxrtnarginata* (lire** types are distmgoish-able* stellate hairs each made up >f four** long **nutfatfag** iliin-uallcl cells. These are very abundant **over tome parts "f the pitcher,** and in a denise ft'ltcd form make

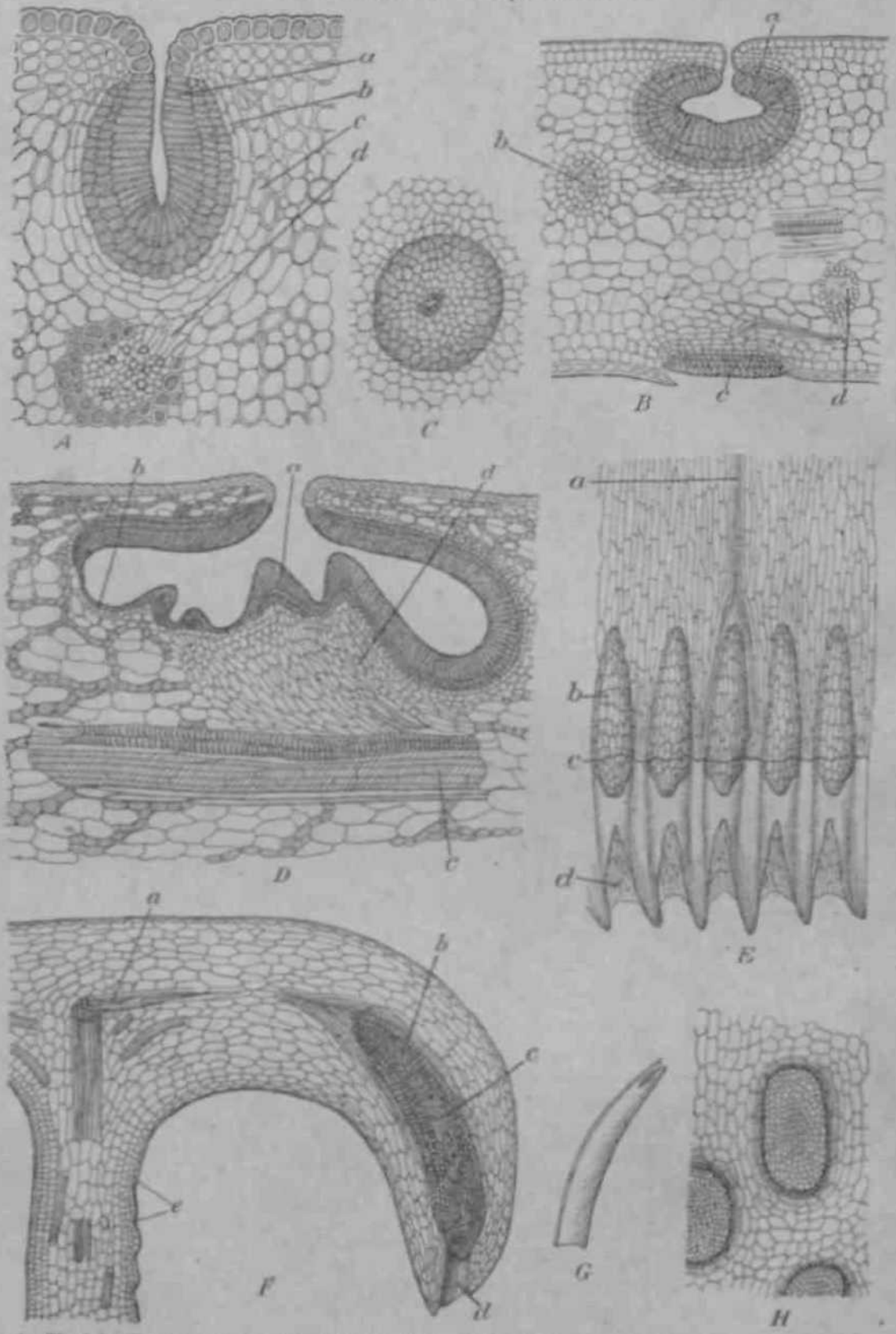


Fig. 7. Glandular structures of *Nepenthes*. *A* T. S. adaxial surface of X. phyllamphora Willd., *a* columnar glandular layer, *b* limiting layer, *c* spiral cell, *d* vascular bundle connection. *B* L. S. pitcher wall of *N.* Masoniana Hook. f. *a* adaxial gland, *b* its bundle, *c* digestive gland, *d* its bundle. *C* Attractive gland of *N. Peralleri* Hiern. *D* Attractive lid gland of *N. Lowii* Hook. f., *a* columnar layer, *b* limiting layer, *c* vascular bundle giving off a branch (*d*) to gland. *E* Surface view of dissected-out peristome of *N. Hookeriana* Lindl., *a* vascular bundle, *b* gland, *c* line of tissue separation, *d* marginal cells. *F* L. S. inner peristome margin of *N. Masoniana* Hook. f., *c* central gland tissue, *e* digestive glands; other references as in *E*. *G* Peristome tooth of *N. edwardsiana* Hook. f. with marginal gland. *H* Honey gland from sepal of *N. bicalcarata* Hook. f., that exactly resembles lid glands of many species.

up the white collar below the peristome that is chr ...tic of the species. The same form of hair is developed in *N. phyllamp* Jwni ;«l. relat"il lype-. A second in *N. albo-marginata* is the short thick-wall• i hnir dial lioara une lb» Hire* Im^il i radiating cells from whose united centre springs a long strong 2—3-celled shaft, whilt[1] a third is th• •• grea lly elongated multicellular linir Hi, twt sbundai< along the midrib. Each consists of 5—8 narrow thick-walled cells, the upp•r porU of which grow out as lateral *U* anch processes. This is the type that is speciall.v »bun<iant over the lamina and outer pitcher surface of *N. villosa*, uiJ v, |*v h gives it specific designation. tn *N. Veitchii* five types ol Imir orttjr. In addition to sessile peltate hairs there are a few thin-walled stellate hairs made up of "•—*1* - — usually 6 — lo ng clear radiate cells. Many sliort brovtt hairs, composed of a strong dagger-shaped central c U sQTrouad«d by 6—8 radiate basal cells (Fig. 6 *B*) give a fine brown pubescence to the leaves. Less abundant are st rong dark-browti greotlj •ranche< hairs that give n «s|ifltil\ h! rsute character to the lamina, and particula"\\ Lo Ibi midrib region of it. The fifth type is tha: which gives the hirsute aspect to the unfolding, and even to the mature lamina. It corresponds closely in histology to the long hair of *N. villosa* already described. In studying the specific value of related species, and the probable parentage of doubtful hybrids, the writer has found these hairs to be of extreme value, and they will doubtless be regarded with increased interest in the future. Functionally the elongated felted hairs evidently act M i i rotective covering to the young hoots and 1< aves against over-rapid heat radiation and evaporation. But in the mature state of such specie i as *N. albo-marginata*, *N.* Wfc'i *ii* and *N. villosa* they p-iiisilih D ay act US felted moisture holders for the general epidermal surface.

The stomata (*e*) of the lamina are wholly restricted to the lower epidermis, but arc tl ere very abundant. Their surface cell-area may amount to from $^1/_3$ to $^1/_4$ that of the epidermal surf... Each stoma is almost or quite circular in outline. . nud the guard cells arc well Btted will chloroplas ilc

The epidermal glands (*d*) of the petiole and lamina vary in number and distribution in the different species. Each gland appears to the naked eye as a little greenish-yellow papill minute central orifice. Microscopically it differs from the stem gland already described, in be ng ftsn<»t>f«i out in its glandular tissue (Fig. 7 *Ba*). The glands increase in mimbcr a a rule fpom »'em and petiole up to the l djoifior rod an-: the tendril. Only a few species such a, *N. Northiana* and *N. sanguinea* puncw them OR the upper •urfoev, tbooftb to—60 RJ ay be at times counted on the two last. Their number, as compared with that over the outer pitcher surface, may be indicated by the followi n *N. ampullaria* three leaves showed 35, 50, 44 over the iawrr lainnui mir face, and 5, 7, 10 over the outer pitcher surf »CP. In *N. Veitchii* 70, 64, latter. In *N. k* MMMMM one Ira/ *hi>* ed 64 over the former and ICO Oi er the latter. As a rule the larger, more specialised, and more richly colored species, have a greater nuuib«r (haa ti smaller lets -striking forms. That these alluring nectar glands should wholly or mainly be confined to the lower laminar surface is appropriate and explicable on principles of natural selection, when one remembers that insects in the tropics usually run along that area, .iinl *(> shelter themselves from the observation of enemies.

The mesophyll tissue *[tl) t* n> be divided into three zones, the aqueous, the palisade and the MMOgT In yers. The first consists of 1—3 strata of clear round — or rarely (*N. bicalcarata*) transversely elongated — cells, placed beneath the upper epidermis. In *N. Veitchii* this zone is about o h the thickness of the entire lamina, in *N. Northiana* about one-sixth, in *N. k* it is one-eighth. The cell walls show minute pore areas, and a fr w of the cells may contain crystals. The palisade parenchyma consists of 2—5 layers of cells that may be slightly elongated vertically, or rounded, or transversely widened (*N. bicalcarata*), and the cells are richly supplied with chloroplasts. The loose parenchyma is twice to three times the depth of the

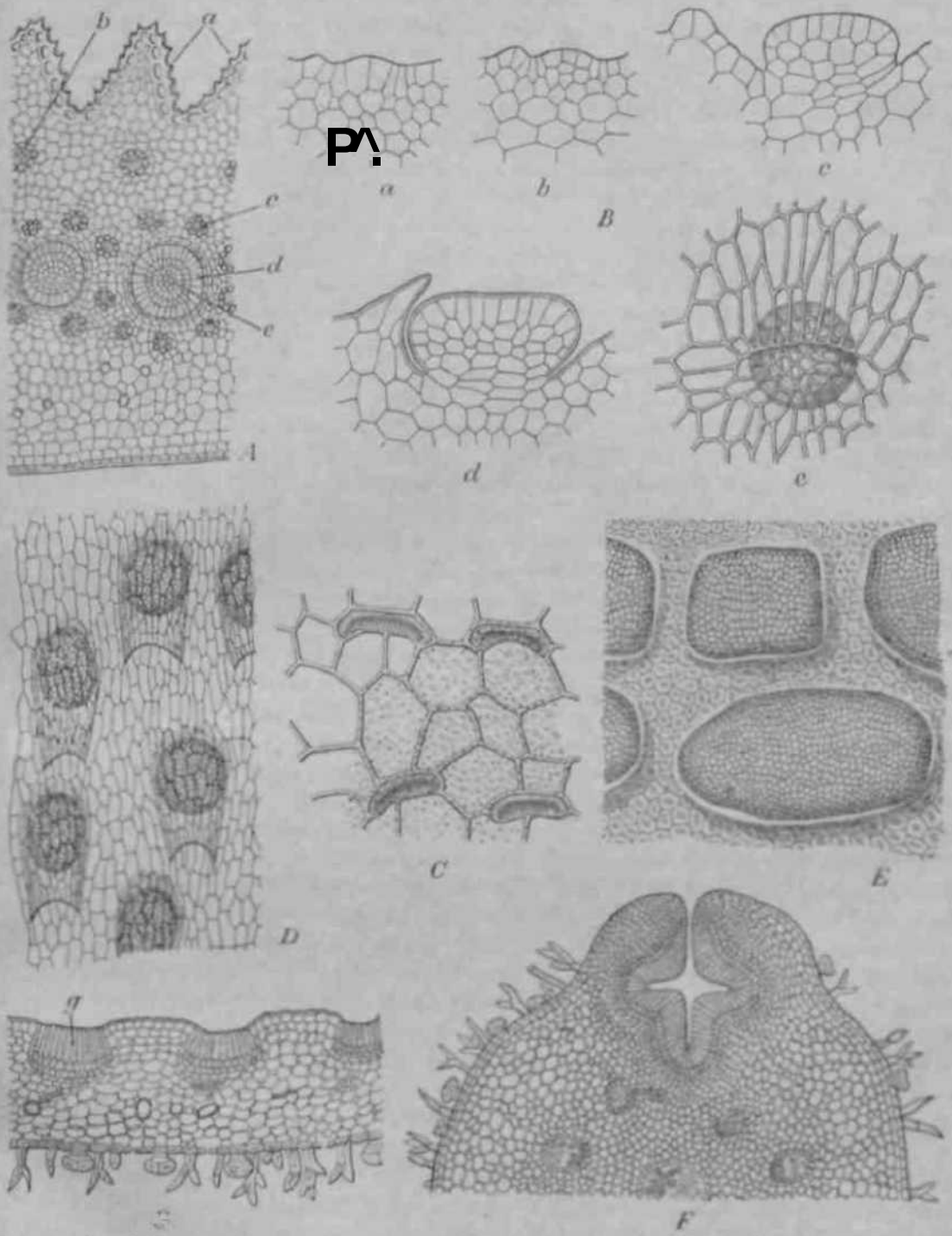
oMuur WM&nrata i

last, and is abundarilly traversed **bjr irregular intercellular** spaces. **Manj** "t* ii^- cells contain crystals. Spirttl cells unify **through the**]iTi!jsfi<lc **layer,** tint **are more abundant** in the *loose* layer. The vascular bundles *(f)* run benoalli the junction ul' **these** two **torn**s. Eac**ii boodle** is cnslieallied by a tibrons gclori'iirhyiun ring, *awl* **haa the** *u-*ormal dirucial **arrangemi i**.

The **histology** of the lemlril dues mil djfTor fundamentally from thai oi **Lha** |"'liule. Its **epidermis,** cortex, **and pith ti-**sues are quiii« **similar.** The vascular bundles are unit• ti into a rini;, even in*n* in lh< petiole, by • • z• • of sclerenchyma. **The normal bundles that** are thus i connected, tend in nearly all cases to show bifacial arrangement, **own** tinn;gh the tendril may be cylindrical (*N. ampullaria, N. maxima, N. phyll* etc.). But in a few cases the bundles of the upper or ventral region of the tendril may be inve:ted, when the xylem faces internally the phloem externally (*N. Veitchii* etc.), **and** i» a close approximation to stem structure occurs. A set of accessory p Mb **ban*** les is even **more** perfectly developed **Lh&n** in the stem or pe *\iofc,* *Thau* ••• re relatively of large size, even in such thin tendrils as those of *N. phyllam-phor•n* and *N. graci (is.* **Wilh** the ex **CepUon** of **the dorsal medi**an one, **which is in eonlad with** the sdrivnclivmn ritif, till arc **embedded in Lhfl pilh.** In most, i cases also Iht^ i_vlt*m is ventmlly, and the phtnmi is •dorsally placed.

As might bt.[1] uipci' ed from its m Tpliolof(ii:.'il **rclatton,** the ge **aeral hu**ology of the **oaler** wall <f **the** •itcher a<"l oi Ue mes iph^U **nil**stance broadly agrees wi(h **lha** of the bttsnl **lai**nina. flic **eorrugaicd** sun ace of the peristome consists of highly cuticu-lnri/t"l **epidcnnal** ct'tls **wraogwl** in radial rows, und **neallji EHting bilo cadi i**ther by **obtiqae** walls. llir SHICJace of each ce il in Jclicaletj striated rad'.ilh, vi ile the end of tb« **cell** Ll at is toward th te ni'iufii ol **the** pitcher may slightly overlap the adjacent **end** of **lha n**ext cel• within, **Theac m**ooth glistening cells of the inwardly sloping I'nri form i ;in ins ecure zone for insects that atte **mpt** la **walk acroM** it. Its action is aided by the presence of a secretion from a series of remarkable nectar-glands, l **nr.-**deeply embedded in, cavities of **the** in curved margin. These were first observed and **described bj GLbbont-Hnnt, and later we** re studied in de **ail l.v i>**ickson who named tlnNii Pmargtnaf glands". They may **itlain** (« large size, and all excrete a juice iliai hn» b(?en provtvl by the wrih*r *\n* bi[1] |>artiml»rly i • liel ed by insects. They are always develope•1 in lli< first s **eedling** "af, as **o i-'W** (5—8,[1] dark oval glands **ombeddctj** bi the leuiulurcni **margin.** Iti ey increase **in** si/i' **and number** *AS* **older ptlchi**rs form. Each **fullj** developed gland is an otii* (*N. ampullaria, N. gracilis* e . i ig. 7 *E*) or elongated cylindrical (*N. Edwardsiana, N. khasiana* i ig. ; *F, N. phyllamphora*) mass of cells. Each origin **itea** as a **central** p,v ch of epide **not) '••11" lhal la carriwl** inwanl *by* ii» agi-nation of a circular area of the peristome margin. **Thil** patch swills mil in II e centre of the depression, as an oval protruding body, while internally it continues to grow into the **tuhBfanct!** «f lii e peristome. When the J.md **lias i**eached **niAlurilj** the greater purl *uf* **ils** U&SUL' in **ennodded in Ib** e mes **iph/U** of ***the* margin, whBe lla 0** ee ma **uQlar extremil** y protrudes into *On* depression or can il of *\he* margin, Mini **a di** as **a** Itiiin-u Tor the discharge of MH' i> ctar secretion. Each ^Innil !K ***U1** rounded by a circle of bundles, ili-riv. •! l»\ splitting of a singl•• **bundle lhal i**uns to **raid the gtud** I.rom the **nina** ef **if** e pitcher system (Fig. 8 *A*). **Thcat** bundles surround •I).- In niting membrane <f the **|tlai[** ds, and doubtle ly the glands with their secretion substance. They are of smallest size in *N. gracilis, N. Reinwardtiana* and *N. tenuiculata,* of medium size in *N. ma* ***imoy .V,*** **Mtn^VMiM** an **•.•!,** are long cad cylindrical in *N. khasian* **i** an<l **V. *yhyttampkoni.* bat th* Ian - ••>•** those of *N. Edwardsiana,* which ma| **nwftattrc *f,* - -h mi' I , I MM UP** ir position is indicated, round the simple margin of the pitc **liirr in** *N. Lowii,* by t **(!•• riiniifti ajMU** tures seen in the middle of **sninll** pn}iill> e (Fig. 19). These apertures lead **inlfl eatHiei whnir 11**nbedded glands are **elliptic ami hluot,** In *N. echinostoma* each is sunk in a depression at the tip of each isolated touth, **and** is oval a **thjp<-** (Fig. 7 *G*). Tho >jf{h au abundant secretion is r **irdjr** poured out by them, **the writer** liu b»l frequent and convincing proof **hat It** is greatly

preferred bj insects l,o **the** secretio**D from the** lid or the **pitcher exterior. Their effort*** to hang over **Lhe** inner **perislouH margin** so as to reach **ind sip** Hie **Kcrdion** often **I>-:i'l lo Ibcir tftpluro** nnd **destruction.**



Kg, 8. tiliindular Structure of *Nepenthes*. *A* T. S. peristome of *N. khasiana* Hook. f., *a* corru**gdtont or ridge*,** *t,* **bun**dle, *c* periglandular bundles, *d* gland tissue, *e* loose **litrncn ll**ssue. *B* Development of digestive glands of *N. p*illd. (*a—c*) and *N. gracilis* Korth. (*d—e*), *a—d* side view, *e* surface view. *C* Conducting surface of *N. phyllamphora* Willd. showing modified stomata, wax covering in part shown in part removed. *D* Digestive glands of *N. Peroillei* Blume. *E* do. of *N. Lowii* Hook. f. from pitcher base. *F* Gland from pedicel of *N. bicalcarata* Hook. f. *G* T. S. sepal of *N. bicalcarata* Hook. f., *g* gland tissue. (*A, D—G* Icon. orig., *B, C* after Wunschmann).

The histology of the lid or <ipt'mjtinn in the different species closely agrees, the greatest feature of variation being the relative amount and character of the hairs. flut the internal surface oflru prespnts features of great morphological and taxonomic importii).••. In *N. ampullaria* alone the elliptic rmliimentary li-i »»« to « nil? no «itractive lid glands, Lhougti in large richly coloj - if><ir» a: isioual gland *may* \e detected. hi *al'* others the lid -lands are either fairly or very uhuo'lnnt. and as a rule s•'. rt'l, freely in young fresh pitcheri. In *N. Hookeriana* *N. Rafflesiana* and *N. Northiana* the gla(ids arc innint> or wholly disposed in two longitudinal series between the middle line anij ih. margins of the [U in the majority of species they are largest and most thickly masse I along ill middle. In such spwtie* as *N. maxima* and *N. Boschiana* that have lmsjil keels to the lids, tin- keels are richly paved with large glaild». In *N. bicalcarata* and *N. Bitrbiil;* numerous glands of moderate si i am HI iformly distributed over the entire lid. hi moil cases the gland ttaao is nlmost tl.il, and b direct); mtp osed (Fig. 7*H*) or slightly covered by a dmrttring epidermal flap, but in *N. gracilis*, *N. Lowii* and *N. Pervillei* (Fig. 7*C*) the glands are almost identi-1)1 will) lh> se of the lamina, and similarly open by a small circ re relatively gigantic (Fij. 7*D*) and are deeply embedled iii ine thick substance of in- lid.

Histologically and ph« iologically, the pitcher cavity shows two diverse conditioBJ in some species, that are connected by all gradation> fi<nu» in other specie i. In a considerable number, typified by *N. Lowii*, *N. ampullaria*, *N. Burbidgei* and *N. bicalcarata* (Fig. 14), the entire cavity is lined by a greatly cuticularized glistening and smooth epidermis, that has glands uniformly distributed over it. This can appropriately be called the "detentive" (detinens) .Ml-l 4gr»tivi - l l :..-•.-, line physiologically it fulfils the functions of preventing the escape of caught insects, of pouring out a digestive liif11 id when the g:ind» *rr ctifuni ated, and of absorbing the digested products of animal tissues. Very different is the relation in such species as *N. alata*, *N. Reinwardtiana*, *N. gracilis* (Fig. 4) and *N.* jUamaM, wb re the lowermost bal/ or one-third is detentive, while the up , .-r «n* fnnn I In- run U the top of the last-named region is usually glaucous, glaucous-purple or purple, in part due to a waxy surface secretion in part to an epidermal pigment. It is extremely smooth and ill-adapted for free insect movements. Further, it is closely covered by many transversely placed ledge-like cells (Fig. 8*C*) Uml in raised slightly above the epidermal surface. These ledges represent transversely place ich in embryonic pitchers have a normal stomatic aspect. But gradually the lower of the two guard c Hi «tnk» tn*AH K-hind the upper, •o tbal lhe *Uif* ner and the stomatic orifice become hid by the excrescent and parill-1 poo tion of the outer cell. Thw 4r^-i i ay well be rmmt'ij the "conducting" (deducens) surface, since it affords *no i*>W fOOtli old for insects, but rather conducts or vopi them Inl o the lower •nri, In •titb »|w ies as *N. Macfarlanei* and *N. Rowanae*.< ii m«r MI extend over more than one-eighth to one-fifth the depth of the pitcher. Where distinctly dimorphic basal •»n-i r.iiiiinr i> tchers are developed, as in *N. ..esiana* and *N. melamphora*, the former may be wholly glandular, the latter glandular below and conducting above to one-sixth or one-third of its depth.

The glands of the detentive surface are almost identical in structure with those of the lid, though they differ greatly in function. In some species, or in large pitchers, they may be relatively large. Thus in mature pitchers of *N. Lowii* the upper glands are of small size, iff widely apart, and are completely covered by downwardly directed epidermal flaps. Gradual transitions from these can be traced to glands at the bottom of the pitcher that may be huge quadrangular or polygonal masses separated from each other by ridges of thick-walled epidermal cells (Fig. 8*E*). As compared with typical lid glands the detentive ones are usually covered by a shallow to deep epidermal and cuticular flap (Fig. 8*Be*) that may partially or wholly cover the gland. In the geographically widely separated species *N. Pervillei* and *N. Vieillardii* the flap is so largely developed as to form a deep pocket with narrowed mouth (Fig. 8*D*). The epidermal and subepid• -UMI

cell- of the detentive region may be slijriiUv lu i;tvaU* indurated, and in the former cuticularized. The cuticularization and induration may be so extensive as almost to obliterate the luniti of the epidermal cells as in *N. Edwardsiana*. But the protoplasm of the plan. I <->-\U, .md «tf lite mrrtrtr epiderinal wlk i« »!*• in living and dit< ct continuity with the more deeply-placed tissue of the mesophyll, by fine cytiaU that traverse the thickened walls, and which contain fine intercellular protoplasmic threaila. As in nil <i iin- giandi already described, each dentive gland is directly in connection with a vascular bundle-termination.

Biological Uiiniis of Ilit: Let!. The general morphology and alike the)>isi>ilui;\ ol *Nepenthes* leavea *tnifi-*^ rod particular)}[1] on in«w tivorous habit. Observation <>) (be retation betwee a iusecU an<l pitchers dearly ileiui onstrates this, while nil traveller* Agree in describing lli« abintduu e of insec I rcniainn in lii pitchers. While ^>.nt. t>l Iho Caughl iit^tM-in in herbariuj specimens from the East are wing"'1, it set'iiiK l.irgely true that runr littg i»»«cl« such no ante and Bodtroachi s form the principal prey of the groap. Such is typically the case in conaerrali ories, where the writer's experience Sa (Itiit anifi and cockroaches nre ah nost invariably the victims. hnnntng up Hit- st<•n such insects mm tu ri^hl nnd kit. in <|u««t of Food; a gtobulnr drop exuded fro in nn nlltin ng stem-gland may arrest them for a time. I teaching the base ill' .1 |eaf they n; i v jtat*>. alo g it, attracted by the frequent presence of honey-drops (here. Iticy almost invarial ly run along its uodor •ide, to shelter themselves from en rinics and hot iiuta. M> >ng on restlessly, and sipping fron i glands us they pi-ocoud, Hi y reach the tendril which in som« ipecwt ol ers conside rable allrat ion. The ventral win -a and (ho ar*l s between are more beset with alluring gl *ii'te* lh'<n is the outer oi dorial part of the pitcher, and along this they often r"ii MI II ey reach the orifice or the lid. The lid-glands of Ihe inner w rface prove a great attraction, specially in such species as *N. khasiana*, *N. maxima* dtifl V *sanguinea*, but their secretion does not compare with that from the margin il uliuids. Straining to reacb il>< orifices of the glands the iuh- t visitors often over-reach ihetiisch'cs nl'ttT D !'«« efloH«, Itnttblt* intn the pitcher cavity, a : i.. rare cases is escape again possi ile. V here a definite conducting carfare u developed, the Irregular t<ttering and «ir uggling ••*([<,r\i* made by inse el* ii it, demonstrate t.w (flactira r' i» EM the wo rk *In* hand.

The presence of li mid in i tif pitcher-cavities early attracted the attention of botanists. Ihus tiritnin in IB81 ipoli e of the native Ceylon *p« ies, *N. distillato* rii M "planta mirabilis destillatoria". i ater observers like Rump -It and I oureiro spoke of the varying amo Mill (if the secretion during day and night, while Korthals stated that the fluid was more abundant in plants that grew in the sun, than in those th it grew in the shade. As already stated, a considerable quantity of liquid accumulates in the young pitcher cavity, while it is still air-tight, and hermetically closed by the lid. i h liquid is cle ir anrf *li. of pro't'ijMritKu •atwl.i nces". He f :r'l»«'i in ted that whe *n U»'* fluid «a s emptied out of a fully formed pitcher that had not received or been in contact wi It anittml n atter, the liquid again -tJlrcicl *m* maH •, uantity, and fiirili. r lh«l pi acing of inorganic s stat*tatr%* in the fluid, did not apparently c illH increased secretion, though animal matter did. Gorup-Besanez extended Hooker's observations, and further state I flm' a cidification o f Ilif liquid in young pitchers with dilute hydrochloric acid, increased the digestive action. Vines and Clautri•m b a n supplied more exact information, and they both oppos i- lUe v ews of Dubois and Tschutkin, who contended that digestion of animal prey or of other proteinaceous substances is effected by bacteria in i >li" pil cher cavity. Vines and Clau 'riaii af're* that a specific ferment is excreted, which the former I'rtit linn ed Nepent IM n. I rom experiments conducted on *N. melamphora* at a high elevation in Java, supplemented later by experiments in greenhouses at a warmer temperature, Clautriau concluded that the liquid of the unopened pitcher was at first neutral. After mechanical irritation or shaking of the pitcher, the foi>i btormv »<^d UMI a dlrntrtrn* f rment was

simultaneously set free. He considered thai u, is fermeui converted insoluble proteids iniu iiis>o|vfii \it-]tU, nes, and *i* so thai it ISUS referable in Hi^ pepain series of Feran nts. From more «tcint»><I comi-arative observati>>us Vine? coodudod Hint it Ita* the i ower not nttcrdj (u pcplontze, bui fdrLber (• protoci^^e. The ilisintcgralion »ir ka(«bolism ' of I-oteids is thus effected n o t tfi'i.-U i., the peptone stage, i«t furll.er to that w hich yiel Is (lie Irvplophaa producU of detompoiftiofi. As in Hi" i-asc of *Drosera* nn«l *Dionaea*, raechftnicA] o cher*uic&l* irriUUoa *at* Ihe iltin-"alled gland cells, cause• Uie aggregation sijliKliuiir*; of cci'lt ct'U lo ball up speedily. According to Vines' experi-tnents," whnn Ihf temperature ID MlflJcieQllj Iti^h, rapi'l ittgostion within I wo lo -ight hours is effectod, vfaQe Kl lower tedaperalorai :<^ IboM at wtiidi Cltutriati carried on his rxjH'rimfiils in Java, digestion is il<«rer.

Floral Structure (Bltitenverhaltnisse).

The inflorescences] of *Nepenthes* seem always to be oppositifolinr, and cadi a ccordingly is the direct < inuD.iiion of mt mis.

Fig. 9. *Nepenthes villosa* Hook. f. *A* Extremity of axi.'. B' Lc»f with (litditT rtr a»i:t(liiltn to front view. *B²* Ascidium in side view. *C* (Inflorescence. *F* C Fbwcr. (/ FniiL (Artcr Hooker r.i

The appowd lu-.T i loaf is leuilc in tifarl y every instance, even though the foliage loavc* trtav have long slnJkt, but it is uiaatk equ al or little inferior in size to them in it I Inininn, irtuk> in gener;«l imtl:ne they are nearly alike. But in *N. ventricosa* the bract leaf is typically oval, while the foliage leaves are linear or linear-lanceolate. TLe bract tlifferm alti' from tbe fnli.i ge leaf in it> rauU< Th ni inai<'ad of showing 2— IJ pair* of i ngitudinal vei at, 'nib lirart u ir regularly and closely reticulated by si series

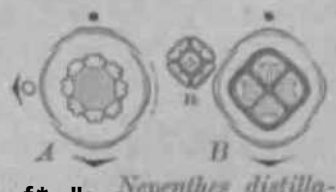
of One oblique veins Hint only CUB? near the margin. If iwo or mare inn<<rescences arc produced b succession, as often tiappeni in A. *Bong»o* and niber aperies, tin* hnKts conform with each oih'r.

Eacli infiorcw:ence ciisisis of a pad'•cle of varying length luwl thickness, surmonntod by HI • x i •, * j i. i i •. f [i.uiii'•• *of scorpioid cymes in N. distillatoria, N. madagascariiutxis,* N. *bicalcarata* '•(nri'l W, *i'"<>U,i,* .'lis.' f-rruginous panic!*- in A. *I«I-pulhrut* or Bokpaoide BS in V. //••*okeriana* etc. a I><1 by a simple or suli-iiinijilo raepimr in ti>< remaining ipecic*. Uiil H"[1] wu type is evidently derived by c nnitensmiufi wd simplifie•io n from Hi*- panicle, for nol un&eqnenl!^ Mio lower flowers, or moiri of Uie Dowffifl of a *n* ceme may be grou [ted uilo reduced s—3-floncnil acorpiotd cymes, The infltuvsi ences are dioeci-ms in llieir fl*-[1], bu[1] on intcreslinje case nf monot-*ism was described by M;oore (;rans. Roy. lii-h \-ii \\1\. (1870) 6J9), wlion: Urt J*ower lowers in iiu tntloroftccnei were pistillate !> lla Bumber -(.it.-.tit ivefo, while ilt« ittmcroUl upper (lower- were staminate. Nectar glands are not uncommon along Hi'-axis and on tin pedi-is of the flowers ir*i{:. 8/'[1]) UiOUgh Ibe •!• i icate pedicels of *N. Perillii* alone potseaa man; smull neciar-glautte. hi EOOBI apeciei tin' pedundi and Ibe pedicels have a close cove ring of hairs th«t nro forniL[f]in>;U8 i> color, but may vary to CUILTCOUI or sUn'ry. In *s<•<*e* spec lea small linear hracfoolfia occur on inotst ot the pedicels, or mn\ onh develop on ih»» lower padicala of an iiuiorcscvnco. In lui ngth each inflorescence m;n v;ir; [rODO til e short ones of *N. Bong»Q* Oh') \. *tentaculata* (Fig. IS 11 at are 10—16 cm io iltoiiL' of A*. *Rafflesiana, N. rajah* and *N. bicalcarata* tha' maj !>• ft'oin 40—loo en m length, the number »>r flowers bone by an inllni'i':•>• •-III •• may un also from IS or SO up Id acrcrtl liun-h ed.

'j 11.' I. looming period seems to be rather extended JUH) somewha• Inconstant for • ost of the species March to Septe d given ority of thin the wild sialt', though ation in ubor is Uw peril in ibe map commo ugust to Oc Under CDIUVI Ruribcra hemisphere, orescefice may iilv ffona * Inbor. The h'n^Hi of thn« durio it, an ti tin 'mil' cies bn Id.....i rariea rilb UK number ol (li *V. maxima (Curtisii)* rtudkd. Thus in n ataminal« Infli a hybrid of •e rate of six bloon[18] 111 Hovers were produced. Tliese expantlcd <>» ili>' < but fainter daily, nn*l during Ibe b ••! a Uearji Foetid odor, similar l« Iban s•ot eibaled Erom sUmfnali flirwera, wan JMTOH • *m. 'Jli<< aUanmatc !)•;> if >on wither, bul the piaUJJaie DDWCM *m*

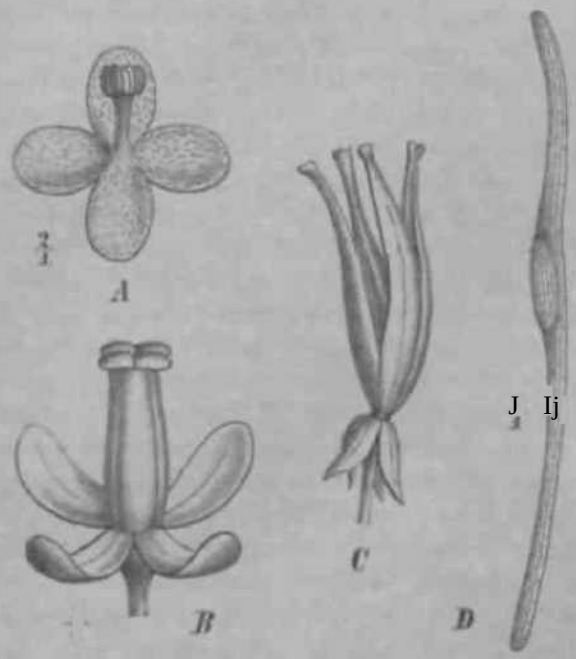
polunsli

'n *N. Perillei* of three — oval olie greeni' cuo&islt or Tunr — or sonicUin^ < ce sepals (Fig. 10). In ^ small *Perillei* the sepals are synsepalous at their bases. T 111 • > an rarely glabrous without, more commonly they are clothed with ti dense silvery or ferrugiaous tomentum, that in some species may extend to the inner edge of each sepal. An occa u'onsl nectar-gland may be detected on the outer surface, similar in structure to the leaf glands. The inner rim' is of each sepal y provided .it), .1 unds over it i mi,. . . . . f* " *Nepenthes distilla-* area (Fig. i* ri.lil its ea' hese genera :: /«riVi I.. I Dlagrai[n] of ♂ resemble the attractive gl mils of the inner IW surface i flower. *B* of ♀ n.; *n* stigma from beneath, with the upper pitcher. But there is a decided tendency in some specie I put of I In; *o*\ary cut transto depression of the gl anil, an versely, showing the four ing epidermal UJBUO. Thi* proce•'•* iti anch as exlcod cells. Ift A *Perillei* that eac 11 KUni] oprn* LV « It ry nai OW elongated orifice. The amount ol i nectar excreted by *Uctr i§* nl» ays considerable, and in co mection *iih i)ii« Burliiilpi* in formed the writer that clouds of small insects flit abow the inflorescences, or alight to sip the nectar. Small therefore tbuugu the :owers are, they are evidently cross-pollinated by insec•* st »•ll as, or perhaps more Du I by wind. The odor already mentioned probably aids in attracting insects.



k

The •tames vary from .1 « c to many, and an? monadelphous. The staminal column may be naked: as in *N. distillatoria*, or hairy below ,<nJ ^Ubrgu* abow u in *N. Bongr*fl, or unituniily hairv as in *N. albo-marginata*. The column mar be shorter QutB, m- LIJUHI to, or fifiiirwlul luntrtT than Uie sejmU. Ttie terminal anthers (Fig. 11 *A*) fiim a Itoobtfkc **mas*,** and arc uu:seriate or UTUI^I in oji circular series, or lni> maj Lie blseriaie when the anthers of llio upper set are riivttUr ami are dovetti l d i> to those of the lower series, or an intermediate condition may be shown when one efn*<ular series is cippcd bfj **a** fe\- transversely-placed ni«]i«r ones. The **debueuce of Ow aatlien** i* ••xtioree, ami ih'- **microsporM** or pollen-grains are three-lobed.



***ft*. 11.** *Nepenthes* ..;.,,n,,»« *hora* L. *A* ♂ Flower. *B* ♀ Flower. *C* Fruit. *D* Seed.

Tli. pistil consists of 4 — or not **tmfrequentJi** In .V. /'•*rvillei* oi i :i — united cjirjr ls, tfolia (in i>vitl nr ovste ovary below. The stvlc is nibst'iil in most speci«s, but. in a few a .short thick style can be traced This nr the Upper part of the iivm-v mtls in 4 — rfurt'tv 3 — J Ij **sfaarl** thick radio *m* bilobed stigmas (Fig. ; ! /.,. The ovarian **n**urface may be glabrous. but i- more often liairv, and maj rmely bear « few n^ctar glands like those of the lamina. The ovary is 4- rarely 3-celle•I, EUUI the ovules are numerous, mi**iiulf,** a-cending, anatropous **Uti'l** arranged in several series on the placental ridge in the centre of the ovary. Envli OTUIC b narrow, elongate and slightly fusiform. It consists of two coats or indusial coverings, the [irimii,e and secundine, Mif former of which is greatly elongated in thi- inirrofnlfir region into *a* micropylar funnel or canal with oblique moittk I'osteriorly this layer is also gmitlv prolong«il rote a tapered chalazal tail. The testa and tegmen surrmud (In centrally-placed nucellis or iifuasporau^iunt tttnt is ovul Li ovate in shape.

Fruit and **seeds** (Frucht und Samen). A pfsriod of e- (i weeks elapses between puliinnation and fruit-maturation. Alike from study of herbarium material, and artificially pollinated inflorescences in our stove houses, one gathers that the greater number of the• (i(Ntt)lntf Ilowfrs **an polHftiled** nn-l **I**nature fruit. Each ripe fruit **(•** *i* capsule of fusiform to ovate shape, is of leallirry to woody c«*»!«;ce, and it rang% in color from gray to reddish-brown. In Home species the covering of hairs that was present over the ovary perstdl* Hi to the time i| r/ifisulnr >*l*ehiscence, but more frequently this is shed I ilnrin? ni aturation of the capsule, which thus becomes glabrous when ripe. If long stron| titb-fl were present over the ovary, and become shed during ripening, the capsule may **hare a** punctate aspect, from s**nn lufi** by the hairs. The stigma of the pi»til ji.'Mur* ai aUr(i»i- during fruit- maturatioo, «u as to *form* a dark quadrangular or nearly circular knob above the fruit, or above its short style when such is developed. Each fruilimr **»tigmatie lotw i**may be simple, or more or less deeply divided. When ripe the capsule deh inally and loculicidally into 4 — or rarely 3 — valves, that slightly diverge from each other above, \>\0 i remain more or less attache; or *ipproximated below (Fig. 11 *C*). The long thin filiform seeds jtraduaDjr • Jrv, sprev\ *n*\>art, and at length separate from their placental attachments.

The number of **wed*** matured in • raptu! may vary from 100 to close on 500, according to countings made by the writer. Thus tw 'es of *N. alata* showed

respectively 191 and 209, iwo of .V. *melamphora* showe> ***Oil*** **and l«7, on.** of *N. khosiana* 415. **In all** species except *N. Perrillei* the seeds are light filifc**"in** sphnU'-s that may be from 3 to 25 m**in long, nii.J (list** Ttij **in coloi** from silvery yellow to dark brown, according to the species. T**•I* tell*** of the greatly elongated testa are lhin-w:ttled, but are thickened internally by spiro-annu**ini ti«n<l» Dial 1**become spec**ill* slroitK** nrouiiil tlie endosperm r**.'«JU in** the middle of the sued, **i** The tegmen consists of tliiu-wnllf **I cells** Minitiiri'iiui. the distended nucel ins **uid endosperm. Ihi** endosperm •L-li- contain oil, starch, and protein material, and **unround** .1 tiiinui" **Iriuigular** am-bryo, the **grealor bulk oi which coniieti of 11-** **Hi.- iecda** mtial fall **on a** moist porous surface, and must be surmumi'^l by *a* **moial** atmosphere. Subsequent ch**mgc§ ha**ve been already described.

Hybridization (Bastardbildung). **All of •l.«-** cultivated specie*** of A-***penthes* hybridize readi**IT wiUi** *each* othe***'**, and the to**u** **111-•** **I>** degree, alike between themselves, ar.<! **vslifii** crossed by other species. A large series of artifici**LI liybruk is HiensfoM in ctUUvaUira** at the **present** •day, the parentage of which ***in*** accuratel\ **known.** **H»«a exhibit, b** a marked degree, the blended pec **nHaritiet** <*f\. their parents, ;ilikc in macro- and microscopic characters. TIIPI may **••<}** **inherit eommcnd-***nlf*<- IJII.I'ities from both parents that render them more acceptable to growers t **Itiiu llie** parents. Thus *N. [illegible]ersiccsa* pitchers as freely, is as easily grown, and can be as easily propagated by cuttings, as the one [illegible] often as richly **colonrti** as, and the plant shortens its habit toward, the other parent *N. sanguinea*. Again *N. mixta* is more amenable to cultivation than are the parents *N. Northiana* and *N. maxima* (*Curtisii*), while *N. Tiveyi* is **I MWri"! IVIM"** of plant to *N. maxima* and *N. Veitchii*. When such results have been secured readily under cultivation, it might reasonably be expected that **nAlaral I**ybrids would be formed in the native haunts of the species. Such seems clearly to be **in* CU'**. Thus Burbidge's *N. Harryana* (p. 54) may with almost complete certainty be regarde**: ii* a li**ybrid between *N. villosa* and *N. Edward***'MUM, U**like from habitat, structure, and stature. *N. cincta* from Borneo exhibits **'h« bKi.** ded characters of *N. Northiana* and *N. albo-marginata*. Even *N. Hookeriana*, which **the vu**iter has temporarily accepted as a species, since it has thrice been fo**IIHKI \M11,** shows all the blended characters of *N. ampullaria* and *N. Rafflesiana*. The two last species have been fo**iiul in Dtc i**egions where the supposed hybrid occurs. More critical study of these plants in their native haunts will almost surely reveal that natural hybrids of Nepe**uikett cro** nat **11**nfrequent in the **wild sin**te.

Geographical Distribution (Geographischo Verbreitung). >he *Nepe-tiharttu* **ure** now mainly restricted to the "indisches Monsungebiet", and h**•ivr Uietr Itcftttqturtm** in N. Borneo, with Mount Kina Balu as a centre. This mountain alone possesses the most striking species, including *N. bicalcarata*, *N. Boschiana*, *N. Edwardsiana*, *N. Lowii*, *N. rajah*, *N. Veitchii* and *N. villosa*. It is noteworthy also that while some of the species like *N. bicalcarata*, *N. echinostoma*, *N. gracilis* and *N. neglecta* *row in **Bnri;**eo at low lev.'- nml **in I.**ot moist situations, others like *N.* ***ampuHaria,*** .\. *hirsuta* and *N. Veitchii* grow commnu'tih at mi allihulc **of** GOO—Ton in, **vfaik** *N. Edwardsiana*, *N. Lowii*, *N. rajah* **md V,** ***trifle*** reach an elevation of 150**IQ—3000** m. The last group and in particular *N. ra***w/i BK alh**ost continuously exposed to a moist dripping atmosphere (**i**ig. 12) owtig **Io Hit i**ot wind currents from the plains round Kina Balu meeting the cold currents from the upper regions of the mo'ititain. The extremely light seeds, com[illegible]tively large surface of exposure to wind, favor wind-dissemination to [illegible] degree. This probably explains in part the distribution of the species in radial manner from Borneo as a focal centre. At least twenty species have been recorded from this island. From the adjacent island of Sumatra eleven species have been recogip-r*i **of wUdi (oar** ***wrt*** \«>?*vti*r* **t- it -iiwl** the

remahnler are common to I;orneo, \taluvn ainl **evta** iimtv dist>>t parts. Eight species **oc^ur in iln**[1] Mil*. **PcnioFula, ui which i** •\<o are alone restricted to that area. Kight to ten **ipecfet** are **reported froin K.** Australia, but as yet only three from New Guinea. **A** more **intimate** *k*><wledge of its (loro will **probahh incrcxe Ihe** uunii.--r irwttUv from Die la 11 or ivliin-i. Son 10 of iis and •\<*umiiiibiwG** **art** pruiv ably inc **ureot** Tor species from (he I'tiili] pines, hal **al leaal** seven to **mine ai** found there of \^hich most nn> **endemic.** *N. maxim**ut** is* **ftnmd** in **ili«** Celebes, Borneo and N. Guinea, *N. Vie**Uardii*** \\i N. Cavtionin. *N. distillatoria* in Ceylon, *N. khasiana* in N. E. I:<-ugal, *N. Smilesii* in Si am, -^ Miiim, A. *Pervillei* in the Seychelle Islands, and *N. madagascariens*ia — Hie tspeues most wi«lely rt?m»\-d geo**prapfaicalljT** IVom the centre of the gre•)i]i **al** iln- **prewnl >*tn*\ — in Ufidag^scur.** TIJ- most widely distri buted

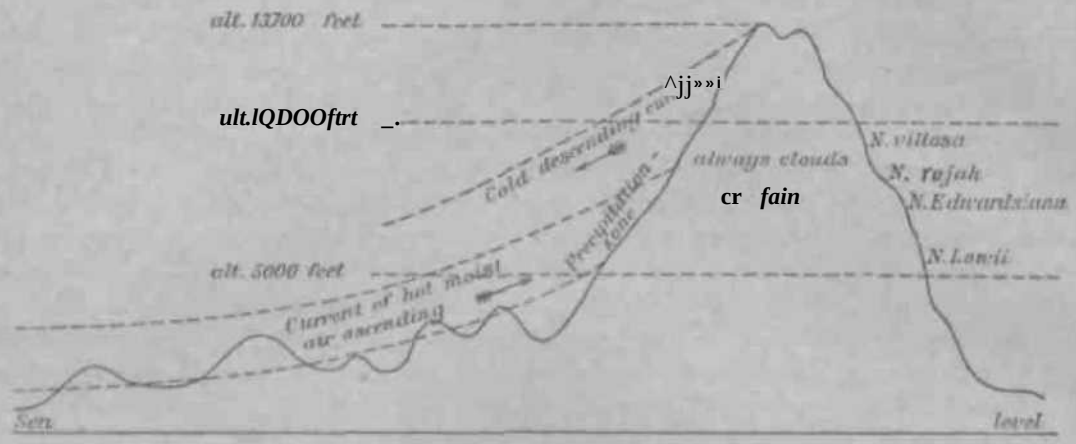


Fig. 12. Diagtutu showing lint and cold **air** currents on the sides of Mount Kina Itilu in **Borneo, *m***-eting and condensing at the Nepenthes •'o.'e. \<Ut*lff(l fron Burbidge.)

species **n *S. fiUifU'ttnphora*** **wliidi nuiB« fi** om S. E. China to Malaya, Suma'r", Borneo, New Guinea, and in **Au»Lralui u** represented by the closely related geographical species *N. Kennedyana* and *N. albo-lineata*. **Rail** er more restricted in range are *N. gracilis*, *N. ampullaria* and *N. Rafflesiana*.

Systematic Relations (VerwandischaftlicKe Beziehtingen). i he *Nepenthaceae* *i\n**. e been vn'Mi.l .• by some botanists as related to the *Cytinaceae* and *Aristolochiaceae*. Thus Brongniart grouped the**n a* a wwiion** of the *Cytineae*, and **Link M a *••** tion of the *Aristolochiaceae*. The i ete flowers, united stamens, extro**r*r aalben,** radiating sessile stigmas, several-celled **WUfj *nntl* tiuu** erous seeds suggested point**i of** morphological agree**•ii- nt. ptri tlic lH** rphology of the leaves, the tet**amemuc <r tri-**merous dioecious **flo»irr v md ||v ulltumuiou*** **MT>U eoi** stitute **if»-**portant differences. As successively suggested by Lindley, Eichler, Engler and the writer, very close affinities are shown with the *Sarraceniaceae*, particularly through the genus *Helia**,tpkora*** of the latter order. I \ep ***nth***'* and *Sarraceniaceae* again have considerable affinities **uiMi ih**e *Droseraceae*, and all of these seem to stan**i in** intermediate relation betwee**ii ilif** */Papaveraceae* and *Cistaceae*.

Uses (Nutzcn). in Borneo the natives u**ilbe lh« lOJNJ ^>A** ible ster**i» of »u**ch species as *N. ampullaria* and *N. Rafflesiana* for cordage in binding the bamboos of bridges. **E**veral Bornean travellers state that the pitchers are used as cooking dishes for rice and other food. The liquid of the n quently to be drunk by the natives, as it has also at times been by travellers. As objects of horticul: i l interest and scientific study, the different species already introduced into cultivatio**ii. luve litil a larv«(«>**le, but the beautiful hybrids that have been produced **ariilitjnlt.v b«Ti** been more extensively gro**wo uml »ol«l.**

Nepenthes L

Nepenthes)* L. [Gen. ed. I. (I73"7) 2: 3] Spec. pl. ed. 1. (1753) j!JS; En<H. Gen. (1836—40) 11. SIC"; Hook. f. in DC IVidr. Wll. (|s73) 9ft; *Booth,* el II00J, f. Gen. lit ;u«ol 118; Wunschttana in Engter-Prantl, *9tatam* ill. 3. (I8»(J 2G0. — *liamium* Adan*. Fam. H, fl7U3} 75. — *Phyllan* '^«mi Uur. FI, coohtnclt (1790) 606.

<"uspectiis sperirniin.

A. If Dorescentia |mniiiila!:i T. racemoso-paniculata.
  a. Sniiina parva, testa rh v. Ireviter caudata.
    «. Srpnln i—3 ± conaila, testa ^i\ caodata . . . . **t.jfi** *Pervillei.*
    /if. St'pala >i tfi»Hnrta, twla breviter cmnfuia. . . . . **1.1** *tmitith pascarien* **W«,**
  b. Seminn liliiVinnur. testa utrinque caudatft.
    α. Ascidia plerumque tmqtifl globosaj peristorohim Inltitu aec]uale; opereuluAi |HUVIIILI vci mediocre, inlii non vel spim« gtasdulosain.
      I. Opecenhim panrnm, non glantliilosmn . . . . 3. *N. ampullaria.*
      II. Opcrctduni mndiocre, sp'iirsr gUndulosun. . . . . 4. *N. Hookeriana.*
    (i. Aseiditi pk>rtiitii|iic gluhob-', peristotniuni laluni, postice in cobum el in calcaria dao decurvata elongatmn . 5. *N. bicttearata.*
    y. Ascidia ± cyItadrlco-reolricosa, peristomium angusinm, postko leviter clongatum, opwcuhm glandulosum . 6. *N. distillatoria.*
B. InHoirescenti1 racemi pedicelU rarissimt* (rifluri, \>\?\um-*(lw:* liilluri veJ unid-ori.
  a. Opercutooi ueidli inlua pianuia.
    <(. Nerri longiludinaJea Imninae %—(.
      I. Foiia scisilin uinplciicatilin, non decurr«nlia.
        1, Peristomiuo) nsriijii m«!uri cylindricum aequale, zona jHlurum 'omentosa sub insertione esteriort loalrnBtum.
          * Nervy tongitudinakki Uuoiiue *1* obtcuri . . 7. *N. albo-marg* maftL
          • N^rvi longituditiales laminae 3 obscuiri. . . 7. *N. gracillima.*
          *** Nervj lougiluiltrinlos Iaminae 3—4, conspicui 8. *N. anamensis.*
        !, IV-i-isl«(*inii)ji* 4»i'i<lii maturi cyllndricuni, sed sine zona piloruni.
          · Plantae pumilae non scandentes.
            f Mae asci dfi nmiimnodl eilialae .... 9. *N. Smilesii.*
            ft Alae ascidii inferne angustae non ciliatae, KtUsum ciliato-dentatae. . . . . 10. *N. Cholmondeleyi.*
          *• I^PIIHtae elongatilae icandentes.
            † Nervi tamfttaa *t* —\, nlae acddfl toferne rilinlao. reneiiN M aosnataUf non ciliatae, pcdirelli uniflori . . . . . 11. *N. Blancoi.*
            +-j- Nervi Inminiif 11, alna antuilii uniuunodi ciliatae, pedicelli uniflori. . . . . 12. *N. tentaculata.*
            fff Nerri lamfnae 4, alac aniriiHlni! non dtiatae, pedicelli liillwi. . . . . 13. *N. trichocarpa.*
            tttt herT laminae 4, ftlae irn^tilarit^r icrnitai: v, breviter ciliatae, pedicelli bi- v. triflori. 14. *N. philippinensis.*
        3. Peristomlimn a«'i>lii 1naturi latere late expariinuv, saepe0 maryine exteriore liiiitulalurti.

*) Nomen derivatum a νηπενθής (νη sine; πενθος cura), quia liquidum in ascidio collectum recreare dicitur. »Nepenthes« apud auctores antiquos nomen remedii cuiusdam vi ea mitigan (cf. Wittstein, Etym. bot. Handw. p. 613).

* 1edicelli infe**roe *i*—-3-ffciri, cap-**ula elor**.aala.**
f Lamina tt **u\H:ri\ri?.f*> axddii #titbru.** operc**uhiin oraUna teuton)**. . . . . (5- *N. Northia>ia.*
•j-f Lmiiina el sup-**dura ortricuhu** . . . . . 16. *N. sanguinea.*
•}-{•• Lamin**raperiJdet asckttti (ilnlirst.** operculum inagimrn conlaluin baai **carinatiun,** 17, *N. raj**tit.***
*• **Pcdictlli inf^mf nuitlori jrari^**sime biflori); capsula brevis lata.
f **Folia {lellata; c>>!initna statninca ***asi pube-
Kim, anil**erae ad 8** . . . . . 18. *N. Bongso.*
ft **Folia in arrliiiiu nlicnuala; coJurnna sta**minea glabra, antherae 10—12 . . . . 11. *N. singaiana.*

11. Folia sessilia amplexicaulia, ± decurrentia.
1. Ascidia pubescentia vel villosa, peristomium distincte striatum, pe**ilirrlli iinidttri**. . . . . 20. *N. Vieillard**lit.***
1. **Axcidk ± liinsuU,** peristo**aioni dil**tincte striatum, pedicelli uniflori . . . . . 21 *N. hirsuta.*
3. Ascidia glabra, peristomium o**l»Kure -**triatum, pedicelli biflori . . . . . **If.** *N. Reinwardtiana.*

IK. Folia peliolaia.
1. Costae peristomii tenues numerosae.
* Lnmiun cll'lp'ica apice atten**itlti** . . . . S3. *N. Copelandii.*
*• **Lam**ina obovata v. oblongo-lanceolata, nptrf**i pd**ata . . . . . 24. *N. eusiachya.*
2. Costae peristomii magnae paucae in liunellas **proftuutfti** productae.
* Ascidium breve obovatum ± villosu**ii** . . . 25. *N. villosa.*
** Ascidium elongatum cylindricum, glabrum . 26. *N. Edwardsiana.*

β. Nervi longitudin**iki Ian**inae 5—6.
I. Folia sessilia amplexicaulia non decurrentia.
1. Ascidia matura ventricosa, medio valde constrtcbi.
* **0* atritlii eli**pticum transversum, nervi operculi 3—4 . . . . . ***T** *N. ventricosa.*
** *On* ••<idii ovatum ol lUqixoni | nervi operculi 6—7 . . . . . 28. *N. Burkei.*
2. Ascidia matura ampulliformia obconica v. c• liudrica, medio non vel leviter constricta.
* Ascidia inferiora ampulliformia superiora cylin**dri**ca, margo peristomii longe pectinatus; pedicelli saepe biflori . . . . . 19. *N. melamphora.*
** Ascidia obconica, margo peristomii pectinatus; pedicelli uniflori . . . . . 30. *N. Deaneana.*
•"• Ascidia omnia ± cylindrica vel raro inferiora leviter ventricu**M, m**argo peristomii breviter denticulatus.
† Caulis pumilus, cylindricus, non scandens. 34. *N. Alicae.*
ft Caulis elongatus trigonus scandens . . . 35. *N. neglecta.*

11. Folia sessilia amplexicaulia ± decurrentia.
1. Caulis trigonus vel triangulus, ascidium extus sub peristomio tomentosum; glandulae operculi paucae, rarius multae diffusae . . . . . 33. *N. gracilis.*

t. Ca«lU Uig»jfto-. vliotlriou, NK>dium extus sub

peristomio ferrugineo-pubescens, glandulae operculi paucae . . . . . 34. *N. mytutifidia.*

3. Caulis cylindricus, ascidium exlus aub peristomio . . . . . *N. khasiana.*

in. Folia petiolata.

I. Ascidia tubulosa glabra, peristomium cylindricum in collum ikon elongatum, margo intus polite rientkulaliix, ascidium medium usque vcl mb mi dio glabrum dein glandulosum . . . . 36. *N. tubulosa.*

2. Ascidia subventricosa tubulosa, peristomium cylindricum pectinatum in collum valde elongatum, margo pectinatus, ascidium ad medium vel sub medio constrictum, constrictum gtaadtt-Imum . . . . . 37. *N. Hemsleyana.*

3. Ascidia ventricosa, peristomium angustum cylindricum non elongatum, ascidium intus per wntuin, mat. superiorem glabrum dein glandulosum . . . . . 38. *N. Rafflesiana.*

4. Ascidia ventricosa, peristomium angustum cylindricum non elongatum, ascidium intus per collum superiorem glabrum dein glandulosum . . . . . 39. *N. Armbrustae.*

γ. Nervi longitudinales laminae 7—10.

I. Ascidia omnia ± cylindrica vel superne cylindrica inferne leviter ventricosa.

Folia non vel breviter decurrentia, ascidia viridia et albo-lineata, alae virides inferne angustatae fapenu ad nervos vel vertices reductae . . . 40. *N. albo-lineata.*

2. Folia non decurrentia, ascidia viridia vel rubro-viridia, alae angustae vel ad nervos prominentes reductae . . . . . *N. phyllamphora.*

3. Folia leviter decurrentia, ascidia viridia rubro-maculata, alae angustatae non ciliatae, basi et apice angustatae. (f anicti . . . . . 42. *N. Moorei.*

Folia non decurrentia, ascidia rubra, alae rubrae, inferne a basi medium versus ampliatae, dein ad os angustatae . . . . . 43. *N. Bernaysii.*

5. Folia non vel breviter decurrentia, ascidia pureo-rubra, alae fi ntrales rubrae, a basi ml os ± sinuosae. . . . . 44. *N. Jardinei.*

6. Folia breiUer decurrentia, ascidia ruUro»^rlidia vel rubra, alae ventrales basim versus gradatim vel interrupte expansae et ± ciliatae . . . . . 45. *N. Kennedyana.*

II. Ascidia inferiora ventricosa, superiora ventricosa Ad infundibuliformia.

I. Folia petiolata non decurrentia.

* Planta pumila scandens, ascidia monomorphia . . . . . 46. *N. Garracayae.*

** Planta elongata, ascidia dimorphia . . . . 47. *N. Decurria*

J. Folia petiolata ± decurrentia.

* Caulis brevis dense tomentosus, glandulae operculi paucae immersae, peritheciobleae . 48. *N. Rowa*

** elongatus glaber, glandulae operculi copiosae **rniTsac**. . . . . 49. *N. Treubiana.*

IN. Asciili.-i rylinchit.il, **peristomiam En** series dentium duas dissectum . . . . . 50. *N. echinostoma.*

b. 0 perculu00 ;isi-iilii iiilus hani caritin **prominCDte,** vl Ixitii cnrina et SIIICV procevm iiistrtictum, vel **ucdlo** tarinattun.

α. Oper• tilum b«si **eariiu prominaito** instructum vt'l ra«4io mriiuilun).

I. (Jnulis late nl.tl.us, acute **tritngnhfffl** . . . . . 54. *N. Burbidgei.*

II I toli s leviter flatus, subtr **igOfltttf** . . . . . 55. *N. Bosrhiann,*

III. (faults non **llatas,** folia spiraliter posita, fere gl ibra. 53. *N. aiaia.*

IV. Caulis non alatus, folia disticha villosa. . . . . **51.** *N> Veitchii.*

V. Cnulis non olttlius, *folia* spiraltlw **poiita fere** glii ra, car iau **teti** in i medio oper uU. . . . . 55. *N. stenophylla.*

β. [1] ipcrculum tiaw in **carinam prowinei** tem et apice in proces sum aUi'tiuntuni protliir.Uirn. . . . . 56. *N. maxima.*

c. Operculain a* idii int us nclis muliif **dwp** ersis in ilnictam,

α. Ascidium **iiii-rlio vain** e constrictum margine •.|;!inihi . 57. *N. Lowii.*

β. Ascidi **.ill Mip<lii> lino vi-1 J.** viter constri i-'mu. c argine in peratomio fonnatu . . . . . 58. *N. Macfarlanei.*

4. 17. Pervillei **Wum**, Mus. bot Jugd, lmiav. li (1852) 10; Hook. f. **In** DC. Pro-r. XVII. (1873) !)«; B«ker, H Mnurilhi- and Seych. (1877) 299; Dyer in Journ. of Bot. (18> liu: Watson **ta GanL Cbron. L k UL 1896 E39; Hi** emsley in Cat. North i;;dl. Kew, ed. 4. (1886) n. 468, 496; **Hwhrlan** e in Ann. if Bot. Vl. (1893) 431, 443; G. I**feck** i» Wien. Ill. Gart. Zeitg. (1895) 226; Ve itch iu Juurii. Roy. Hort. Soc. Wl. (1897) 237. — A. H".J>(//I **Wright** in iraiiB. **Roj.** Irish Acad. X\l\'. (1871) 576 t. S9 i*L30. — Miiritn **pro**strata ramis erectis, v. ere **ct« breTiler Kandeiu folila** L'labra (vrminatn. CnulU proafratus T. mil erectus, 0,5—4 m longus X 5—4$ mm crassus, minosus, in'erne nudus, superne foliorum basibus viridibus v. marcesc alibus >) ense oltloctus, ii erecti 5—7 **ran** crassi, cylindrici, ,lnl>n, purpurei. Folia 10—30 cm longi X **3—^lent** lain, corlaciMi, **un** ilia, semiamplexicaulia, obova> T. lipalliulaU, apice acuta v. oM UNIL, supra rii idia, subtus ±: ruin a, glabra, nervi longitudinales utroque latere 6, rarius 5, om*ne** a Itiisi taijin ae orientes vel ['.nil **duo intima a iri** ente inferiore costae orieulin, par iiilimtim 6—(Oimn$_f$|«-> r secun **turn 9-**—15 mm, par tertium **11—10 mm, jmr •|ii;n'tiijn U —|0 HUH, par •|iiin!nii** 15—22 mm, par sextum 16 u- **que ii nun •. cofta** remotum, nervi transversi 5—6 m **no ftepanti, panUeli, a eoata t-rasat** radiato-ascendentes; cirrhus in foliis ascidiiferis 2—7 cm longus, in no n-ucidiil eris **10—SO** rui **loDgtt,** sumun> gradatim iit lm«ut a.-niilii niiiplinliis; **a*** idia 4—20 cm **loDgn** X 3—T cm **lain, dimorphic,** inferiora inferne ± ventric**, *ttUH* o leviter 'onstricta, os versus expansa, ascidia superiora infundibuliformia, juventute rufo-pubescentia demum glabra, /oiws rufo-i omentos **[•** <.uii **peril** tomio exceptis, coriacea, pmrpwei o-rubra vel rubro-viridia, alae ve **otnlM** *'vu) tae a : .]•! IK.vos **MM** T«1WO» approximatos rc<li!ctae, ve. in ner*a media conjui ctae, nervo medio superne sub peristomio in nervos **tateralffl** disperso, os ihliquum; perutoianna **1— 8** mm **Itlsi** n, cylindricum, aequale, ptxitiro aub l>a«i **opereiiJi** non .»(; roximatum, crebre striatum, margine intus denticulatum; operculum 3—7 cm latum, orbiculare, rul>roviri de v. rubrum, extus glabrum intus glandulis magnis immersis perithecioideis sparse punctatum, glandulae **Mi'i** <lrorvuii'** continuatae ab opercul **o per «D** perficiem deducentem; calcar 3—5-fidum, rufo-pubescens; ascidium intus per quartam partem superiorem in ascidiis minoribus, v. per dimidium superius in ascidiis majoribus glauco-purpureum, opacum e[1] **deduo** ns, inferne nitidum, detinens et glandulis multis discretis obsitum. Inflorescentia 25—35 cm longa; pedunculut **ptniculae** aequilongus ± ferrugineo-sericeus; panicula triangula, rami laxi in cymas

5 — \ 2-floras densas scorpioideas parvifloras terminantes. Sepala 4, rarius 3, cir patentia et basi connata, hi floribus (j[1] oblonga-obtusa, in floribus (^ deltoidca acnt.a v. obtusa, extus ferrugineo-sericea, intus glabra, glandulis parvis pcrithccioidcis per hasini connatain dispersis. Columna staminea sepalis brevior, glabra, antherac 8, uniseriatae. Ovarium glabrtim, obpyramidatum 4—3-angulum, stigma medio depressuni, 4—3-lobatum, intus stigmatosuni. Capsnla 10—I 2 mm longa, nitida, 4-v. 3-gona. Semina 4 mm longa, fusca, breviter appcndiculata.

Malagassisches Gebiet; Seychellcn: Insel Mahe, 700—900 m (Perville n. 98!, Bouton, Blackburn!, Barkly!); Mahe, ff not common, in wet places *by* the side of running water at an elevation of about 1500 feet" (Home n. 315!, n. 575!); Insel Silhouettes, auf dem Trois Frères Gebirge (Wright!); auf dem Gehirge (Home n. 576!)

2. N. madagascariensis Poire!, Encycl. moth. Bot. IV. (1797) 459; Willd. Spec, pi. IV. p. 2 (1805) 873; Brongn. in Ann. sc. nat. I. (1824) 45, t. 5 f. 2; Korth. Verh. Nat. Ges. Bot. (1839) 41; Spach, Hist. nat. veg. XIII. (l 846) 325; Blume, Mus. bot. lugd. batav. 11. (1852) 9; Morrcn in Belg. Hort. II. (1852) 229; Hook f. in DC. Prodr. XVII. (1873) 92; Masters in Gard. Chron. s. 2. XVI. (1881) 685 cum ic. xjl.; Scott-Elliott in Ann. of Bot. V. (1891) 376; G. Beck in Wien. 111. Gart. Zeitg. (1895) 226; Drake d. Castillo in Bot. Jahres. XXX. (1902) 547; Dnbard in Bull. Mus. d[1] Hist, nat. XII. (1906) 02; Veitch, Hort. Veitchii (1906) 302. — Planta brevis erecta subscandens. Caulis 0,75—1 in altus X 7—13 mm crassus, cylindricus, juventute dense ferrugineo-pubescens, demum sparse pubescens v. glaber. Folia 12—30 cm longa X 3—8 cm lata, coriacea, petiolata; petiolus 2—5 cm longus, alatus, alae basi expansa decurrentes et fere ad nodum inferiorem attenuatae, superne in laminarn gradatim ampliatae; lamina elliptica ovalis v. obovata, juvenilis dl fusco- v. ferrugineo-pilosa, adulla glabra, supra viridis subtus viridi-ruhra v. rubra, nervi longiludinales in paria 7, rarius 8 v. 9 dispositi, paria 3—5 intima a medio v. versus basim costae orientia, par intimum 7—14 mm, par secundum 8—19 mm, par tertium 11—23 mm a costa remotum, paria reliqua proportione decrescenti, nervi transversi oblique ascendentcs et reticulati; cirrhus 20—30 cm longus, piano-convexus, gradatim versus basim ascidii ampliatus; ascidia 10—15 cm longa X 3—5 cm lata, juventute ferrugincn-pilosa, demum sparse pilosa v. glahra, dimorphia, inferiora ampullacea v. subventricosa, rubra, alae ventrales a basi fere ad os late expansae, ciliatae, os obliqtiuin ovatum vel subor-biculare, postice in collum latum triangulum olonpalum; pcristomium 5—14 mm latum, cylindricum, rrebro striatum, margine intus suhtilitcr dentntum; operculum 3—5 cm diametro, orhiculuri-reiiil ornie, cxtus ferrugineo-pubescens, intus glandulis paucis inagnis circularibus a medio mar^inem versus minoribus obsitum; calcar 4—6 mm longum, obtusum, decurvatum; ascidium intus *feve* ad medium glauco-purpureum, opacum et deducens, inferne nitidum glandulosum et detinens; ascidia superiora infundibuliformia, rubro-viridia v. viridia, alae ventrales inferne angustae non ciliatae, superne ad nervos prominentrs reduclae, os transversum circulan? postice non v. vix clongatum; peristomium parte postico-laterali *zh* expansum; ascidium intus superfine angusta superiore trian-gula gluuco-purpurea, oj>aca, et deducente, inferne nitidum glandulosum et detinens. Inflorescentia 20—40 cm longa, paniculata; pedunculus 10—12 cm longus; panicula anguste triangula, ramis oblique asrendentibus, in cynias densas scorpioideas terminan-tibus; pedicelli <st sepala f<MTUginco-soricea. S?pala ovata, intus glandulis inultis ininutis obsita. Columna staminea glabra, sepalis brovior, antherae 10, convolutae, subbiseri-atac. Ovarium ovatum, 3—4-angulum, dense ferrugineo-sericeum; stigma sessile 3—4-lobum, lobis profunde sulcatis. Capsnla 13—15 mm longa, sparse sericea, nitida, ovatu, valvis stigmaliferis triangulis bilobis, intus depressis. Semina 6—7 mm longa, brunnea.

Malagassisches Gebiet; Mada^askar: Ohne genauen Standort (Commerson und Chapelier, Humblot n. 400!, Curtis!); Tani-fouci in der Prov. Be-tani-mena (Hilsenherg!); ^Central Madagascart (Baron n. 1707!, 2735!, 5979!); bci Fort Dauphin >peaty soil and sandy, sometimes in nmrshesc (Scott Elliott n. **2302!)**

Einheim. Namen: Kapok, Ponga, Amrainatico (Spach).

Nota. Var. *maerocarpa* Scolt Etliutt a typo *differt* solum carpellis majoribus. — Var. *cylindrica* Dubard (op. cit.) est forma typica ascidiis inter inferiora et superiora medium tenentibus.

Fig. 13. *Nepenthes ampullaria* Jack. *A* Ascidia e surculo brevi ramuli prostrati orientia, *a* ascid. nondum apertum, *b* folium juvenile cum ascidio rudimentario *c*. *B* Folium ramuli scandentis. *C* Pars inflorescentiae ♂. *C*¹ flos ♂. *D* Pars infloresc. ♀, *D*¹ flos ♀. *E* Capsulae et semina. (icon. origin.)

3. **If, ampullaria** Jack **in** Comp. Bot. Mag. **i**. (**i** 835) 271; Korthals, Verh. Nat. Gesch. Bezitt. Overzeesche Bezitt. Bot. (1839—42) 46, t. 5; Miq. Sum. Pl. Ind. Bat. (1860) 69; Miq. Fl. Ind. Bat. Suppl. (1860) 325; Hook. f. in Bot. Mag. (1889) t. 6909; **Hook, f. \a I"**. Prodr. Xvir. (1873) 93; André in **D in. ih.ii, w**V. (1877) 45, t. 272; Planchon in Fl. des serres \\!l . (1877) **1. 1355;** Ittirl.; dge, Gard. Chron. (1880) 40; Beccari, Malesia III. (1886) 8; Hook. f. Fl. Brit. Ind. V. (1890) 69. — *N. ampullacea* Low, Sarawak (1848) 69; Blume, Mus. bot. lugd. bat. **Il** [1952) 9; Miquel, Fl. Ind. bat. **1.** ⊳. \, 185:) 1076, **Suppl.** 151, 366; **Horren In** Belg. Hort. II. (1852) **il(t. — Planta r**obusta, alte scandens vel pro**«trata el in lactnminc rilvaniin rnrficans. Cuulis II—Jo** in .-thus **X 8** —• *ti* ni!ia crassus, juventute fermgioci'-tomentosus, demum gl.liter, inlcrnodiis **el**ongatis vel in minis prostratis suppressis. Ramuli prostrati breves vel elongati, saepe copiose radicantes et s**urculos I**aterales breves gerentes foliis dense aggregatis et reductis, ascidia magna fasciculata producentibus; ra**II)i *r.irt.Ii'|.**tes foliis magnis in ascidia reducta terminantibus instrui'li. Folia ramorum prostratorum 3—) .* cm longn X 0,5—I|J cm lata, sub-coriacea, **ad** 1/2 vel 2/3 amplexicaulia; petiolu**- brerti r. nolla**s, lamina reducta, cirrlnis \—5 cm !••>'-us brevis curvatus, ascidium 3—I (» cm longurn)- I—6 cm latum, globosum ad subovatum, pallido-viri**- ⅄iri-'**Ifl t<I purpureo-e, plerumque maculis purpureis ornatum, alae ventrales amplae, herbaceae, fusco-ciliatae, ciliis in series <hi.'(>. <ivergentibus, os transversum v. leviter obliquum fere circu**Jar****, peristomium 5 -•* I 5 njm tntlitn, extus angustum **et** vatu**reettr**s profun**mnd** oblique inclinatu iu$_t$ anguste stri'urn; operculum 1,5—4 cm longum × 1—2 cm latum, erectum v. reflexum, oblong**"-lancco-**latum, glandulae r**irt««irii.'**e v. plerumque nullae; calcar 3—7-fidum v. ciliatum; ascidium intus superne superficie angusta par* |>aud efficaci deducente, inferne glandulosum et defiuens. **FoltA rtnoi**um scandentium 12—35 **. em** longa × i—**I cm la**ta, sub-coriacea; petiolus 2—5 cm longus, alatus, semi-amplexicaulis, gradatim in **laaafnun** ampliatus; lamina lanceolata usque ovalis vel obovata, ferrugineo-tomentosa demu**in htiprn el:**bra subtus pubescens, nervi longitudinales in paria 4, rarius 3 dispositi, par in**t**hmtR) 15—25 mm, par secundum 18—34 mm, par tertium 20—4 0 **mm,** |tnr •|iturtmu **JJ—*it*** •nm a costa remotum, nervi transversi oblique ascendentes paralleli, 2—4 mm inter sese **fpomli;** nrri.us 5—8 cm longus, ferrugineo-hirsutus; ascidia 3—5 cm longa × **i**—3 cm lata, cylindrica ad **i mltiU'iiJiul.**formia, ceterum ascidiis inferioribus similia at omnibus |**Wtibu**s minoid. lull..r<—.'Klin |**5— (5 cm lotij**a, robusta, pyramidata, ferrugineo-tomentosa; pe**ititioiilii-** 4—7 cm longus; pedicelli infe**r**iior«i sitejif **bnctcolttl, in** cymas scorpioideas 2—5-floras terminantes, superiores uniflori, omnes ferrugineo-tomentosi. Sepala {, ovafo-oblonga, exteriora majora, extus tomentosa, intus luteo-viridia et glan**itllbjUt:** plutulnlae parvae, copiosae. Columna staminea glabra, sepalis brevior; antherae 8—12, uniseriatae v. subbiseriatae. Ovarium tetragonum, ovoideum, fusco-pubescens; lobi stigmatici triangulares. Capsula 2,5—3 cm longa, angusta, ± pubescens. Semina 12**: —ifi nun** longa. — Fig. 13.

Von *tier* Molny'mchoii llu]lim*i'l *Ui*>. Neu-Guinea verbreitet, wächst an nntk|<ligen Stellen, kommt oft längs **ilef** Meeresküste vor, oder steigt bis zu einer Höhe von i 200 miiu hin**in**f, l**li**< Kronen von **Palm**en odci anderen BAuuien kletternd. Jack's Form ist als *N. ampullaria* var. *vittata major* bei den Gärtnern bekannt; diese Form geht allmählich [*N. ampullaria* var. *vittata* in Ill. Hort. XXIV. (1877) **: rl** in die grüne Form mit kleineren Krügen über, die gewöhnlich kultiviert wird.

Monsungebiet, S. \\ M . Iayische Provinz; **Mat«k**ka: Paddam Bhatoo und Ayer Punnas bei Malakka (Cuming!, Griffith!); bei Johore (Burbidge); Singapore (Jack!, Wallich n. 2243!, Maingay n. 1322!); Rhio, auf der Insel Bintang (Jack!, Wallich!); Larut in Perak (Kunstler n. 4128!, n. 6222!, n. 1943!, n. 4087!; Wray n. 1794!, n. 600!).

Sumatra: Küste bei Siboga (Teysmann); Westküste (Korthals!); Padangsche Boovenlanden (Burek n. 21!).

Borneo: Ohne genauen Standort (Teysmann!, Barber **ii :t";**!); bei Sarawak (Teysmann!, Low!, Motley!); Sintang (Teysmann!); Kapuas in der Prov. Pontianak (Teysmann!); Labuan (Burbidge!); Kina Balu (Whitehead).

^'eu-Guillca: Vsnupe **Valley** **inetU m**

colur longiore, magis elongatis (4 cm), st obis obliquis.«

Bei Ramoi (Beccari!).

angustis

Kinheim. .Namo: **Keiafcoiig-betoel [Filet, Piantkundij Woordenbo**

V;ir. ;!. longicarpa Beccari, Malesia III. (1886) S. — >\ forma tvpicu <ii: ata **Katahmek gracUiore Lnfoej in Gani apahk low, Sarawak« \inl$)** mus **emam, puncGCnnalbas, rotandatia, panua**

Nea Guinea: Hemdcj in Ga I wif 19i **i89ij**

Var. ;'. GeeiTrinklatia Beccari I. R — »Cap«uils 'A cm longis, stigmatls lobis

Load, Hort Brit SappL HL ((850 • Alphnnd, Proao. de I • irlaoo in Ann. '•

L r. in DC, Ptoar. WII : I«7:i 'J6, R ia 111. f(\r.l 1894) 1 « ; C«nW ji, Sera Ro« L 57; C, B«Jt In Wlep I G |47; Miller in • 904) Hi: . — PlanU

scandn. ilia IB— IH in alttn • H ilirlrictls, jarentule deiut Folvo-pu , ilemum si tnmae Intcntes riensc pnbcsreiitcs. Folia 35—60 cm Urn^a X *> —) » Cm Inlu^ sulicoiiacea, ptliolnta; pi[1] —13 cm toninis. late Hiatus, ainplciicaulio, *him* ad I—2,5 cm dennTcns; lamina Inddo-TiridiB, cllipt. costis Errbum a nbmple ai margo ira *pai[K]- DilvO'puberuIii, s-uhuiu fblvo-pubom . juwntute dense pal igKadioaJea in jwria 5 dlspoaiti, par iiiiiimum)r»—*m* nam, par w to—33 fi-ru, ; nun, par tfuartum 16 — i3 nun, parquiatuoi —40 mm a emotum, • venua uwtain ungulom few inn fonnant 6 mm 10—10 cm longus, ^Tlindricnv, vd boKim aacidii rcnua :. ampliattu, Arlro-pt dia S—tfn'iu to HI Inln, (limniphin, Inferiors rn.ila *el sul •iistinrte Blrial.-i, riri'i. irpoWO-striaUun,)><tslic<* non vd ru nut 3— color. Jonguin X *t*—.1 «n tfttmm, reclntn t. ± im lin.iliim, DVUIC T. ovjituin, til asciiliimi •his epursc rufo- tl cine HA, tatui spam? glandulosiu poalUe; I 5 mm Ionium, lili- io, recnrrnluiD, dense n Mntosum a tupertora iDbiodibuliformia, 15^—tO mm atliim rro» proi: ;itum, obllquu Hani >in. Infiurrniviitui 31 —40 cm l-npit; pedunculus 10— longus, j"' ventute dense rufo-tomentosus demum subglaber, racemus subpaniculatus; pedi calli i 0—20 mm longi, tomentosi, saepe bracteolati. biui 3- T. 1-flori, apicem versus uniflori. Sepala ovata v. elliptica, extus tomentosa, itilns ylnn>lnii« minutis adspersa. Coltttnni) staminea sepalis ae i'(«lbi, gtabn; anthcno H— \ 6 irr^fnilnn iiir c dDtlieris circ, is composita - vlii.- r. 4—6 COHjpo*iU Innifivcrsi[1] posita. Ovarium niTo- tomentosum, ovatum; stigma peltatum purpureum, 4-lobatum. Capsula et semi- 4 l^OOlil.

S. W. **Valajrli** **ieie-1** **BO!** **Sarawak** (Low!; Berg Umbir bef **Sarawak** <

liangka: OUno ircnaufit Staii t n. **4410**!)

No[1] -v Hacc fitrniii v«ttle illiliocU <l lr..v|ii l a IJUI uiullit suiU imribtta (liftVrt. Cmn ; planta pluribus illorum locorum supra jungi solet

nominatorum statu haud cul In OCCWT&lt auctor eam 'ii terim pro specie propria habet, dum experimentis institutis de illi,is plantAC positions tceoraliua juiU ari possit. Investigationibus macrosenpicis cl micrasco picis auctori persuas">" urt, *N. Hookerianam* esse hybridam inter *N. Rafflesianam* et *an•pnllariam*..

5. **N. bicalcarata** Book, r. in DC. Prodr. XVII. (1873) 97; Burbidge, Gard. L of Sim (1880] 116, 3 1I Ottn ic. xyl.; M^lers in *i'.nvA.* Chrtin. s. *, XIII. (188©) 100 *e*\ [con. 101; Burbidge op. dL 564; Broom* op. dL w (1883) *V7%*\ III. Bort, XXVlll. 4os; Burbii C:i I-II Wll. (1880) 54t;Bei?cari, Halesiu II. [U8CJ 231. III. (1884)1 ; Goebel, Pflanienbio.1 Schild. II. 1891] I (i i>: M<farlane in Ann. of Bot. VII. (1K93) 149, 430, 443; G. Beck in Wien. ill. Cart Zeitg. [1898 IW; BuiWdgfl in Joum to y. Hort. Soc. XXI. (1897) 259; E. B B in Cartel welt X. 341. — A. *Dyak* Moore in Joura. o![1] Bot, Win (IBHOj 1 I. 206. — Planta ml.iisti«aima generis, alte scandens, luteo-viridis usqi smarngilino-viridJ!!, Caulis 14— 19 m longiuXtO—80 mm crassus, cylindricoa,) laber, siperne !».'i»j|,tts omptexicaolibm follontno obler.ini, Inferne brnanem nl dcatriciboi irregulari iitis foliornni notatus. Folia 50—11« 'in longa • 10—-<5 cm lala, coriacea, I onge petiolata; petic 'Ins $—15'-in loogtu, alelut, alae oblhjue T. annum njijili'Niltif, liatti dilatata, ad 3/4—7/8 amplexicaulis, dei D medium i ersus angustata, supe >«> in laml nam gradatim amplSalB, In teribus ± glanduloso-tuberculata; l unina elltpUci *usqat* oborali, apice abrupte rotuodata et ptltala, cmrta. sublut vahie prominente, ^Inbra, pun tata, subtus ± glanduli osa allectans, nervi longitud inales in p iria 8—*H* •'• ispositi, omnes a basi folii orientes, [>:ir intiit....i !0—35 nun, pw BeoUttdom 35—45 mm, par tertium 47—60 II m a costa remotum, paria cetera proportione gradatim decrescente, nervi transve ral mvilli, fntJianles \. a scendentes parallel), S—3 mm ttishinU's; cirrbttt *tS*-50 cm l.mifiis, infra aeqaalis, osi-iilii attitudiae in aream himidAm saepissime I istulosam nJVIIIU'I n|>hilum — 6*io* Him cranam amp iatus, dein ve i»u» Im^mi ascidii angustatus, superficies saepe glan lulii nlteetantibiu |iroiiim»*titihii^ lubercolati; ascidia dimorphii, juventute leviter ferrugineo-tomealoM dearana gJtitfa, ± nid da, co iacca, In teo-viridia tique {•linn •.I-I-IIIJ: t; atCli dia inferiori I 8—I li cm longa × 5—10 cm lata, subovata, saepe punicea *v.* [iinii^co-rirldin, alao ventr&Iea I ate discretae, ample expansae diver-geat«i nmrginibui ciliaiis, snrsum ± angustatae; ascidia superiora ampalUfoflnia ad iif'iiit'lildilifdi'iuNi. *n*\ i ventrales ± angustatae. non filial i; os circulara posLico in MIIIJUI MIIIIIH prolongatuin; jicristniuiiiin 10—5(1 DBQ laluin, *ntqaai* e, extus revolu uni, intus oblique iaclinatum, crebro itrialun , et margine ser niUtooi, ptMticc in ifMncIln parallelas Btibpectinalai 1—Sena longM etongalum, lainpllnruni n pices antice in calcaria *duo* *t*—4 cm *longa decurvata producti; operculum 3—"tin* latum, co UIWHI JC reni-forme, extus pubernlun ad glabrum, intus glandulis multis minulia fer« ncquaiibui dti pcnsiH•britum, rariiMin e basi in calcar te rUan metli.....ai carinam pro iuHum; ralwr 6—ir(.....kmgam, ryHwlricui n, tomentosum, ex •>llo 8—IS mm tabopercnlo divi rgens; a•ddium in 111-. cxpiteatum, opacuin *dedu< ens< ad 8—I.....i tab pei'iiU>mu), n ferne nili<litm ginndtilosuin d tinens, liii'lul i circulares subsessi leg, lull orescentia 70—100 cm longa; ;•••inn!-111•i- 8—IS mm eranit.s, ± glan iduloso-tabwcuialis; panicula mascula laxe diverg us, rami multt etot gati simplices radiaolei v. aiea dentes et in cymas scor-pioideas 3—1 >-florai terniiaaal es. Se pals i in pnribnfi inae^ualibui (par ettaranm mini is quam internum), obovata, intus minute glandulosa. .....i' M, .-.i qium sepala brevior, robusta, glabra; antherae ∞, biseriatae, convolutae. Panicula feminea e ram is nmltt* in rMima (—3-flnras 1"n>im«iiLibic composita. Sepala ovalia, minute glandulosM. Ovariun n rli-nst" pitl escens, lobi sti miilmi) I, radiantes, rec iinrsti. (':.i(i«ila ISn um longa, lev ilw stellato- pnbcrnla, va lvae lanceolatae stigmatibus recurvatis coronatae. — Fig. 14.

S. W. Hal ay itch < Provinz; Borneo: Lawas Fluss (Low!, Burbidge!); Lawas Flus• !••: Sintang (eysma nn tt. 1093 7 u. 14461; U erb. hort. bot. Bog.!); Undup in I'niv . Batang-Lupar (Teysm ii:.1 , Be • . r!); N. W. Borneo (Teuscher n. 33!): [til! 1. til Berg I nnbir bei Sarawak (ll ose!).

6. **I. distillatona** L. Spec. pl. (1753) 955, et Fl. zeyl. (171 H; MI: *H*. L. Burm ••• I iinl. 1768) HO : Gaertn. de Fruct. II CSI) IR t. 83; Willd. spec. pl.

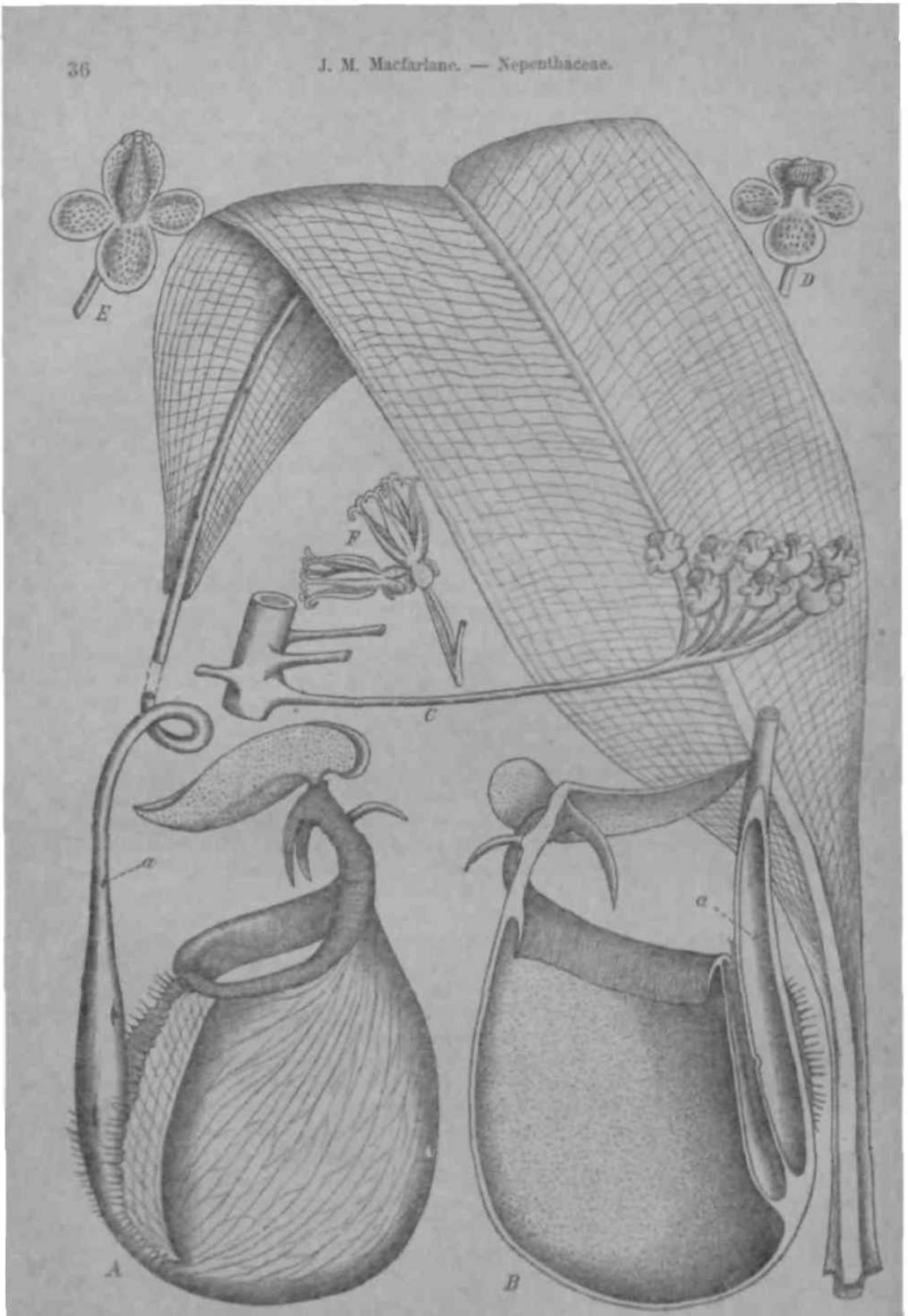


Fig. 14. *Nepenthes bicalcarata* Hook. f. *A* Folium cum ascidio, *a* glandula. *B* Ascid. et cirrhi apex long. secta, *a* cavitas in parte cirrhi incrassata. *C* [illegible] antiae pars. *D* Flos ♂. *E* Flos ♀. *F* Fr[illegible]. [*A*, *D*—*F* Icon. orig., reliq. sec. Beccari.]

IV. l,. 2 (1805) 873; Korth. Verh. Nat. Ges. Bot. (1839) 42; Loddiges, Bot. Cab. XI (1825) 1017; Spach, Hist. nat. vèg. X. (1841) 571; Blume, Mus. bot. lugd. bat. II. (1852) 6; Thwaites, Enum. (1864) 290; i! i >h f. in DC. Prodr. v II. (1873) 93; F titi e in Compt. Rend. LXXXIII. (1876) 1155; Hook. f. Fl. Brit. Ind. V. (1890) 68; Trimen, Handb. i l. Ceylon III. (1895) 420; G. Beck in Wien. Ill. Gart. Zeitg. (1895) 225. — *N. iadica* Poir. in Encycl. M th. Bot. IV. (1797) 458; Brongn. in Ann. sc. nat. I. (1824) 43; Spach, Hist. nat. vèg. \ II; (1846) 323. — *N. Zeylanica* .. i I 1 - ! : . l \. (1836) 1,1. — *N. hirsuta* var. *glabrescens* Smith in Gard. Chron. I. (18s!) 398, *VW* f. 59. — *N. rubra* Nicholson, Dict. of Gard. IV. (1886) 439. — *N. Zeylanica* var. *rubra* G. Beck l. c. 226. — *N. Smithii* G. Beck l. c. 188. — *N. speciosa* Hort. ex G. Beck l. c. 226; non *N. distillatoria* a Comp. Bot. Mag. ( ) ? *N. gracilis* est; nec *N. distillatoria* Graham in Edinb. N. Phil. Journ. III. (1827) 371, et in Bot. Mag. LV. (1828) 2798 quae *N. khasiana* sunt; nec *N. distillatoria* Steud. Nom. ed 2. II. (1841) 190 et Macgillivray, Voy. H. M. S. Rattle. i (1852) 210 quae *N. p amphora* sunt. — Planta alta, scandens, lucido-viridis. Caulis 10—K> in nllt s × 6—10 mm crassus, subcylindricus, juventute fusco-punctatus demum glaber, inter- i odiis inferne brevibus, superne elongatis. Folia |5—35 lit long* X 3—6 cm lata, herbacea v. subcoriacea, petiolata; petiolus 4—6 cm lon .a*. Ul alatus, basi semiam- plexicaulis, non v. leviter decurrens; lamina elliptico-lanceolata, supra et subtus glabra et fusco-punctata marginibus costa et apice exceptis, quae ± albido-pubescentes sunt, costa subtus prominens, nervi longitudinales in paria 5 rarius 6 dispositi, om nia altitu- dine diversa infra medium costae orientia, par intimum I- - (| mm, ; ar secundum i I:; — (8 !um, par tertium 15— ' I f •»)>', par quart not 17 — 11 nun, *ptr* quintu a 18—*itfi* mm a costa remotum, nervi transversi oblique ascendentes reticulati, primus quisque aut secundus brevior, cum longiore ad marginem excurrente alternans; cirrhus 8—20 cm longus, gracilis, su m planus v. sulcatus, fulvo- v. albido-puberulus usque glaber, in basim recurvatam ascidii aliquanto abrupte ampliatus; ascidia 6—15 cm longa × 2— 4 cm lata, dimorphia, pallido-viridia usque rubra, puberula demum glabra, juventute cinctu tomentoso sub peristomio; ascidia inferiora tubuloso-ventricosa, alae ventrales inferne ampliatae, sur on i: angust«» ae, marginibus ciliati *i*$_t$ *m* Iran sversum v. leviter obliquum; ascidia superiora cylindrica, alae ventrales ad nervos prominentes reductae, os obliquum, postice in collum breve elongatum; peristomium 2—4 mm liltlilU, *r* \ ' I drieum, graciliter striatum; operculum 1,5—3 cm diametro, cordato-orbiculare, extus fulvo-tomentellum demum glabrum, intus glandulosum, glandulae per m •ilium [>»*»<••••, (iM=ua- , rubro- virides, margines versus gradatim minores; calcar 2—3 mm longum, planum, pubes- cen«, saepe 2—3-fidum; ascidium intus per dimidium superius glauco-viride ad rubrum, opacum et deducens, inferne viride nitidum dense glandulosum et detinens. Inflores- centia 25—60 cm longa; pedunculus 8—20 cm longus, albido-pubescens demum glaber; panicula la\» r;iin sa in cym it «eorpioU««s : —5-floras terminans; pedicelli dense albido-pubescentes. Flores 6—7 mm diametro, viridi-lutei. Sepala 4 extus pubescentia, intus glandulis ma tis minutis obsita. Columna staminea sepalis brevior, glabra, crassa; antherae 6— eriatae. essile, albido-pubescens. Capsula 12—16 mm longa × 6 nim IHI.I. bnrnii co-nitida, puberula, valvae ovales in lobos stigmaticos latos truncatos terminantes. Semina 7—10 mm longa. — Fig. lit.

Ceylon: Von : Mwrt'Mtraf de bis zu 659 m Höhe verbreitet. — Bei Colombo (Grimm, Hermann, Burman n. 122!, Wic turn n. 1681, Trimen); ohne Standort (Wright n. 2508!, J. Fraser n. 109!, Macrae n. 258!, Cuming n. 262!, Walker!, Beccari!).

Einheim. Name: Bandura-wel (Trimen).

7. **H. albo*margiimt» I** Lobb in Gard. Chron. (1849) 580; Hook. f. in Trans. Linn. Soc. XXII. (1859) 422 t. 73; Spencer St. John, Life For. Far East I. (1862) 323; Masters in Gard. Chron. (1872) 542; Hook. f. in DC. Prodr. XVII. (1873) 102; Planchon in Fl. d. serres XXII. (1877) 165, t. 2343—2344; Burbidge in Garden XVI. (1880) 542 et icon. col; Beccari, Malesia III. (1886) 13; Hook. f. Fl. Brit. Ind. V. (1890)

70; <;. Beck in Wten. W. Carl. Zt-iu-. 1895 (90. — A*. *ioinmteUa* Niq. *VI.* (ml. bat. I]t. |, t85.j 1075, **fti** III- II. Archip. bad. ,1*7(1 5. — X *T?>f*m*iimi<ina* Miq. (in ilerb. Acad I. Kheno-Traicet. n, 63(IJ **ill** parte, •! II. **tod, bat** I- p. I. (1855) 1073;. — Plunta unit-ili*, cLongatn., scainlcits. Caulis 5-—IUm aJtus X 3—7. . . . » missus, snltivliuilrii'.u* usque obtoM Iri^onus, rarius ilearsnm t»u»ilius fbtiortup decurrenlibus Jc\.ter jugoHU9, juventutp *leit« albido- aI fusco- e(»tcUiil»- pubescens, ileosom subpube-cens usqino gluljor, internodia sup Tit tloiu'iiU ad 3—* ciri liiujra, iiifra ± n-iin-u. Folia (0—.TO »:m ion ' i.—' i ri lata, ... i coriacea, subpetiolati t. in basim ad ²/₃ amplexicaulem brevissime decurrentem gradatim angustata, elliptico-lanceolata, apice obtus.« v. hi cirrlittm nltenunta, *ii|ira sj>.arse stellato-pubescentia demum jrl«l>r«, infr* rusciH-puticsrentirt **?el** irliibra ft |>nij>UtFi, margine graciliter ciliata, in sicco vtil'le rtivolutu, nervi Longitudiillfc s in duo paria dispositi, ob»curi, par intimum 7—12 mm, [Mir sci-iiailiuti 8— I *i* nun n ***cotta*** remotutt, Qervi transversi pauci irregulariter H8rpn«k>nte9 cl retkniali; drrttai sai'pe brenu lion ai«:iiluftTii«i ^ . .—IS 'in !•.. et abrujttc in basini racurtatun uekfii ampliati s; ascidia r»—15 cm longa × 1 ,.—1 an lata, nifadimorpoJa; iulV-jiora cylindrico-ventric-osa, nlia rentraiibui exponsis ciliatis, e-nrsuii) in fronts p«m(>mii prol nifrutiis; supt-'rioni tnbliliuui, aJi» xi.-ntralilnix ai ngustis non ciliatis v. ti<i ncrrofl protni nentes reduc'is. ± albido- et stellato-tomentosa, sub peristomio zona vottn oli bido-toment w [ostruda, viriili- et (jurpui-«»-siriuiri usque diffusa v. tula purpun-a, os leviter obli(|uuin, jostice in col Inm In eve triarionium elongatum; p'Orifttomium 3—4 min Ijitiiin, i>vliinlrii nm. BOJUule, brevite f »U ai nguste slrlounu,)<tir**irpureum**; operculum 1.5—2,5 cm latum, ovatum ad orbiculare, extus viride v. albido-viride et[1] **pur** [Mir o-maculatum, intus glandulosum, glandulae magnitudine a basi ad marginem gradatim simplex filiforme v. 2—3-fidum, pubescens; ascidium intus inco-stins al< ¹/₈ ad ¹/₂ altitudinis glaucum opacum et deliscens, infra glandulosum et detisens. Inflorescentia 20—35 cm longa, gracilis, laxiflora; pedunculus stellato-tomentosus, demum subglaber; pedicelli 1—3 cm longi, **wfetne t-** rarius 3-flori, superne 1-flori, fusco-tomentosi. Sepala oblonga, extus fusco-tomentosa, intus glandulosa, glandulae 10—15. Columna staminea sepalis aequalis, tomentosa; antherae 8—12, ± contortae, uniseriatae. Ovarium ferrugineo-tomentosum. Capsula 2,5—3 cm longa, **«|»ne fcmi>ni**-puberula, valvae ad apicem attenuatae, truncatae. Semlinn IS:nm longa, testa circum embryonem transverse undulata.

S. W. Malayisch**0 1'roti**uz; Malakka: Bei Perak (Kings Coll. n. **IQItl); «ur** dem Berg Opli r (ll'iilctt!, t,ohl.', Wliilrhc.i d); bei Singapore (Wallich n. 22 U!, **I.M.l,', Walker o. it'. HalJett n** . ;63).

Sumatra: Ufer bei Siboga (Teysmann n. 530! ex herb. Blume in Herb. Acad. Rheno-Traiect. sub nom. *N. Teysmanniana*, Teysm< un n. Q7! ex Dili. Biltl ne in Herb. Acad. Rheno-Traiect. sub nom. *N. tomen* **V**q.; Inseln bei Siboga (**ttlohol** itz).

Borneo: Klif *fcw* I Berg Mattang (Beccari!); Pinangiao (Beccari); auf dem Berg Peneyu (Teysmann n. 10967 in Herb. Hort. Bot. Bog.); auf dem Berg Bongsch **(11(1** riland und Hose n. 3303!).

Var. *β* villo-ti II-,. f. in DC. Prodr. **WII** . 1873) 103. — Caulis dense hispidoselo«tn, folia juvenilia ntibtna :rrugineo-villosa, ascidia ampulliformiin.i, «IJ ida.

Bo 1neo: Ufer bei dem Fluss Lok|**Un un** d Tangong-poe.

Var. **;• rubra M.**-efarlane var. nov. — Folia et ascidia rubro-purpurea, dense albido-tomentosa v. **sulmlalira.**

Ohne genauen einh**•.-imi«t-h*u SUuttlv>ri: kuhWu^ri ii** n botanischen Garte**0 unler** dem Namen *N. albo-cincta* var. *rubra*.

7*. **V. gracillima Kidjev** in Journ. Linn. Soc. XXXVIII. (19**l«) 3t0. — l*UuU ilk** scandens. **-nulls 0**,5 m et **ultra •ltu«** × 2—2,5 mm crassus, gracillimus, trigono-cylindricus, glaber. Folia 5— **10 au 1**-.i X I —1,5 tm **Jala, aettUia »J** ¹/₂—²/₃ amplexicaulia, coriac***em,* ltocooUla, lumin« Imatm rersu* ^rmiintim wgutUla ail afikvai** in cirrhum atte**uuatji T. rurUaiiue levJUr p«lUU**t **•**-per et **suHui glataN r. jiillii •{»«««•**

pub. scentia, ii<'fvi langiludioatefl in paria 3 disposal, par inliimim 4,5—5 mm, par secuodneo s,5—6 mm, par lerliujB 6 — DUO < costa remotum, nervi transversi irregulariter r–li«i»Li11: drrbos bnsi grtiriDiniUK jwidiuiii Tenaa gradulim an glaber•; as<-i<Hi ft—40 cm lonpa X t—1,5 cm lala, roonotimrpliin (nl nolals, sub-cylindrica medium re sus leviter exp>msa, sparse pubwcem ia ad .lahra sub peristomiII rona dansa bnumeo (in Mno^-lomenUisa inslnirts, paUido-virvlia el l^n. liter copiosc parpurco-trflolal/L, alae vimlralc* in nervoa rcdu<tae rarius c» versus leviter e<cpansac el spur ilic, os obliqaom po«i ilium trftnguhiro elongatum; peristomium 2—3 r>im (atu cylindricum aequale, postice in olian .; -to mm aKtun elong_.ihnn. ul : *N. Reinwardtitiana* til* rulim-slnn'[1]um; operculurn I— i,:, nn liilmii, I ovatun, nt iiH'i' lio coloratum, extus et mint »pa»c pubescens, inluu u'linxliilis magnis circularib'in V. ovalibtla *dz* otuistuin; CJik'nr if—3 mm long•UN. planuno recurvatum pubescens; ase Idium ttjliis per dbntdiom mperhis glaucft-purpuraioa et deducens, dein tiilidnt gland luloiam, plaiKtuInc sttpAme imiDcraae tnt> rne expotilae. Inflorescentia 12—20 cm lo»9*i f»«"Jimriiiu-s quam i racemus longior; racemiu It xiflorus; pedicell: uniflori grncUc? — |<uh> escentes, sub medio bracteolati. Sepala ovalia, t'slu- et per hftivim I t marginem intus dense tomentosa, intus apicem versus minute glandr olumna staminea sepalis ubescens superne glabra; antherae 6 unseriatae. Flores ♀ ignoti. ii"|tii)'>n^a, basi | [in 5 mm longa, fusiformia, pubes depressis coronatae. valvqi! lauccututae spaIW <'»:nl»rs)ulun stiginulitmii Irtanfrutis

Malayische Hall Berg G an Staate Pahang, 1000 m (Ro -Wray n. •inset: Auf deti imoiig-Tal in

Mnson nis *N. albo-marginatae.*

•ia, Spriin* valdo all nta gracilis scandens. Caulis 2 d ultra longus is, juventute fulvo-pubescens demum glaber, punctatus, pallido-viridis v. viridis et purpureo-macul Folia 12—20 cm longa × 2,5—2 cm lata, subcoriacea, ses iata, basi ad 2/3—3/4 atnpl- xicauli, oblique inserta, leviter decurrente, superne gradatim in laminam lanceolatam ampliata, apice in t'irrlmin longe attenuata, costa supra luteo-viridis v. purpureo-viridis et sparse pubescens, infra fusco-pubescens demum p urt«U, nerri '»i<iiu*l«-it In pai ia 3—4 dispositi, par intimum 5—] tain A ronU remotum et oblique ab ea juxta v. infra medium oriens, par secu ;idiim 1 mm ab i mot it in | fere a basi costae oriens, par tertium 1—1,5 mm a secundo, par quartum 0,5—1 mm a tertio remotum, nervi transversi obli iqw B!*l r nil I'll t**t 4" reticulati; cirrhus 5—10 cm longus, supra conc uvus et ptdMtC* i ipaivi' pubetccna dunn pi-[1] nil- pliatus; ascidia •'•—« rtti kwga : • i l.-itn, din morphia; inferior t mnpn liformia •up™ n .eta, miiiiii'[1] puttew i edium leviter contr ntia, zona dense tomentosa sub peristomio instructa, alae ve 11 trail** 3—4 nun lalac, aequales, fere a basi ad os prolongatae, longe r»lial«««*t - iro a<t sub. ovatum, postice in collum breviter elongatum; peristomium 1,5 KIMID —i tun) la' m. •Iria- ill oral? *n*-1 ovato-cordatum, extus pubescens et punctatum, circum marginem interiorem dense tomentosum, intus glandulosum, glandulae pa ir*a«[k] discretae nisi marginem versus; *ultar* ;—2,5 mm longum, recurvatu Hl J 4h<'l dii superficies infra pallido-viridis usque purpureo-viridis, viridi-purpurea usc stem superiorem, *lal et operculum; ascidium intus per dimidium •ttfieriaa j^fau co-purpureum, opacum, deducens, per inferius viridi-luteum nitidum glandul Mom et .1 tinens, glandulae aliquanto discretae, prct unde immersae; ascidia superiora cylindrica, alae ventrales latae v. anguste expansae *. *n* d nervos longitudinales non ciliatos reductae, peristomium 4—5 mm latum, purpureo-viride ad viride, aliomo In P** iisiiilin inferiora. H<res et fructus ignoti.

Hi it t'rinili*ch-imt usiat ische Provinz; An vm: Lang IUTIH, |500 m (Micholitz!).

Sot a. Esumptiriit Uujit* *(ecici novae a rl, W. Mi cholitz nuio looa t. eta et a I d, San •ler ioiM4 wuL qui ca U«rbarh> KewcDti 4«Bavil *m».. <WI. (lhata«tarib«« fcJi.

*jMfeiek vilili- iiiim- i*t *X. liitfHhfoi-* *ae*; fors*n* hacc positio •• floribtu adhoc noodmi i serius affirmari potest.

9. V, S«il«*: Hemsley in Kew Bull. (1895) 116. — P KOa !>!• evis erecta non **seaadttu. Caulii 1** revis 2 dm et -'rn altw, Nuibun foliorui dense circumdatus. I folia 8—15 cm longa × 1,5—2 cm lata, h lineari-lanceolata, b 2— 2/3 amplexicaulia, basim versus leviter a 'rluu'fn, Btwilin, in cirrhum attenua isi ad venilia ± pubescentia, margine ciliata, nervi longit paria 3 rarius 4 dispositi, par in- timum 3—4 mm a costa remotum et a ea v udiDalet in dium costae oriens, par secundum et a e inferio rtium **n—7 mm a coita reoiotM - la i 'i*wta parf re rod** orteta, p«r** (< oriens, ner-i IransTwrsi irrftnljni.T el oblique ascendentes; cirrhus 2—5 cm longus, puberulus v. -rlsbcr, nequalis, in ba*im ftschfii abrupte expansus; ascidium 6—10 cm lon cum × 1,5—2 cm [alunr. • ylindrico-ventricosum v. cylindricum, viride, juventute dense fusco- j*nt escens demum fere glabrum. aU e ventrales aliquanto approximatae, angustae, ciliatae, os ovatum oblic num. ; peristomium cylindricum rubrum, crebre striatum, margine interiore I? viter wrrtttiiin: operculum 1,5—2 cm latum, ovatum v. orbiculare, rubrum, extus ± pub•niluiti, inlii glandulis multis parvis similibus obsitum. Inflorescentia 25 cm longa; [it'if unculus striatus puberulus; racemus simplex; pedicelli breves uniflori. Sepala ovalia. Antherae 8 iimscri atae. Flores pistilliferi et fructus ignoti.

Hinterindisch-ostasiatische Provinz; Siam: In der nördlichen Region "on gra»» lands un the ground at Baw Saw, Kawng (Smiles!)".

In. N. Cholmondeleyi 1. M I alley in Queensl. Agric. Journ. VII. (1900) 441 **pl. 59. — Planta n«nn** erecta, **nTI «-i«n-*en** Caulis inferne **rr|K>w$** : nodosus, superne 12—(5 cm longus × 3—4 mm latus, foliorum basibus imbricatis dense circumdatus. Folia 3—6 cm longa × 0,5—**I cm** lata, lanceolata, sessilia, ad 1/2—2/3 amplexicaulia, »j> se pubescentia, marginibus ciliato-d- **n i l** i **lonffitrnim.**[1] in* i l. 3 dis- posi**fi, par Hil.iiuuiu t>** Dj [' <r i ecundum 2,5—3 mm, par tertium 3—4 mm a costa remotum; ci• 'I'hllB 0 I. aH t nu longus, tenuis, a basi ad apicem aequalis; ascidia **S—3 cm ionga X 0,75—*i rm* la** la, cylindrica, inferne leviter ventricosa, alae ventrales **inf-** rne attenuatae sursum expansae et ciliato-dentatae; peristomium 1—1,5 mm latum, obliquum; **opercvlm** 5—8 mm diametro, ovato-orbiculare; calcar basi latum, apice atten**usfimt i** ecurvatum, saepe **pro«p>;** bus duobus lat **nfibtH** instructum. Flores et fructus ignoti.

Aus**tr.-m;.**[1] ayische ['ruvin; Iape ^ork Halbinsel von N. O. Australien (J »rd in e!).

No**ta. Fonaii** *N. Smilesii* et species supra descripta formae pumilae speciei **ru«j** probabiliter *N. phyllamphorae* sunt. Quae auctores de specie indicant, interim accipienda esse **fiuln. tlliili t**[1] ores accuratius sint noti.

II. V. Blanroi II lume, Mus. bot. lugd. batav. II. (1852) 10. — *Nepenthes* sp. Blanco, Fl. Filip. ed. 1. (1837) 808, ed. 2. (1845) 556, ed. 3, III. (1879) 215. — Sp. non sat. not. Hook. f. in DC. Prodr. XVII. (1873) 105; G. Beck in Wien. Ill. Gart. Zeitg. — *N. miclamphora* Villar in Flor. Filip. ed. 3. IV. (1880) app. 173. — Planta tenuis erecta v. breviter scandens. Caulis 3—6 dm altus × 4—5 mm **m** ssus, obtuse trigonus, juve fulvo-puberulus demum glaber, punctatus. Folia 15— 25 cm longa × 1,5—2,5 cm lata, herbacea v. subcoriacea, subpetiolata v. vulgo lamina sessilis gradatim basim versus angustata, ad 1/2—2/3 amplexicaulis, linearis usque ob- lanceolata, apice rotundata v. in cirrhum attenuata, supra glabra, subtus brunneo-punc- tata, ner**ri k-:.** itudinales in p **in* 1—3 4Uf»** ositi, par infimum 7—10 mm a costa remotum et ab ea circiter triente a basi oriens, par secundum 1,5—2 **nmi »b** intimo remot**tun '(|Hmp< ^Mtiim latma»<** oriens, par tertium **i** mm a secundo remotum et a basi **lanritt»r** oriens, nervi transversi valde obliqui et irregulariter inter se et nervos intimos longitudinales confluentes; cirrhus 7—20 cm longus, tenuis, gradatim in basim recurv**•tain** ascidii expansus, leviter ferrugineo- v. rufo-puberulus; ascidia 10—15 cm longa × 3—6 cm lata, monomorphia v. subdimorphia, rubro-viridia, sparse pubersula,

brunneo-punctata; ascidia inferiora cylindrico-ventricosa, alae ventrales a basi ad peristomium productae, ciliatae, ciliae 5—6 mm longae, os ± obliquum postice in nllitftt 1—2,5 cm longum productum; ascidia superiora cylindrica v. basi leviter subventricosa, alae ventrales inferne leviter expansae et ciliatae, superne in cristas non ciliatas reductae, os obliquum postice non v. leviter elongatum; peristomium 5—7 mm latum, cylindricum, crebre sed anguste striatum, margine intus serrulato; operculum 3—4,5 cm × 2—4 'in. ovatuai v. ivato-cordatuim(inbnaeisbruiaceuni, i^xms nil>ru-ujuni)jrum, intus per medium costatum, per totum glandulosum<. glaadulac in inedio paucae magnae, [MIIthecioideae, latus versus glandulae UMI1U> parvae ovales; calcar *i* — 5 mm longum, ferrugineo-pubescens; ascidium intiw [>IT dimidium superius gl.un'o-piirpureiim, opacum et deducens, inferne glandulosum et detinens, glandulae superne parvae immersae, approximatae, inferne mediocres ± expositae, magnae et diffusae. Inflorescentia 30—40 cm longa; pedunciilus 25—30 cm longus, juventute rufo-tomentosus demum glaber; r«fmu simplex **bxiflorw;** fn-riirclli 4—:• moi longi, ferrugineo- v. fusco-tomentosi. Sepala 4 lanceolata v. s[iiiiiiii]nta, extus et per marginem interiorem tomentosa, intus per dimidium inferius glabra, \wv **tuperti**s glandulis parvis obsita. Columna staminea ± ferrugineotomentosa; antherae 4 **ft, (jiiarum 12 in**feriores et **itoi»«fuiU«** *i* ***up«ri<*** res et t **«usveru4>** sunt. Ovarium breviter stipitatum, dense pubescens, lobis stigmatum **»e«»Jllbtt», promiiientibus** bilobis, leviter recurvat^, *Ca*\\sula 15—17 mm longa, fusiformis, ± puberula et niti**la, •Uxnml,)** plana, obscure biloba.

Provinz der Philipp**Inen: lu-**, Cebu (Blanco); Ins. Benguet (Cabeza); Ins. Culion (Merrill n. 5.!-[].

i .

Eittleim. Namen: S IIIKI-SIilud, Sogon-sog**K,**

il. H. taataculata Dook. f. in DC. Prod. KVJI. (1873) **IOi;B***cari, Malesia III. (1886) 13; C. Beck in Wien. Ill. Gart. Zeitg. (1895) 188; Burbidge in Gard. Chron. n. s. **tvii. da**(1882) 56. — Planta gracilis ramosa scandens. Caulis i —;• i altus × 2—5 'urn crassus, glaber, flexuosus, saepe ± spi**nlUer lortu**s, juvenilis triangu**tt de**mum trigonus, internodiis ± elongatis. **l** Folia 6—15 cm lo:ga × 1,5—3,5 cm lata, herbacea v. subcoriacea, lanceolata v. elliptico-l inrrolata **MsaOUi** • et oblique auriculatoamplexicauli**i, *(>kc** act: **«MM, ntprft«lcuhUw glabfii** nervi longitudinales in paria 3 v. in fol**i« tnaitnm 4 dufXniti, amon** * ba-i orientes, in auriculas ba»«lr- curvati dein per laminam prolongati, par intimum 4—7 mm, par secu**ii him** 6—12 mm, par tertium 7—14 mm, par quartum 7,5—15 mm **a cOtU rrmoiiiiH.** nervi transversi irregulares, versus costam fere rectangulares v. **oMWttte a>**cendentes, rarius ± descendentes, omnes furcati et reticulati; cirrhus 9—17 cm longus, gracilis, concavus et supra fuscopubescens, aliquanto **nt»nii>** te in basin ascidii ampliatus; ascidia 8—12 cm longa × 2—4,5 cm lata, membranacea, juventute rufo- v. fusco-pubescentia demum glabra v. sparse pubescentia, dimorphia; ascidia inferiora ampulliformia v. ovata, rubro-purpurea, alae ventrales breves, a **ba« i**d os continuatae, ciliatae, os ovatum obliquum; peristomium 3—4 m in latum. «**riitutrku**m, tenerum, remote striatum, non v. in collum leviter elongatum; operculum 2—4,5 cm longum × 1—2,5 cm Utrm, ovato-oblongum, membranaceum, extus minute brunneo-punctatum, sparse longe tentaculatum circum marginem v. per totum, intus glandulis multis minutis dispersis obsitum; calcar 8—10 mm longum, raro simplex plerumque multifidum v. ciliato-fascicul[1]i i'iin j Hi iiiiim III'.i:- (>' r • iiim superius [illegible] opacum et deducens, inferne nitidum glandulosum et detinens, glandulae multae, circulares, discretae, expositae; ascidia superiora cylindrica v. ad basim leviter dilatata, purpureo-viridia, alae ventrales angustae non v. ± ciliatae, os leviter obliquum v. transversum; operculum ovatum; ascidium intus per duas partes superiores opacum, inferne glandulosum. Inflorescentia 5—6 cm longa, saepe 2—4 ex axillis bractearum adjacentium orientes; pedunculus 1—3 cm longus, saepe curvatus, puberulus; pedicelli in floribus ♂ 1—2 mm longi, in floribus ♀ 4—5 mm, uniflori, puberuli v. subglabri. Sepala oblonga, extus margine pubescentia, intus glandulis minutis adsperva. Columna staminea sepalis aequalis glabra; antherae 4—6 uniseriatae. Ovarium sessile, lan**Uf**neopubescens, lobi stigmatis distincti, duo. Capsula 27—28 mm longa × 5—6 m**ii lati**,

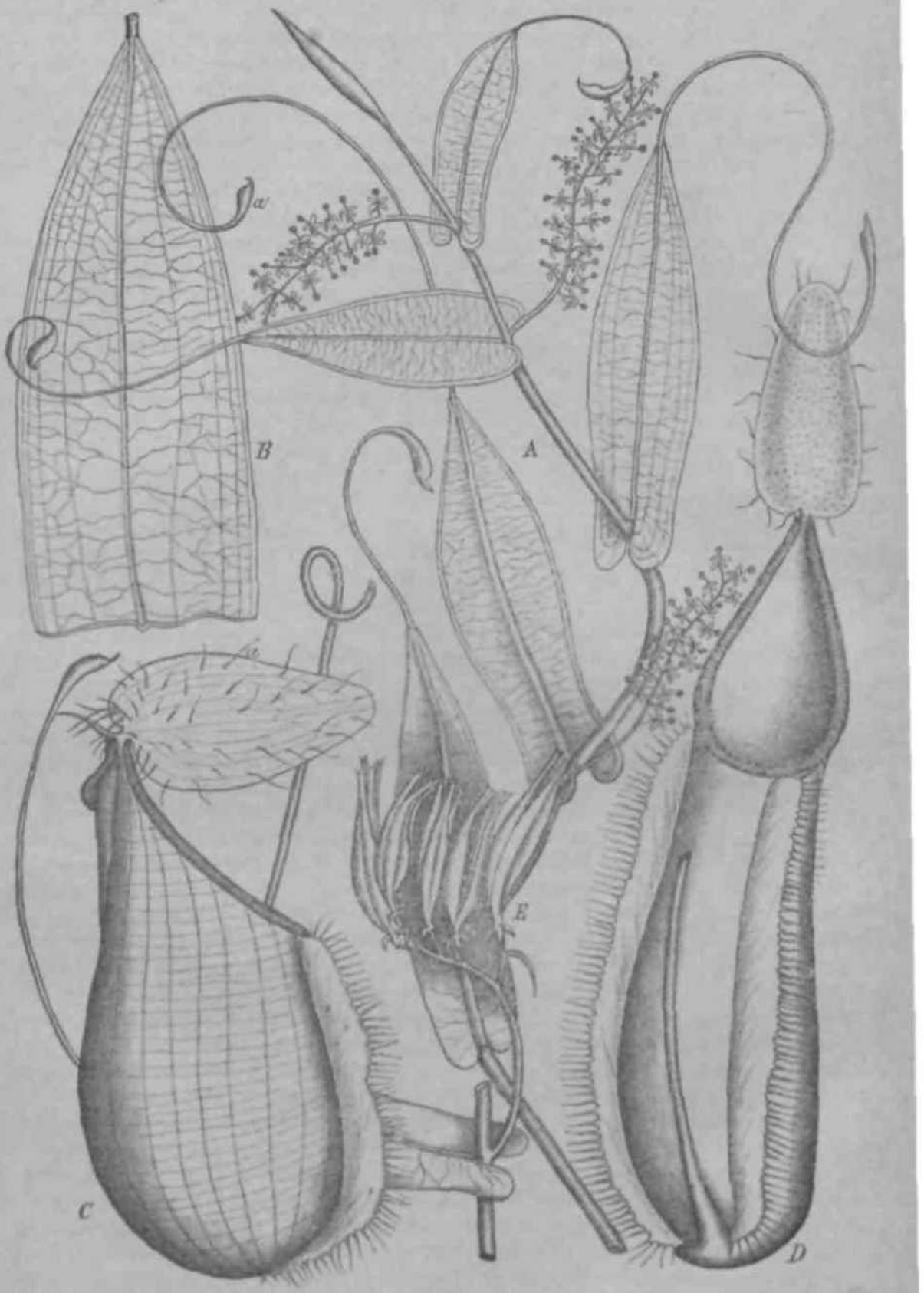


Fig. 15. *Nepenthes tentaculata* Hook. f. *A* Apex ramuli pl. ♂ cum infloresc. tribus, *a* ascidia abortiva. *B* Apex folii majoris. *C* Ascidium inferius vel basale, *a* operculi »tentacula«. *D* Ascid. superius vel caulinum. R lUtuiitu* fr uctifer. (Icon. origin.)

remotum, nervi transversi oblique ascendentes; cirrhus 15—20 cm longus tenuis, inferne concavo-convexus, ± puberulus, superne in basim ascidii recurvatam gradatim ampliatus; **wcidtum *—Mem loogtun X 2—3,5** cm **Utum. m<M"-ii.iirj>iiiiini v.** MI! dimorpi-ami: **H A** inferior,! • **I** <-.•....';.. **I,** i **m KtiM,** fere a basi ad os extensae et longe ciliatae; ascidia superiora tubulosa v. inferne leviter ventricosa, alae ventrales 1—5 mm latae, distantes et irregulariter serrr breviter cilia'jr. si, superficie inferiore viridi v. rubro-viridi, superiore saepissime rubra, juventute dense fo **mi-**gi **oco-ptil**escente der **nmn** ± ferrugineo-puberula, os ovatum obliquum, postice in co **Hum** breve elongatum; peristomi **:IM 6—*1* tri**um latum cylindri **cum,** aequale, crebre striatum, maiyo IPUMor tenuiter serratus, postice in c 'Haiti rfcmtus, *uin:rfl<:iW>ii» pmlk-lis oppositis; operc ium I- –2,5 cm longum, o ilo-wnl' tum, rabntin *K.* ruhnrn, extus puberiiluiii itittis ulaitili: is multis circularibus in MfiM Hdat JlrtHpi* Ul*re Hour mediae dispositis, et rlau'hilis- t; agnis paucis perithecioideis pro tninralibtn twuim rravu* \. diffusis obsitum; calc ir 4~-6 turn l i gum aliquanto cr iMiim; «*<-. dium intus per imiilluiti superius glauco-purpurt inii v. **nihto pwpiircuiM** opxroiii et deduc••-, inferm* nittdtuu et gland nils .- remoti* subnets libus obsitum. Inflorescentia (♂ solum nota) 45—55 i "in longa; pedunculus lo cm longus, dense ferrugineo-pubescens demum glaber; racer **HIJS** ttrtgu- tus elongat tgt deiwi(lofii s'. *['•"* icelli 8—10 mm lon • f.i.--i bracte olati, biflori rarit u Icisim vends 3-fi"ri, dense ferrugineo-p fi bescentes, flores nun •ii.nn -Iro. Sepala i in jtorin faaaequatk rl sposita, par externum late ovale, internum ellipticum i. • \(t» dense ferrugineo-pubescentia, intus riridi-lnti a, et glandulis multis parvis nectariferis instructa. Colu -nan Klni'inea cum liaKittiLt sepaloru in inforne sp.irsn juitiesi ens, superne glabra; antherae 8 **mikeriata** e. **I -es pistU**liferi et fructus ignoti.

I'rtjvini dcr Philippinei: Auf dem **l*'^ VJcloria, I** ns. Pal **twflD, 384** *tn* **I** oxworthy **u. "2 1'** spec. typ. in Herb. Sc. Manilla); auf dem Berg Pulgar, Ins. Palawan, m (Curran n. 3896!).

15. **IT. Northiaaa Hook. f. in** Gard. Chron. II. (1881) 717 f. 144; Burbidge in Garden XXIII. (1883) **49!, f. i":** Will mack in Gart. *I* eitg. 1. (**1** 882) 64 cum fig. 14, 15; in Rev. d'Hort. et Et. XXI. 271; Gentil in Sem. Hort. I. (1897) 75 et icon. 107; North Reco **II, ..f Hi,** ppy Life **I i<'i: 151; It-** msley in Cat. North Gall. Kew ed. 4. (1886) n. 561: G. Beck in Wien. Ill. Gart. Zeitg. (**1*** 95) 142; Veitch in Journ. Roy. **II** ort. Soc. \\i **iKinj 136, r. <f.**; Masters in Gard. Chron. s. 3; **w\i** V. (1903) 272, XXXVI. (1904) 97. — *N. spuria* Beck in Wien. Ill. Gartenzeitg. (1895) 187. — **Phmta** robus Caulis 4— (i in **I><IIJI«H X G—H mm era** ssus, cylindricus, glaber, internodi **is inrcrne bKTibttt, CoHorum b** asibus latis amplexicaulibus **iion*f ol** tectns. **Kolia (5-—35 cm loilga** × 3—**-H> cm ln^, tras«t**t **bprbm** coriacea, elliptica **i riTaliri** v. obovata, inferne in basim late alatam semiamplexicaulem gradatim angustata, alae pe **i' in! t-rr** odia duo decurrentes, superne in apicem obtusum v. peltatum rotundatae. tiipni i^lfthru n argine pellucida, subtus glandulis multis (30—60) nectarife its punotaln, iierri longitudi ml« ubwi. it I <|»fMi»iU. par intimum 15— Jfl **BUD,** par secundum it—30 tnin. far **latttm** 25—35 mm, par quartum 27—40 mm a *t. i mi **I - t mm** 10—60 cm longus, gradatim v. aliquanto abrupte in ascidium expansus; ascidia 6—40 cm longa × 3—12 cm lata, dimorphia, ***en****.** glabra, herbacea, v. sub- i-, . i- ea, pallido-viridia maculis purpureis; ascidia infe **.ton an**pulliformia v. subovata, ± purpureo-maculata, **•IM** ventrales a basi ad os continuatae, inferne angustae, in medio latae, sub os abrupte et oblique truncatae, membranaceae, dentato-ciliatae v. fimbriatae, os ovatum valde obliquum; peristomium 10—50 mm latum, in ascidiis junioribus subcylindricum, in maturis late expansum, margine externo undulatum, antice et postice ± angustatum, ad latus late expansum, margine intus denticulatum, superficie crebre et distincte striata, luteo-viridi- et purpureofasciata; operculum 3—14 cm longum × 2—10 cm latum, ovato-oblongum apice acutum, fere transversum, pallido-viride et purpureo-maculatum; ascidia superiora infundibuliformia, basi recurvata et gradatim in cirrhum angustata, alae ventrales a basi

recurvata •4 us cuntjnualAe, angiwtae, eiltaloe; perislowimn el operculum angustiora quam lo ascidiist infermrihiis; asridiuru inlus \>r triangulum posterius T. ad trientem ascidii glaucum•• v. gtauccKpurpuretun el pturpareo-maculatuim, interne nilidum gbuidu* tosum. lullorcsircntia t5—35 eln longa, laxiflo>r«; ra<emus triangulus; pedicelli I-—4 mm longi, graciles, saepe «<l v. tub *m*edio bracteolati uni- v. biflori, florM 6—7 inm lati. Stan<ia, pislill. . . . . *i* I, . ttM iguoti.

S. \\. M;i I a y i s, he Provinz; Borneo: Auf einem Berge bffi Jambusfltn (Marinun e North, icon. col. in North Gallery, Kew; Curtis!).

Nota. Species haec pulchra adhuc uno ex loco colOpotA Mt. Qi»n)«|uiiii] ftbhinc quinque c(vi^ijiti «nnaa in i iiiiur.im introdoctj n..r«» •«

N. Horthiana x albo-tnarginata M«« ers. — *N. cincta* Masters in Gard. Chron. s. 2. XXI. (1884) 576 et icon., s. 3. MM, I 89•-' 48, s. 3. mi. (4193) 46; Nicholson, Ill. Diet Gard. II. (1885) 4.3.:.: GeolB in IUv. ort. Belg. et Etr. XXI. (1895) 268 et icon. 269; Miller in Cycl. AI.K.-. Hoit III. ,1901) t073; Veitch, Dort. Veitchii (1906) 301, •86 — Plants rofoiistn, scaiultos. Caulis 6—8 m altus × 5—10 mm crassus, internodiis inferno bievibus superne elongatis. Folia 15—35 cm longa × 2—8 cm lata, crassa subcoriacea elliptica, in basim subpetiolata v. ± di d 1/2—2/3 amplexicaulia et decurrentia apice obtusa v. subpeltata, nervi longitudinales in paria 3 rarissime 4 dispositi; ascidia 8—30 cm × 3—8 cm, cylindrico-ventricosa, ± diunoiphia, viridia et rubro-erubescentia maculis purpureis or lijitji, HIae ventrales expansae continuatae sub os truncatae longe ciliatae, os oblic[Uttia; j'eristominn 10—30 min liiium. antice et postice ± angustatum, ml Inltis t>xpamuin undulatum, purpureo-viride v. purpureo-striatum; ascidium sutil- |HT!stomio zona de lisa ft lbido- v. remisso-tomentosa instructa; operculum ovato-orbiculare; calcar B— 11! linn ir ongum simplex v. bifiduui; ascidium intus pallido- et glauco-viride purpureo-maculatum.

Samen dieses interessanten Bastards sammelte Burke 1884 in Borneo von einem Exemplar von *N. Northiana*, das in der Nähe einer Pflanze von *N. albo-marginata* wuchs. Diese Samen keimten in den Gärten der Firma Veitch und brachten Pflanzen hervor, til*[1] eine Kombination *tin-* Merfcina le oben genannten Arten aufwiesen.

16. **N. •angulnea Lindl.** in Gard. Chron. (1849) 580 f. 2; Griffith, Notulae IV. (1854) 348; Masters in Gard. Chron. (1872) 542; Book. f. in DC. Prodr. Wli i 1873) 100; Masters in Gard. Chron. II. (1874) 715; W. G. Smith, Flor. Mi. [IS74 t. 128; Plaichon in Fl. d. serres XXII. (1877) 2256 f. 2343; Masters in Gard. Chron. n. s. XI. (1879) 13; Burbidge in Gard. Chron. n. s. XVII. (1882) 56; Beccari, Malesia III. (1886) 4; Hook. f. Fl. Brit. Ind. V. (1890) 70; Whitehead, Explor. Kina Balu (1893) 16; J. Veck in Wien. Ill. Gart. Zeitg. (1895) 185; Masters in Gard. Chron. s. 3. XXXVI. (1904) 97; Veilrl, Hort. Veitchii (1906) 303. — *N. pumila* Griff. Notulae IV. (1854) 349. — non *N. sanguinea* in Gard. Chron. II. (1882) 809 quae *N. Veitchii* est. — Planta terrestris v. epiphytica, scandens, lucido-viridis. Caulis S—: m longus × 8—10 mm crassus, trigonus, glaber apice excepto quo ± ferrugineo-pubesceas, foliosus, ramosus. Folia 12—45 cm longa × 3—6 cm lata, sessilia, ad 3/4 amplexicaulia, crasse herbacea v. subcoriacea, oblongo-lanceo(Into, apice acuto v. sub-obtuso, gradatim in cirrhum angustato, supra glabra v. juvenilia In iv.illis foliorum et per costas pubescentia, subtus sparse pubescentia v. glabra costa excepta quae juventute dense demum sparse pubescens est, nervi longitudinales in paria 4 r»nu* 6 <lujM«««ti, obteari, a l>a»i a7ki|ilr\irauli onrnlri, t"r inl limum 10—(8 mm, pai secundum 13—24 mm, par tertium 14—27 mm, par quartum 15—29 nun a costa remotum, nervi transversi obscuri et irregulariter radiato-ascendentes; cirrhus 10—20 cm longus × 1—2 mm crassus ± hirsuto-pubescens; ascidia 10—30 cm longa × 5—8 cm lata, subdimorphia; ascidia inferiora cylindrico-ventricosa plerumque sanguineo-rubra v. viridi-rubra, alae ventrales expansae, ciliatae, M «ovatum obliquum; peristomium 10—25 mm latum; ascidia superiora cylindrica v. cylindrico-infundibuliformia, rubro- v. luteo-viridia, alae ventrales angustae leviter v. non ciliatae; peristomium antice et postice angustatum, parte postico-laterali margine exteriore late expansa, margine interiore inflexa denticulata, postice in collum breve elevatum, superficie valde

striatum; **operratam** 3—**1 i** cm lontnnn × 2—8 n n **latmn, orato-cordalnni** n-i ***at*bi-culare,** *axlus* sparse pub*rse<?ns, inlus gjuudulis timlti* **rariwHuc j** iep<s **transverse fltoug&tii onlibtu per medium,** *tutr*inem versus mi i.-inbut instructum; **calcar tO**—30 **mm** Ionium, fitifunne, sa<:|>t; lii-trili-lurn: ascidium intus per triente **m v,** tlinuiiiiuiu **supcriofl** glam:o-nll>ii]urn v. **gtauco-porpun** um, opacum et deducens, inferne viridi-tuteost] iiilidum, fclnndiilosum el rhitiu ens; ascidia superiora cylindrica v. cyli i in co-infundibuliformia, |)nllidi»-viridm v. viridia i: puri»ureo-ruttni maru|*ta, alin* v«atrales angustae non ciliutac v. yd nerrofc , prominentes reductae. Inflorescentia 20—fiO cm IOD^H, ♂ quam ♀ longioi: p«dnbcnltu in—10 <m longus, sparse pubescens; racemus sub-liisil1i'ru«i ; li<S— 20 nun longi, UHUCS, <IHM<**- >^riceo-pubescentes, infnif ,t—S-florL ii'i apicein racemi tniifi• • 11, Horcs 5— fi own lati. Sepala oblonga, extus ferrugineo-pnbesceoUa, lohw parpnri o-rubra, sicci ite nigru H **^aaduii** i«. -> ikthunna staminea sepalis -i^ acqtiatii tofenae Beric*o-pn bescens, superne glabra; antherae 8 uniseriatae-. Ovariufia ova to-quadrangulare, sericeo-pubescens; stigma 4- **i>ut»,** in **IU--I** depre aura, i >paola 16—55 mm IODJ *m* curvate, vafvat BXUM aukaU e. Semina 8—\/ mm lofiga, tnaU dretun embrjonem tmdulala.

S. W. Malajltehfl I'rovin*: Mjilakkn, nnf itrin >erg Op tdf (Lobl) n. 169! Ridley n. 317*!, White riping; T HUli MI Perak (Engler n. 5332!); G"Oiiou, Ledang ('.riffiili n. * H !); Perak (Wray n. 129!, Burbidge); Larut in Pro'. Perak (KomLler a. lOtst, S6 !, 3307!, 3316!); Gunong Bubu in Perak (Kun **LIM** n. HIHS!!; BaJu im Staate Selangor (Kensall); Singapore, bei Bubo 1700 m (hturto n. 35!); Kluang Terbang im Staate Pahang (Baring n. 10912!).

Borneo?: Burbidge (Gard. Chron. XVI **i i s v** 2 56) sagt: "*N. sanguinea* is **it »*li** ve of Borneo" und (in Veitch m. s. s.) "only one pitcher brought me by my men". Vert. kennt kein **if JMltln-l|t|M'h,li** Exemplare von Borneo.

II. H. rajah Hook. f. in Trans. Linn. Soc. Ull i«:,'. i :•, t. 72 et in DC. Prodr. XVII. (1873) 95; Spencer St. John, Life For. Far East II. (1862) 331, 334; Burbidge, Gard. of Sun (1880) 100, 108, 279; Masters in Gard. Chron. s. 2. (1881) 492 cum icon. xyl. 91, 493; C. Y. in Garden XXII. (1882) 122; Regel in Gartenfl. II (1883) 213; T. Moore in Florist (1883) 166; G. Beck in Wien. Ill. Gart. Zeitg. (1895) 142; Veitch in Journ. Roy. Hort. Soc. \\i (1897) 232; Hemsley in Bot. Magaz. \\\J (1905) t. •r: — **PUi** ta robusta brevis erecta non ramosa. Caulis 1—2 m 4ltt» X IS—25 mm crassus, cylindricus, inte nodiis brevibus, juvenil s feirugfneo-hir-sutus, demum ct*tH-r. l olia 30—50 cm longa × 7—15 cin lata, crasse coriacea, petiola **la; |K-tujlii» •**—10 cm long **M alatat, •**lae superne angustae, inferne gradatim in **h-MiiM j.l** t **ampltifcaalcfi! ••** ni«a»; **lamtM ovalifl aj**. . . . **pclUU, supra glalirn mM** us subscabrida v. minute tuberculata, nervi longitudinales **in [iftha i i'iiri«% S** dispositi, par intimum 25. — **tit nun, |ntr Necittiduni 33-**—65 mm, par tertium 40—80 mm a costa !••1lii»IIII). paria quarta et quinta proportione de escente, nervi transversi ob **1. • •/ •]lli IIT-tutor.** s et reticulati; cirrhus **10 — fin cm lon.** gus × 5—10 mm cr **i««i», tvnu** m gradatim **in l»aftiui aw** idii ampliat **it, «|tflrv- fi** rrugineo-hirsutus demu n **pUb-»tiTi|'tilllfi'** mia, os fere transversum postice in colla **ni Iriii** gulum elongatum; ascidia matura 15—15 rm long × 10—15 in lata m pulliformia, ore lato, juventute hirs **nto-**pubescentia demum subglabra v. gl• !<ru, r ubro-purpurea in ascidiis inferioribus usque viridi-rubra in superioribus, alae ventrales i datim ampliatae, v. ut lobi fimbriati 5 — **13 mm** hit **a** law **ad o*** productae, os obliquum; peristomium 3—6 cm l **lotn,** aequale, rubrum v. lurido-pur **[larvacn, in** argo exterior expansus, **n*r** vatus, undulatus, margo interior gradatim v. crebre incurvatus, dentibus pectinatis et oribus prominulis glandularum marginalium immersarum; operculum 10—20 cm latum, cordatum v. cordato-orbiculare, apice rotundato v. emargi **nat6, k«** viter crasso-pe **niiirt** lato, suberectu u v. inclinatum, extus viridi-purpureum glabrum, intus purpureo-suffusum et striatum, carina media rec ta ». fubaurir ulata et glandulis multis nectariferis per super-ficiem totam d **li»|w«i»; calcar 15 —f 5 mn** longum, cylindricum attenuatum; **«•**cidium intus per totum r **'ilmitii** *t.* **rnbro-brai** neum niti **uun fihnt>tui** osum, **lauitnlo*-** superne

parv*w* iiisi'rctae el immense, infenw ntagnae .'i|<|in>xinmtae expositae. Inflorescentia 30—so i;in Itm^a, saepe duae v. quatuor braeteis rtiijin-onlihus (ippusitai; pr rawtnus ♂ plerumque long!»r quam ♀; pedunculus 2 n—40 cm tongoi X 8—I! *tarn* crassus ± rerntgineo-hirsuUu demum glaber; pelicelii I •'—SO nun langi bid ri, rarius inferne triflori, ;»•! ;i]'n^m miin-tri, ferrugineo-piilx scentes, bracteolis linearibus evoli v•1 oul1i& I Imi'- litndn-j'iiliri, (0—If mm diametro, Svjinlii *i* ellipl ico-oblonga, "I'- tusa, extus et per marg inem f«t.tii* ferruginco-tomcntoia, intus BtltnddJis puidi miitruiti o*valibw* tJisft- sis obsit i. CohtniiM staminea se palii bnsfior, glihrs; aotbcrac h»—-H f uni- v. lubbiierUtae, wrie tup eriore plcrumqne Iran versa. Ovarium subglobo mm, ferrugineo-to Hi. iiLosnm; stigma sessile discoide indeprestuai l-gonum. Capsula !5— 20 nim loiiga oboi ata, sparse ferrugineo-tomentosa der mm pui ctato-glabra, valvae ellip- ticae stigmatibus bilobii terminatae. Semina 5—6 mm longa, luteo-fusca.

S. W. Malayische Provinz; Borneo: Auf dem Berg Kiim H Ilu, 1500 m (Low!); Kinn unti Marie Pati e Spur des Berges Kina Balu, 150(•—SHro m [Burbl dge!); MiirU Parie Spar (St. John).

IS. N. Bongio Ko thals, Verh. Nat. G esch. Bot. (1839) 19 t. 14; Blume, Mus. bot. lugd. bat. II. (1852) I.-; M ;, pi. J 11(...,. I. (is',i) i 67, et :l. Ind. bat. I. p. 1. (1855) ("7». Suppl. 151 I lock. f. i: I". Prodr. KVtl i-:; 10 (: B*ec*ri, Muicsin lit. (1886) 13; G. Beck in Wien. :l. i. Gart. j 18 y B.) I *«. — Planta gracilis scan- dens, siccitate ± nigra. Caulis 2—3 m altus, × 4—8 mm crassus, leviter v. acute trigonus et striatus, glaber, rufo-punctatus, internodiis rt siilU* Fol orum juven ilit us exceptis quae albido-pubescentes v. subh nuiUc Hint. I olia 5—•8 cm longa × 1,5— 6 <in In'.-'. coriacM, M essilia, semiamplexicaulia, |ia»i I'viter expa nsa ft a) riculata, elliptico-lanceolata, apice peltata, juventute pubescentia dem mi (tlabra, mipra I ucido- viridia, infra circo•ii apk-i-in |hit.iniin sparse puberula, nervi longitudinale• in paria 3—5 dispositi, par intimum 5—10 m HI, pnr si'i-tmilum 8—ift mm, |mr tertiuni 10— 18 mm, pur qiuirhmi It—10 mm a COrti n motum, omnes a MVl 8mpl<xicauli v. |nir intimum i wia slUlndlne a costa orientes, nervi transversi radiantes ascendentes; c rrhun 7—Stf cm tungna, ju«(ntute d••IIM- pui escens, dwnuna HJ arse pubescens usque glaber t' I"nctatus. jH'ii nil a lenah superne gi^dnttni :im|>lt:H<i> e(m basim recurvatam ascidii abrupte expansus; ascidia 6—1 c cm longa × 2,5—3 cm lata, monomorphia v. subdi morphia, cylindrica v. infundibuliformia, nervi longitudinales basim versus promi- nentes, sparse pubescentes, Imiiiu v toniciildti* anl peristomio instructa, alae ventrales inferne ± ampliatae, non ciliatae, os versus in nervos promi- nentes attenuatae, «*, • s circulare, transversum v. leviter obli j'ium. p>j«tir« tn roOuiq b reve elongatum; peristomium anguste cylindricum, striis prominentibus obsitum; operculum 2—6 cm a lai orbiculare ad conlatum, extus .i ,nw> otb»<! 'it.. talmii cl gtandiilusiiiiti glandulae per medium aliquanto magnae, per marginem minores; calcar breve; ascidi *am* iniiis -«it. |peristomio glanco-purpureum, opacum et deducens, inferne niti'luiii ylnivlutositni et detinens, glandulae immersae, superne parvae et approximatae, inferne a tiqtl«nto nt;i_f ae et discretae. Inflorescentia (♂) 5—25 cm, vel (♀) 5—15 cm longa; ped uncuHu :i—1« *rm* longus, saepe ± curvatus et flores unilaterales ferens; pedice li 1—l * nun Inogi, t- rarius 2-flori saepe basi t jilntint i rt n edium versus brac wlali, iitltMn-jriii escentes. Sepala elliptico-ovata, circum marginem dense tomentosa, extus gla liHl, Sill us glandulosa. Columna staminea sepali| vjx |.ongior, gracilis, inferne sparse pubescens, superne glabra; anth irrae S—H iminnTi«iai', Otnrium [njbeMen*. Cap- xulii i n—|j nun long*, l te obovata, g ilmt v. iparu puberula, stigm ialA 1»k obata. S niiiu i 9—1(i mm Ion a, testa circum embryonem r>ifi,

S. W. Malayische Provinz; Suma •r«: Aui dem Berg Merapi in Menang-Karbau 1500—tOOO in (Kurtltnlil]; ouf ilwn Here l."iilion !taja (Junghuhn!); auf dem Berg Singalang 2700 m (Beccari n. 183, n. 222, n. 268!).

(<j, *V.* fingalana |i eccari, Malesia III. (1886) 12, t. III.; G. Be k „, Ui.-n. 111. Gart. Zeitg. (1895) 185. — PUiiiti terrestris v. epiphytica, rami>«a, wajHltfit, tar e sicci ile lori*Jf»-bn nnea v. nigra. Cau lit |>) m i tus × 3—7 mm crassus, 3—4-gonus,

internodiis inferne brevi**tms, auj**erne ad **: cm [ongU, jn**ventute pubescens, demum glaber. Fol**[ft G—JO cm longa X *(5—4,5** cm lata, sessili**i, nil** $^{J}/_{3}$—$^{3}/_{4}$ amplexic**uifis,** coriacea, elliptico-lanceolata, basi cordatr' **non v. breviter d<**currentia, apice **in drrlmm** gradatim angust**ttn, supra gUbra, nibtui |**•r costam gl**ilma t. -^nirsn- pilofli**, juv**entutc** basi**m versus el njtkc rafo-pilosa, in-m lun^iUniinalts In pa**ria 4 rarius 3 v. 5 dispositi, omnia a basi orientia, par **iiiUiiL'i**m 6—10 mm, par secunc **liim (o—16 Him,** par tertium **13—20 mm, par quaritim U—58 mm a costa mitdluni, ncrri lrniw>**versi **obcrttrt I**ersus costam rectangulares v. oblique ascendentes, irregulariter reticulati et areolati; c**irrtun 15—IS** cm longus × **t—3 ram crassii**s, proximaliter plano- v. concavo-convexus, superne gradatim ar**Dpttatui t-i in batj**m recurvatam ascidii ± abrupte expansus; ascidia **10— SO fii** longa × 3,—9 cm **!ata$_t$ iiionoi>**morphia **v. subdimorpkiu**; inferiora cylindrico-ventricosa, alae ventrales ar**KuaUe cilintae** *x.* **otacure dsol**atae; **ni|**periora cylindric**a, alue Tcatralea »«(*ru&noa* pi**ominentes reductae, **juveni**ute rufo-pubescentia demu**IU** glabra, zonis densis pubescentibus sub per**lilomtu in***tructa, viridia rubromaculata v. per totum lurido-rubra, os circulare obliquum, postice in collum tr**i inglilt**l**m ± elongatum; peristomium 4—12 mm latum, antice cylindric**tin. la*ere postico laU** exp**lDsum,** superficie valide e' **aliquanlo** remote »lno!uru, uwi**gine interiore dentic**ulntui**n; operculum ovato-cordatum v. orbiculare, extus glabrum, intus **^lan«liilit Bi**ultis circularibus ± inaequaliter dispersis obsitum; calcar ***t*—3 ti**m longum, planum, obtusum; asci**ltui**n int**u per Winii**um **suf^rhts** glauco-purpureum opacum et deducens, inferne nitidum glandulosum et detinens, glandulae magnae circu**Unr*** et remotae. **IuflORMr:**tia 10—25 cm longa, saepe 2 v. 3 ex axillis bractearum adjacentium orientes; pedunculus 5—**7** cm longus, saepe curvatus. rlalwi v. puberulus et punctatus; racemus subla**x**iflorus; pedi• rlli 8—**IS Him** longi, pubescentes bi-flori, s**i<jr. c m i• :i a nv i ,^-:•;;,•••:P ' I r** flores 6—9 mm diametro. Sepala 4 ovata, extus glabra v. basi sparse pubescentia, margine dease **UHDffilOU,** intus glandulis multis ovalibus instructa. Columna staminea sepalis longior, glabra; antherae 10—12, uni- V. tittil biseriatae. Caps'la |&—10 linn i**onga × 5 mil Jut**a, brunnea, nitida, puberula, v. pun**rtala, vah.K**[1] **!n<**ceolatae, per medium leviter sulcatae, lobi stigmatici crassi, **nilrati.** Semina 12—15 mm longa, testa circum embryonem undulata.

S. W. Malayische Provinz; Sumatra: Auf dem Berg Singalang, 2880 m (Beccari n. 1871); auf dem Berg ltc«i.ri bei Lampong, 1000—rjmi n, **[ForbM i**n. 1883!, 077!).

***a.* S** Malakka: Auf dem Berge Gunong 500 m (Robinson-Wray

PLfiK! Tcrt'l Iti.ll. v hi Jonn. . Linn. Soc. XXXVIII. (1908) 320, sub nom. *N. Bongso*).

N. Bongso est quam *N. sanguinea*, ut cl. Beccari et Beck putant. A *N. sanguinea* facile distinguenda est glandulis operculis, inflorescentia et capsulis brevibus latis. A *N. Bongso* differt foliis non peltatis, alis latioribus et columna staminea glabra.

20. ***. VmlUrdii i**look. f. in DC. Prodr. **\\n** (1873) 104; Zahlbruckner in Ann. **I**. K. Nat. Hofmus. III. (1888) 271; G. Beck in Wien. Ill. Gart. Zeitg. (1895) 190; Veitch in Journ. Roy. Hort. Soc. **\\i**. (**i** 897) 236; Dubard **i**ii Bull. Mus. d'Hist. nat. VII. (1906) 62. — Planta robusta erecta sarmentosa v. scandens. Caulis 1 m et ultra altus × 6—8 mm crassus, obtuse trigonus, glaber, longitudinaliter polite striatus. Folia 60—[illegible] × 2,5—5 cm lata, coriacea, sessilia v. subpetiolata, semiamplexi**raKa, *** 7—20 mm decurrentia, lanc**<4ata(a|ttcr u- ut« *. »**ubobtusa, in cirrhum attenuata, juvenilia villosa v. liir»iit«, ininini **glabn** *W.* •uHn* **}** per costam sparse villosa, nervi longitu**iuMlfw** to **(wri*** 1 i. 5 disposili, obscuri, omnes a basi folii orientes v. par intimum a triente inferiore costae, par **t**Utimtm 6— «« nun. **par** secundum 8—15 mm, par tertium 9,5—18 mm, par quartum 11—21 mm, par quintum 12—23 mm a costa remotum, nervi transversi valde obscuri oblique ascendentes et paralleli; cirrhus 15—30 cm longus versus basim ascidii leviter a**m**pliatus, sparse villosus **lii-lrt!** glaber; ascidia 10—15 cm longa × 2,5—4 cm lata, juventute dense albido- v. ferrugineo-pubescentia demum glabra, valde reticulato-ne**r«<«», tfmorpli**a v. subtrimorphia; inferiora ampulliformia v. ventricosa, alae ventrales plerumque ad nervos prominentes inferne reductae

gradlatin) sursum in nlas lntns ciliata* expanse; im obtfqro um postice in collum breve elongatum; asci iia intermedia mbcylindi ica, inferne leviter ventricosa, medium versus ± contracta, os versus cylindrica, alae angustae ± dentato v-ritialac, M obliqnum lei iter v. i). ii in collum (• ostice elonga ihuii; muidiii njpcriora qjrlimlric/i v. infundilmlLTormia, iit;i-> nmtralea ul nervos prominentes reductae, os transversum leviter obli jtiutn pos tice non elongatum; peristomium 4— Ht luin li tum, cvliniiriciiin, in and liribus latissimum, crebre et remote striatum; operculi'in J,5—4 I'm diaiu etro, cordato-orbicu lart, CXLUK i t pul escens v, giabrost, totat ^luntiulis jotitfiw v, mullii i magnis immersis perithe- ci<ii-i. eis dispersis obsit . ; < .,|. in- *i*—7 mi. longum, filiforme, rec nrvfetm ; ascidium intus per trien ilem v. <i imidium superius glauco-purpureum opacum et deducens, inferne nitidum glandulosum et deti ens, glandul •< profiu de immersae. hi' lorescentia 20—-3ft cm longa !, f^rnjRiniuwviDiisa dcnn m fere glabra; pe tonml us 5—8 cm longus; racemus anguste elongatus densiflorus; pedicelli 8— i t mm loi gi uniflori, villosi; flores 8—9 mm diametro. Si'|fji]ii ovalia, extus et per marginem intus tomentosa, intus glandulis multis parvis obsita. Co •luniti.-t «L'tiiiiii<a dimidium s I jiiilui ui!i aequans v. brevior, glabra; antherae 8—12, nni- i. subbise rinlne, (J\arium dense sericeo-pubescens, breve, quadratum; stigma ses »ib»: i- rrtrnts 3-tabum, mi edio depress itn. < .i psula 18—23 mm longa, sparse albido- v. l truaiMto-paberul^ demum dura brunneo-nitida, punctata, lobis stigmaticis triangu lift d(H(pe».« is. Semina 6—7 mm longa, alae inaequilongae, altera longior attenuata, • 1 • crji l#r revis obtusa.

Araucarien-Provinz; Neu-Caledonien: Isle of Pines, "growing plentifully in a swar spot near running water" (Macgillivray!); Isle of Pines, ohne Standort (Pauell.)' ll. 413!. > leillard n. '121, n. 2161, Germain]; Neu-Caledonien: »colli i :>• IMT- heuses situées au Nord de la Conception«, 300 m. alt. (B it Ait l l a n. 3079); »colli tiff eruptives de la vallée du D otio« (Bala tisn it. 3628 : bei Theo (Grunow!); »Mont Roghi, alt. 5C — 800 m. en sol aride« (Brousmich n. 73 1 ; li anteur d'Azaro, baie N. Go, terrains ferrugineux« (! e Pompery).

Var. β. **Dopltmoh.** i Duba ni I. *c.* — **Folia** lata, basi ad 3/4 amplexicaulia.

Var. γ. **MonlrouzL** eri (Dubard l. c., s ult lilulo speciei). — C ipiuU t 3 niii longa, ovoidea, apice truncata non depressa.

21. **N- hirsuta ll«ok- I** in DC. I rodr. XVII. (1873) 99; Beccari, *Utitd** III. (1886) 4; G. Beck in Wien. Ill. Gart. Zeitg. (1895) 191. — *N.* s G. Beck l. c. is scandens. Caulis 2 m altus × 4—5 cm mustn, jatanS dense adultus ± sparse i \\ pilis ferrugineis rigidis saepe patentibus obtectus, in frriK itaue folior ernodiis brevibus, superi nternodiis l—. cm longis. Folia 10—25 cm longa × 2—5 cm lata, subcoriacea, breviter petiolata v. lamina gradatim in basim obliquam ad 3/4—7/8 amplexicaulem >»IK inli ,« i leviter decurrentem transiens, elliptico-obovata, apice in cirrhum attenuata, supra glabra, subtus ± ferrugineo-hirsuta et punctata, nervi longitudinales in paria 4 rarius 5 v. 3 dispositi, a basi folii orientes, par intimum 7—15 mm, par secundum 10—20 mm, tertium 12—23 mm, par quartum 13—24,5 mm a costa remotum, nervi transversi far bliquc ascendentes reticulati; cirrhus 15—20 cm longus, inferior saepissime ascidiiferus, superior plerumque haud ascidiiferus, fits o- v. concavo-convexus, ferrugineo-hirsutus v. glaber et brunneo-punctatus, in basim ascidii abrupte ampliatus; ascidia 6—20 cm longa × 4—6 cm lata, dimorphia; in- v. ventricosa, juventute dense ferrugineo-hirsuta demum ± hirsuta v. fere glabra, viridia purpureo-maculata v. non, alae ventrales 3—5 mm latae, a basi ad * s continuatae, ciliatae, os ovatum obliquum, postice in co IIIIII)>l reve elongatum; peristomium 3—12 mm latum, cylindricum, antice leviter angustatum, latere postico ± expansum, margine intus dentatum, superficie crebre striatum; operculum ovato-cordatum, ext is brunneo-punctatum, intus glabrum glandulis magnis mediis et parvis lateralibus sparsis v. haud sparsis versus marginem; calcar 5—12 mm longum, hirsutum; ascidium intus per trientem v. dimidium superius glauco-purpureum et deducens, inferne nitidum glandulosum et detinens; ascidia superiora cylindracea v. cylindraceo-ovata, alae ventrales angustae ± ciliatae v. non ciliatae, os transversum v. leviter obliquum

vis in eoUom fluii_gatum; .tucidium iulus fere v. oiimiii'i nitiduin, glaDdulosuni. Itirii:trpscciil.ia 10 — *lit fju* longa, juventuLc et ±: adulla ferrugineo-lun-1 Luficuhii 4—G om loogtti racernil subdensiflunis; pedicelii breTd inii- *t.* biflorL Scpala ovntia extus ei inarpiin: interfere fcrrogifleorhlrniU, intufl gtandnton. Columns Btan«m, tiqmlis qetjuali**, untheruc N uniieri atae. Ovari am sessile, fulvt- kursuluiii, t»Li(ftua sessile. Cupsuln t*t scminn ignota.

S. W. Mal aviscbn I'rovtna; Iloru^o: Am Fliuae l^awaK (Low!, lt< e*ri' Burbidgc!); auf dcn< Berge Mtittaog, 600—BO 0 m (Beccari n. *id**8!, 2580!); &iniwttk, 800 is (Lobb n. 92!); Bakam-Gebirge i,i Sarawak (Uos e!).

Var. «. typioa SI cfarlane. — *i'.But'iB* et Buperfici* *tot* f**k« pilit longis ferrugineis .. fulvk obi ita; folia elliptico-lanceoi;iU, a&«i<Jia tHq uanto parva (5—8 cm longa), ferrugineo-liii-suta. — *N. hispida* G. H^k I. c.

Doni«o: Am Flout Uwn» (Low!, Beccari!, Burbidge!).

Var. *,i.* glabrata Mu^farlone. — Caulis cl su|)crflcien inferior folii ip*»e v. raro tiirstitn, ttilulU rufo-iHiiirlala; folift oblaii' ceolata v. oborata, ascidta 10—Stt cm IOIUJ a, i hlrsttLa, niro-punrhr Borneo: Sar wat (Lobbtj Husi !).

tm, Spodmina c) Beccar rJi in monlc MnUaxiK lecta varietates priore- •-unjiin^mt.

i*. S. Keinwardtiana *Wq.* in Pl. Jungh. I. (tfl 51) 168, Fl. In I. b«l«v, I. p. 4 (1855) 075, Suppl. (1860) 151, 366, Sumatra (1862) 151, Ill. Fl. Archip. lad, (1871) 4, pl. i; Hook. f. IK Trans. Lit n. Soc. XXII. (1855 i) 4J1 (tub noi n. *N. Rein-HXtr.U*), et in DC. I'rodr Wll (1873) 103; Hi msley, Cat. North Gall. Kew ed. 4 (189(n. SIS; B««a ri, Malesi till IB«I 5; Hook. f. Fl. Brit. tnd. 1 (IMd 70; G. Beck in Wien. Ill. Gart. Zeitg. (18 I9S) *int.* — I'lauta t. acilis ramosa BCOL dens. Caulis i—3 na ultu* X 5—*1* "»»i drtuw*, jumi »rt(fuliiB demuin trigoaus Y. *mi* cylindricus, angulis duo 'njs alternanttbtts aluti» ab morgintbuB folioruin d* currentibus. Folia 7—25 cm longa × 1—3,5 cm lata, herbacea v. subcoriacea, sessilia, ad $^1/_2$—$^2/_3$ amplexicaulia, leviter v. per dimidium internodii inferioris decurrentia, lineari-lanceolata, vacpe supra bashe leviter constricta, apice acuto r. gububtuiOp *>< ra et •.ubtu* gla bra, nervi ItmaituiJinali es plerumque in paria duo r.nii: s 3 v. 4 dispositi, par intimu a 6— ts mui a o«»u rcji otum et ad nedhm ^. J* ^ medio costae oriens, par secund lum 7—

P

11 tntn a rotta rcoiotutn, paria (urtia ot ijunria valdc rtb«oura aacpc HI, *m* puri HCCUD- vi Irnusvcnti obKcm i perne cu laritcr -'us grit nplia- sur>mr> . ' " in busitn a*<>idti rccurralatu el nonDunqnam abrupte expattHani ai cylin- vu»; liacidia io—10 cm tangii X 1—i *tta.* Itl Amcrphk^ > i T. AUl)cvlindru:a$_p$ in n anacea, pallido-viric alae i Trr>n* dl ri|(aniu»$_f$ glabra, mrnilir.ii *Y\a x. \t\it\>urtn-\'ir'u\\a$_1$* >ae, in afcidiix ibu* *1*—3 nun latar, littae, in »« •Qu>'i *nd* n«*r 'Din os ctirvato* solutae »un(i tmin I • •equ icon alrittii cuJum Hliplico- la glanduli-i BmlUa minutia tug^ntt olmituui; ufcar 3—4 mm loi • it part*, ibilf ovalilitu bnir iiitiiUr^ ⊳i circularet rl nwrtA*. Inflorescentia in pltint.i .-*J*1* J(J-45 cm longa, in pi. ♀ 10—15 cm; pvbmculua fi co-tomentosus racemo atqi) itu htirfloru s; pedicelli 10—20 mm longi, infe iurea bit lori, sufieriuro ui> lori. Flore» 1—5 mm diametro. Sepala elliptico-lanceolata, extus fusco- 11 nn«;.'ii-.i 11ruiiii j_:.I.J-1 iiiiiu tialira <' g.1 iii'iiiii • nuiiii' ••••/!••,• lei in«•.ium obsita. ion* ttai Columinea sepalis longior, inferne fusco- v. ferrugineo-tomentosa, superne glabra; ^i.',]ft.f K, iiunrrialar "\.uium .|r-nn. brtUflCi^t<>niculo»unr, ^tik'ina l-lol atum, con- r»nmi. (.nfi»ula 15—'3D iitiu lon^n, (u ••• ••; iii«t tetrtfcoita, tubglabfa nilHia, icmiter

striata, rulv[illegible]e lanceolatae stigm[illegible]iljbiis IrintJirularihii*. Sfiniiia IS—17 nun looga, testa circum cm)[illegible]ryonem bru[illegible]iincn, ii[illegible]ae pallidae.

S. ft. HalayUchfl Protiaz; Hi[illegible]lakka: Singupui[illegible]e (Wallic[illegible]b umi n, Mii Cal. ut Hooker f. indicat quae *N. gracili*[illegible]'« e»t, «ed B][illegible]ec. inscrip. »prope KatlaJam lecta ab amicis Michel«!); Luiggi in Prov. I'.Jiang, 30—60 m [illegible]llnlloll n. 5693!, 071«[illegible]!).

Bumalra: »Io moote Simiir-wonsas ni. itoo m olim, »ta dumetia prqpc *V*\.. [illegible]er-utang ca. 600 m« (Jungh[illegible]>lin ii. 740!}; West-Küst[illegible]• [illegible]eysman on. 3.[illegible]5!, 539!); Pftdangschc Bovenlanden [Burcli n. Ifi!).

Banka (anfa com. *N. Korthalsia*[illegible]w in Hnrl>. Calc. [illegible]re/amaon n. 3840, Miq. det.!; Kurz n. ISOfllJ.

Borneo: Auf den Berg Mooloo, tOOOin (Lowl); bd Sarawak [Lobb n. 86!, Beccari!).

Einheim. Namen: Ketakong-Eidjaug, ttkar-taboea^[illegible]-taboeng.

23. N. Copolandii Herrill msc — (Janlii eli[illegible]eiter 1 m altus, cylindricus, leviter sulcatus, glaber v. juven[illegible]in!<! SparM rutvtj-jiuljt;rulu«, in avillis tolionnii jnveniliiim rerru-giiii[illegible]o-pubescens. Folia 10—(5 <m longs X J—3,5 cm tois, «ul-[illegible]coriacea, petiol[illegible].l»; petiolus 2—3 cn[illegible]' loiigiw, basi flii Vs—'/2 amplexic[illegible]iuii», alatuB, ahc [illegible]radatin[illegible]i s I>«*t in lamin[illegible]iai ampli[illegible]atae; lamina elliptica, [illegible]nfwne db abrupli[illegible]e angustata, superne in [illegible]irrbum attenuata, supra glabra nisi baaiin eoatse »«fiu[illegible]s quae ± pubescens est, subtus sparse pubescens, nervi lon[illegible]a^tttdliutei in parla & di[illegible]spositi, a triente inferiore costae orien[illegible]'«, par iiiiiiitmiii 0—< i mm, p[illegible]ar secundum 11—13 mm, par tertium 12—14,5 "MIJ a costa remotum, nerv[illegible]etantes [illegible]eticulat[illegible] longus, juventute dense fulvo-pubescens, gracilis, sursum ampliatus et in basim recurvatam ascidii abrupte inflat[illegible]iu; aaeidU 10—13 cm longa × 3—3,5 [illegible]in UU, inouomorpbla r. lubdhnorpliia; I[illegible]nferiori tubulota ». tubuli[illegible]so-infundibuliformia; superiora iofondiliulifortnia, IM[illegible]rvi longitudinales tenues nervis mul[illegible]IK l.rnn-[illegible]versis conjuncti, nrmate rulro-puh[illegible]erula, sub peristomio [illegible]te«*e fnlvo-tomentos[illegible]n, |iillirli<-\iri"lin, ptirpurL-o-efubca-'"illin v. *mat*[illegible]ulata, alae ventrales ml nervos longitudinales reductae, os obliquum, postice in collum triangulur[illegible]M 0,5—1,5 rm Irinpurii elevatum; peristomiun[illegible]i i—li mm latiim, '-ihii'lri'[illegible]niii, antice ± angustatum, latere postico ampliatum et sub operculo marginibus converge[illegible]utitmM. j[illegible]ostice in collum elevatum, striae crebrae, tenuiores; operculum 3,!V—4 cm diametro, cordat[illegible]t-orbicula[illegible]re, pallido-viride purpureo-maculatum, extus g)attnnn, iotas gtenduloiiuta, per lineatn baaai[illegible]em mediam tumidum sed non carinatum, giautlulae (li(Tu[illegible]sae maguae, circulares v. ovales; calcar 8—10 mm longum, tenue; ascidium i[illegible]ilui per trien[illegible]tem superiorem glauco-purpureum, opacum et deducens, inferne glandulosum et detinens, glandulae superiores parvae, ovales, leviter immersae, inferiores ovale circulares et exsertae. Inflorescentia 10—3(> cm longa; ped[illegible]inoulas CO cm loagus ttpin* fulvo-pubeaoe[illegible]s dem[illegible]am giaber; pedieelli infanw liin«n-i, supi[illegible]rne uniflori. Sepa[illegible]I.I otalia iisqir[illegible]e obovata, oiltu dense folvn-tomentosa, int[illegible]is ^Imi.[illegible]lulosa. Columna staminea sepalis aequalis, inferne tonienlclla tu)-[illegible]erne g[illegible]alira; an[illegible]therae io—is, uoiaeriala' ± complanatae. Ovarium ovatum, pubescens, lobis stigmaticis tulcaiis porpurais. Capante 15—10 mm longa X 5—6 map late ± puberttU brani[illegible]eo-nitida, lobis stigma'ici»pr»-minentib[illegible]tin Kiilc;[illegible]tis. Semin[illegible]i g—*i d*. . . . . Umga, Ifnuia, lut^[illegible]a.

[illegible]. Philippinen: Ins. Mindanas, auf dem Berg Apo 1600 m (Copeland n. 1033!).

Nota. Huju* ip«dei «x«inp)&ria tiiiiii *taiivx* sunt &U d, MorrJII, *qai* et pro apei[illegible]ie nova agnovit.

Ii. H. omtachya Miq. R 1ml. bat I, p. I .i[illegible]855) 1074, S[illegible]ppL f51, p. [illegible]3 t. 3, Fl. de l'Arch. Ind. (1871) 3, pi. III; Hi[illegible]ook. f. in DC. Prodr. XVII. (1873) 99; G. [illegible]lwick in Wien. Ill. Gart. Zeitg. (1895) 217. — Planta gracilis, scandens, siccitate f[illegible]<iM*K nigra. Caulis 3—5 (inn rr[illegible]assus, s[illegible]Lbcrlmdrtcoi, nitido-glaber, internodiis superne S—3 cm longis. i[illegible]olia (5—}it cm longa × 3—5 cn,)tt(IJ) coriacea, petiolata; pet[illegible]lohta I—5 cm longus alatus, b u b 1<viter exp[illegible]in**, *ni* '/l •'[illegible]nplexicaulis, Murium i» Uniinam aYwUiim ampUatus; laniloa «>h..v«u T, oMfl«go~l«iiCfolaU, •[illegible]l apicem ± peltat[illegible]i, rinii«

obtusa, per superficie in MI]eriorem costae glabra praeter ipicem jieltatuiii ferrugineo-pubescentem, *un*-\\ lougitndii ales in paria ;, raritu I dispositi, par Entlnnun 12—15 DUD, par stH'uuiluiu 16—so me , par tertium 18--SI,5 mm, par quartan) 19—21 mm a costa remotum, par intimum a triente inferiore costae oriens, paria cetera a l•.isi abeuniifi. i< rvi transversi obscuri ascendentes, par-tflt'li, ainttofti] dirtnu i 5—30 cm longus, plano-romrrtiiB, Lennu, s basi ran scidii gradatiu ;«in>lii> tus; ascidia 10—15 cm longa × 3.—3,5 em lulu, monomorphi a, subcjtiwlfieaj iuf<Tir ± veniri-cosa, medi itti versus eonstricta, M versus ± expansa, gl ibra /oim mii-nsu I, rrugineo-tomentosa sub peristomio t'xrepta, nine ventrales angustae ad nerrot non ciliatos reductae, o- obHqmmi i otundatu m T, (ivntui! ; peristom UH) 2—3 mm I. atum, cylindricum aequale crebre stria ftiut; opurculun I,5—3,5 cm latus >• conla to-orbiculare, intus zona oiaruinali fnsco-tomentosa el glafltiuln multis miimiis itifTunis in structum; cilcor *i*—B mil) Ion gum; ascidium intus per tiniidiutji Miperins \-l profundius glauco-purpureum opacum et deducens, inferne nitidum glandulosum et detinens, glandulae superiores parvae immersae, inferiores magnae circulares vsertae. Inflnn"scentia 20—40 cm longa; racemus laxu I* fuSCO[1]-puberulus; pedicelli tenues, inferne hiflori, superne uniftor . Sepala ovalia, extus fusco-tomentosa, intus glandulis mi nulls it! sita. Columna staminea gr«'ilis, sep ili» km. ior; antherae > uniseriatae. Flonn foeminei et fructus ignoti.

S. W. Malayische Pro i MI/; Sumatra: WeaUtfi ste bei Siboga (Teysmann n. 5291).

Einheim. Nzme: Katoepat-baroek (Filet, Plantkundig Woordenboek).

25. N. vilJoM M ook. f. Icon. pl. (1852) t. HH», el in Trtinn. linn. S.»r. \\|| (1859) 820 t. 69; Spencer St. John, Life For. Far East I. (1862) 285, 345 cum icon. col.; Hook. f. in DC. Prodr. XVII. (1873) 94; Burbidge, Gard. of Sun (1880) 100, 354, et in Gard. Chron. s. 2. XVII. (1882) 56; Macfarlane ii, tan of Bot. \ii. (1893) 426; G. Beck in Wien. III. Gu t. Zeitg. (1895) 183; Veitch et Burbidge in Journ. Roy. Hort. Soc. XXI. (1897) 232, 258. — Non *N. villosa* I! ook. f. in Bot. Magaz. I \\\IY. (1858) t. 5080, et Lemaire in Ill. flo rt w l. (1869) 46 icon. I , quae *N. Veitchii* sunt. — I anta terrestris inter suffrutices vagans ; scandens. Caulis 2—3 m longus × 6—|i) HIM. . turn s, subcylindricus, internodia ± elongata, juventute dense fusco-villosus, demum glaber. i olia 15—25 cm longa × ' —8 cm lata, coriacea, i, pf iolata; petiolus 3—7 cm longus, crassus, anguste alatus, basi expansa ad 1/2—3/4 amplexicaulis, sursum in laminam abrupte ampliatus, ± fusco-villosus; l in HIM • elliptica, apice inaequaliter biloba v. pdlaLa, *ii|.ni i;!.il>r • v. per costam ± villosa, subtus villosa v. glabra, nervi longitudinales in paria 3 : nirius 4 ilispi- siti, par intimum 25—30 mm, *y*r* secundum 22—35 n in*, far I. rliuiii (I - :i" rum I costa remotum, omnia ad apicrtn in cirrhum cur- , nervi transversi 2—3 mm separati oblique radiantes; cirrhus 30—H cm longus × •—' I. . . . . IUI aequale, in Mtini H iraii «iwo>; a*ddtt IQ—18 cm longa × 8—10 cm lata, monomorphia, obconica v. subpy hfornla, *f** *cnu*+ i eviter constricta, ± fu *in>-vil!o*(l T. (Illt>fflul.ta . inferne viridia, superne rubra v. -persicina, entrales nervos prominentes reductae, sursum gradati 11 4H pliatae et non *Jae Tenlrales IMIM nd I os versus in alas latas ciliatas expansae, o-longatae os circulare, postice in collum 3—5 cm altum elongatum; peristomium [simile *N. Rafflesiana*] 0,5—2 cm latum, obliquum, postice in collum elevatum, NUIJI, • qtue *avi- o** pr superficie i i Uueflu asafwu trta>r«na« 6—8 mm profunda -8 mm separatas expansa, lamellae extus recurvatae, intus d nntU e et in dentes pallido-rubros longos deflexae; opctruhim 5—9 H Ubttti rnrda • 4 - o-orbiculare, per medium viride v. rubrum, extus villosum intus carinatum et glandulis multis adspersum; calcar 8—12 mm longum, filiforme, hirsutum; ascidium intus per collum triangulum postice et sub peristomio glaucum opacum et deducens, dein per /dnajn *ftfiMUn nitidam non glandulosam, inferne nitidum glandulosum et detinens, glandulae superiores parvae, discretae, immersae, inferiores magnae, approximatae ± exsertae. Inflorescentia 25—50 cm longa, dense fusco-villosa; pedunculus 15—30 cm longus × 7—8 mm crassus; racemus densiflorus; pedicelli 8—10 mm longi, uniflori, ferrugineo-hirsuti, basi v. • ill, fltir*- hr»i(iri colati.

Sepala oblonga, extus per r,ir<innii ginec fern osa, per r BBrgincin glabra, intus -i*it-dulis p«i medium dispel sis. Coliiinitii **BUufilnea** sr>ptilis brovloi , glabra; anthem* 8—42 nut- v. **Bubbifccriatae,** Ovuriurn **ovatum** 1 errugineo-tomentosum; stigma 4-lobum medio depressur (i. [obi sulcati. Capsula sessili>. ,"'"*.'. is, crassa, dense villoso-tor iji-n-**lo»a.** — Fig- **9.**

S. W. Malayische Provinz; Borneo: **kttfdem I na** BBIU **1700—3000 m (Low!); >Low *Un*\\-, Kina Balu, 1500— i^oo m (Spencer St. John); ECina u.ilu, ^ooo—i) 100 in [Burbidge!]; B** lau bei dem Tampassug-Flusse (Whitehe **»d)i**

Nota. *N.* **i *iltoan* i >***N. Edi nmhiami* inter MM tpodoi »iniilliumf> tit pro var** ietatibus **UIIIII**s eiusdemque speciei possint haberi. Examinatione microscopica probatur, illas species distinctas esse. Atque Burbidge de- oioiutrnvil A", *eil osam* more crescendi ***ierraAii*** el «Uti **nltioro** a *N. Educ fd' MUltHI* rrorsus differre. Utraque spe- cies loco natali in **Usp** so h ybridas proc ***tevn*** **Mi** entur (v. **[i, 5*,[1].**

2•i. **K. Edwftrdiiana Hook.** f. in Trail*. Linn. Soc. XXII. (1859) ***Ho*** **L LXZ; S[<** ncer St. John, Life **iu** For. **Far East I.** (1862) 33[- **L 33€; BurW** dge, Gard. of **Sun** fl««o) 100, **I08, 28 D, If4,** Gard. n 14. >'t (1882) 56; Mhii'ti. ...>. is. f Bot. VII. (1893) 433; **Ann. o** Trans. Linn. Soc. Bot. IV. (1894) 69; G. Beck in Wie Gart. Zeitg. (1895) 183; Bu **D HI** n. Rby. ort. Soc. XXI. in 89 Jrim 258. — !!V. *Edgeworthii* Reichb. f. herb. ex G. Beck l. c. **183. —** Planta saepe epiphytica, **Catuflriucas ol arborui itlias a** scen- dens. **I uitj** s 3—9 m longus × **It—*it*** nmt criuwtui, i yliudricus v. ± trigonus, juventute ferrugineo- puberulus demum glaber. Koliii 10—30 ,,„ longa × 6—10 cm lata, coriacea, petiolata; petiolus ≤— 10 cm longus, validus, alatus, basis n<) - g anipli xicaulis, alae non v. leviter decurrentes pilis longis fus- cis sparsis obsitae; lamina **Itiptict** v. oblonga inferne in [H'liuluuj an- gustata, ad apicem rotundata v. in cirrhum attenuata, supra glabra **Hubtm g|** abra et punctata, margi- nibus et costa ± hirsuta, **II-TV** i longitudinales 4—5 obscuri, par in- timu'ii 15— ;5 mm, par secu m.luni **« — *Hi* nun**, par tertium 30— **41 mm,** par quartum 34—4| **nun** a costa remotum, nervi transversi ascendentes, 2—3 mm

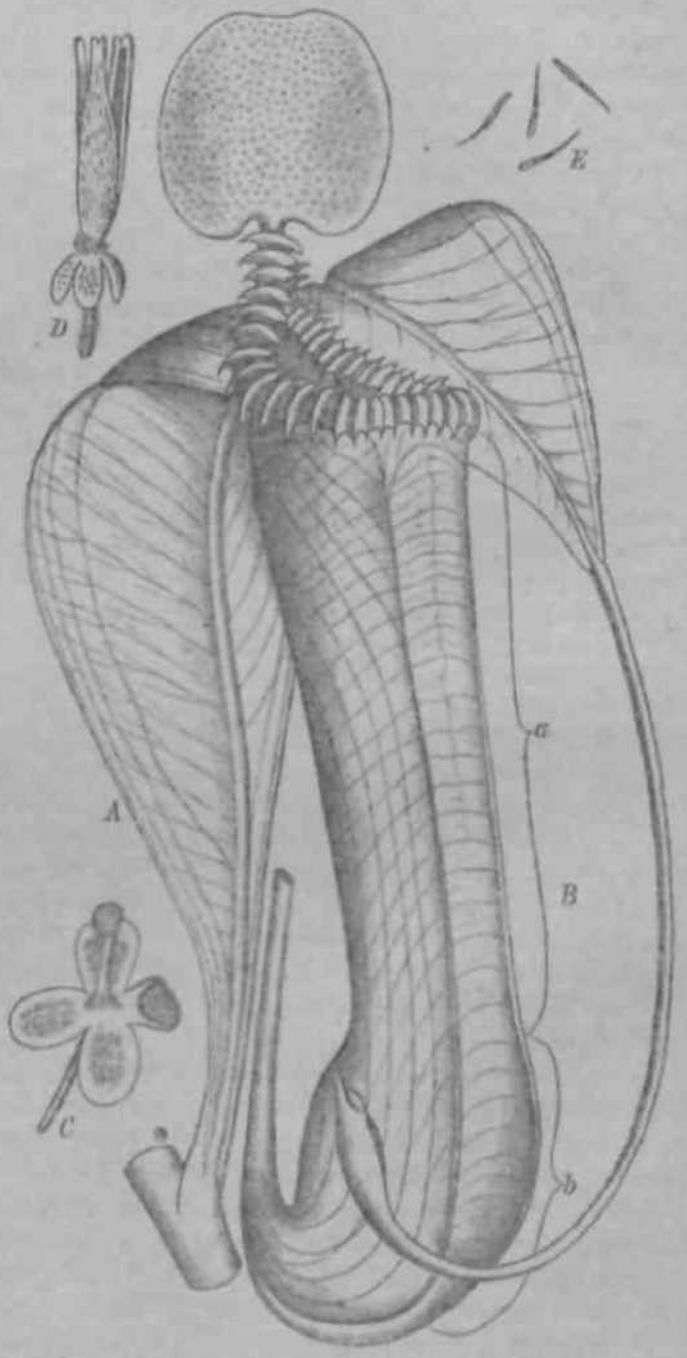


Fig. 16. *N. Edwardsiana* Hook. f. *A* Folium .'ilUIUHUB cum ascidio abortivo. *B* Ascidium; *a* area deduc **at, *b ur*** detinens. *C* Flos ♂. *D* Fructus. *E* Semina. [Icon. origin.]

inter se scpurati; cirrliuM 30—60 cm longus ;< *'i*—**6 nun cra&sut, cyllndri**us, in **batim ascidii rwurvatam abrttpte ampliahw, juv-**entute k>**nse i**errugine<>**-pub«««cvn« demutn plaln-r; asridia SO-**-50 cm **logs, X 4—1 cm L**ta, mo**uomorpiiia, — puberuh T, glanra, dimidio inferior***[1] leviter ventricosa et coeruleo-viridia, **dimidio super**ore • •vlimlrini, iiil.i.i, *nlir* ventralfs 0, v. a hnsi sursnm ^nidntiin ompliatae el ± ciliatae, OS subcirouJiirc J peri*loniiom **magnum** 1,5—S cm latum, obliqimm, **posUce** ID collum 3—5 cm al!um elougalum, caro tinctum, superficie in lamellas transversas 6—8 mm profumlas et 4—8 mm inler se it;paralas r.-lcvuiitj morgo exterior re**unratus, ini**•erior in dentes m: ti,'»os diMlenis; op»T> ulniu ft—10 cm loufnini X 5—**9** <in **latum,** cordato-ovatum v. cordaio-orlti:•lare, extus gl**ibrom inta gtasduloium, glandul**ae multae, ;>«r-v«e} dense aggregalae; nacitlinut mttu **per** <liimdmm *ta*\erius v. profundius gl**uco-purpnrtum opai**um et deducens, inferne nitidum glandulosum et detinens, glandulae superne [•nrv.v **dbercUe profuude Uninen**ae, inferne magntu approximatae et sub-cuierlftC. Inftopj.srviitia 30—in 'in **longa, mlb-tomonlftl**a; pedunculus 15—25 cm longus valiiius; racemus ± densiflo:us; pedicelli 1,5—**I cm longi dOlltori**. Flores 7—**ft moi** J.'ilr ♂ minores quam ♀. Sepfi! elliptica v. obovata, extus ferrugineo-pubesce**Dlia,** intus glandulis paucis parvis mediis adspersa. <**olumni Btomhw**a 3 mm lo»ir:i, iufcrne **faTU^uctvpi** ens **pupwue** ulohra; **antberte 8—41**r ui seriatae v. anthe-ris dualms **fuperiorlbui tntnsvenM.** Capsula 20—22 mm longa × 5 mm lain, iHfit'iTn is, brevi i'T pfilminilala, **ferroginco-ptibtrula *. braoneoHttttds, valv*** stigma-tibus obtusis triangulis ter ninnlae. Scmitia tenwia, 8—9 mom IttDfta. — Kw. 16.

S. N\. **Halavitehfl** l'roiim; Ji.orneo: ***Hut*** ilcr nArdtiel en Seite des Berges Kina **Balu bi§ J00O** in (Low!); "on the sunny southern spu"" nj< lo *tZu*>> m Fi urbidge!); auf dem Kiau-Rücken, 1500 m (Burbidge!); "spur of Kina Italu" E pencer St. John).

N. Etlwardsiana :•-[villosA Burbidge. — *N. Hurryana* Burbidge in Gard. **i lir<**on. I. (1882) 56, etia**ra in** litt. ad Hook. f. **in Berb**. Kew. et ad auctorem. — Ascidia sparse ; alae ventrales el , aliquanto angustae, ciliatae; magnitudine et forma operculi, altitudine et spissitudine zonae deducentis intermedia.

l:.rneo: "South spur of Kina Balu" about 3000 m (Burbidge!).

Nota. Plantae duae epiphyticae ejus hybridae a Burbidge loco natali in . mia parentis **utriu* |u** lectae sunt. Cl. Burbidge characteres intermedios observavit, et nomen supra citatum in honorem cl. Harry Veitch proposuit. Hanc sententiam auctor materiem microscope scrutatus sequitur.

17. N. v«Diricot& Blanco, Fl. Filip. ed. **1.18** 37) 807, ; . (1845) 556, ed. 3. III. (1879) 215, IV. (1880) **ipp, 178: Blimte, Mti». boC litctl. batar. II.** (1852) 10; Hook. f. in DC. Prodr. XVII. (1873) 100; Rolfe in Gard. Chron. ser. 3, XXIII. (1898) 380; Masters in Gard. Chron. ser. 3. XXX. (1901) 312 cum ic. xyl. 313; Veitch), **Horl**. Veitchii (1906) **infi. — PliuU Icrrestna r.** epiphyt•••<, **humiliU'r s^audoa,** luteo-**viri'ti*** \. viridis. Caulis 1—2 m altus × 7—9 *tam* **crat»us<. cyUndricm n**sque obtuse trigonus, glaber, internodiis brevibus. Folia 15—25 cm longa × 2—3 cm lata, proximata, sessilia, ad $^2/_3$ amplexicaulia, breviter decurrentia, inferiora linearia usque lineari-lanceolata basi leviter dilatata, superiora elliptico-lanceolata basim versus ± angustata, glabra, nervi longitu-**tim.>**les in p**inn 6 i**uro 5 dispo**«iti, ob>**curissimi, par intimum 3—5 mm, p**ar wcun**dum **8—ft mm, pa;** tertium 7—11 m**in, •Mir quartan** 8,5—• mm, par quintum 9,5—**14 tnm a i**costa remotum, par sextum tenellum intramarginale, omnia a basi folii orientia, nervi transversi obscuri, irregulariter et oblique ascendentes; cirrhus 10—**So rm loouux, pijidj-i, tef** pUiko-convexus, versus b**isiiu i>**cidii rotundatus, glaber; ascidia 10—16 cm longa × 3—6 cm lata monomorphia v. subdimorphia, inferiora cylin**t H 0 «**ventric a, superiora inferne valde ventricosa, in medio constricta, os versus late expansa, crassa, sub-succulenta, glabra v. minute puberula, pallido- ad albido-viridia, saepe ± rubro-erubescentia, alae ventrales ad nervos leviter prominentes reductae, os ellipticum, transversum; peristomium **10**—25 mm **lilittH,** rubrum v. viridi-rub mm, **utargi** externus amplus, expansus, reflexus, und tlnhi«, margo internus

aequaliter denticulaton, per ixt.mi mi perficiem conspicue striatus; operciiJiim t—S *et* × 2—t2,5 .-iii i)valo-rordaluiu. licrlmL-euni s. suh-iDcmbfanflcetim. margine interiore ascidii multo iiiiiiin*, iiridt! ad riridi-robruu ibruio v. minute poberulum, inlun glandulis circularibui irrefiu)nri(> irse difTuiiR obsitum, nervi laterale i in j>aria :t—*i* dispositi; ca.Icar 5- -10 mm longum, Iriiiiwaluin; a«ci«lium iutus ib ore dcor«um nil glandulusum '•' detiaeu, ii ruAro-ririd v. rubrum, glandulae superne multae, minutae, profunde immersae, inferne magn IIC, CUM'i tae, approximatae et ovales v. cir-rul,,res. Inflorescentia 30—6» cm longs, ♂ longior quam ♀, liniflora, i<p rugineo-puberula; peduoeultu IS— 20 cm longus; pedicelli 12— i BMDB !!; gi, capillares, ""t-flori. Sepala el linUca r. obo»ala, CXLM» fcrniffiuco~['iit>i'niln iul us purpurea et glan dutii mnltie minuUfl *tis|fri^i-i ohsiln. Columtitt stAtninca Hepalts lon^i<T, liasie frmit'i. .)<i!>ra; autl' rhnn brevitcr \n tnni, ferrugineo-pubescens. Capsula t7—toroin fimalicis iiu-ons; .itua 7—j mm I onga.

Provinz d«r Phllipp inen: Insel Luzon, ohn a Slomlort ((Cuming n. 947); Piddig, Balanga, Bongabong, S. Mateo (Blanco); Montalban (Loher n. 4 I!!); Isarog, S. Mateo, Siniloan, Benguet, Piddig, Balanga, Bongabong (Vidal!); Ins. Visayas (Blanc.

28. **N. Borkoi** Masters in Gard. Chron. ser. 3. VI. (1889) 492 f. 69 et K0«, ser. 3. Vlll. (i 89•) 184; Veitc It, Horl Veitchii (1906) 300'. 4H6. — Aspedtu ut in *N. ventricosa*. I olia 20—25 cm longa × 3—3,5 cm lata, crassa, herbacea ad coriacea, lineari-lanceolata, basi 01 vrrstut Ic viter angustata dein deorsum expansa, ad $^1/_2$—$^2/_3$ amplexi-cntiiiii, i -!. currentia, glabra et brunneo-punctata, nervi et cirrtnu id in *N. ventricosa*; ascidia 10—20 cm longa × 3—7 cm Mtn, »»li'liinui-(iliia: inl>riora cylindrica inferne leviter ventricosa; superiora leviter v. satis valde prope v. aupn medium constricta, inferne ± ventricosa, os versus lt>\i(rr nuij ^t^cntia el brunneo-punctata, inferne viridia v. ruhro-viriditt inociili s rubris, nupen late viridi- et rubro-maculata, alae ventrales ut in *N. ventricosa*, *i, o»* on tum, oblique directum; peristomium 15—25 mm lat 'mi. in brum v. obscure purpureum, margo ex'<.>hor an>|.t us, expansus, red* xus, undulatus, margo interior denticulatus, superficie crebre striata; operculum 5—8 cm longum × 3—5 cm latum, ovato-cordatum, orifi EQ a n i d i. multo majus, per superficiem pallido-viridem, riihro- T. i purpureo-mac itlcituin. extus iinrntt.- |iil>>scens, intus gUodulix 'ircularibus in duas series latere utroque lineae mediae dispositis obsitum, nervi latera ei e— •; paria; calcar 7—| 't nun loi gum; ascidium intus ad $^1/_6$—$^1/_2$ glauco-purpureum v. rubrum, opacum et deducens, inferne viridi-rubrum v. rubrum, glandulosum et detine Q*, glandulae ui in *N. ventricosa*. Inflorescentia et florinn. in prox 9t*d uitheru S—10, oniscrialui v. subbiseriatae.

Provinz der Philippinen: Ohne Standort [Burke!]; Insel Mindor•I, BUS dCIB Berge Dulangan, 1600 m [Whitehead!]; *ruti* dem Berge Halcon, 1300 m (Merrill n. 4392!].

Nota. Sp«i«i v«lilt* (in. inis *N. ventricosae*, quacum forsan serius speciminibus numerosioribus •Jlfttt* IDA) *IUV 'atis bene distinctae conjungenda erit. Characteres speciei certe satis multi et cons lute* M nt: consistentia foliorum tenuior, basis eorum saepe contracta, os ovatum non ellipticum et transversum, operculum majus nervis in paria 6—7 (nec solum 3—4) dispositis, ascidia maculata, peristomium fusco-purpureum, superficies deducens satis alta, antherae majores.

Var. *β. excellens* Veitch in Joam.) Roy. Hort. Soc. XXI. tj|»7J 233, Hortus Veitchii (1906) 100. — Aid"li:i. pro r«ta brevi i, Inln, mbro-viridik tu que rubro-purpurea, maculis densis purpureis late lilTititii, i (i Lo....im per marginem exteriorem (ricium i ndulatum.

Ohne Standort (ex Hort. Veitch.).

Var. *γ.* prolitlca MB* i. in Gard. Chron. ser. 3. VIII. (1890) 184. — Folia quam in forma typica angustiora, dense cong••«U, Mtfllti a coplose producta, pallido-viridia, mac ills panritt i ub:is.

Ohne genauen Standort (ex Hort. Veitch.).

29. N. melamphora Blume, Cat. Hort. Buitenz. (1823) IM ct Mus. but. lugd. batav. II. (1852) 8 t. 1 ; Hook. i'. in Trans. Linn. Soc. XXII. (1859) 423 et in DC. Prodr. XVII. (4873) 101; Beccari, Malesia III. (1886) 13; G. Beck in Wien. 111. Gart. Zeitg. (1895) 186; Hemsley in Cat. North Gall. Kew. ed. 4. (1886) n. 662. — iV. *gym-•namphora* Reinw. in litt. ad Nees v. Esenbeck in Ann. sc. nat. III. **(1821)** 365, 1. 19, 20 f. 1; Korth. Verh. Nat. (iesch. Bot. (1839) 32 t. 3; Miq. PI. Jungb. (l **851)** 169 et Fl. Ind. batav. I. p. 1 (1855) 1072; Massart in Bull. Soc. Roy. Bot. Belg. XXXIV. (1895) 253; Heinricher in Ann. Jard. Bot. Buitenz. ser. 2. V. (1906) 277. — Non *N. melamphora* Villar in Fl. Filip. ed. 3. IV. (1880) 173 quae *N. Blancoi* est. — Planta robusta ramosa scandens. Caulis 2 — 3 m altus X 7—10 mm crassus, ascendens v. prostratus nodosus subrhizomatosus et ramos ascendentes ferens, rami prostrati ad nodos radicantes et fasciculos ascidiorum circiter 5 —10 gerentes ut in *N. ampullaria,* rami ascendentes obscure trigoni glabri v. sparse hirsuti. Folia ramorum prostratorum 4—5 cm longa X 1—1,5 cm lata, sessilia, fasciculata; folia raniorum ascendentium 20—35 cm longa X 5—8 cm lata, remota, lanceolata v. obovata, sessilia, basim versus angustata v. in petiolum breviter alatum producta, $^{1}_{,2}$-amplexicaulia, non v. raro leviter decurrentia, supra glabra subtus ferrugineo-puberula demum brunneo-punctata, nervi longitudinales in paria 5 rarius 4 dispositi, par intimum 9 —12 mm a costa remotum et a medio v. infra medium costae oriens, par secundum 13 —17 mm a costa remotum et a quarta inferiore costae oriens, par tertium **14,5**—19 mm a costa, par quartum 15—20 mm a costa, par quintum 15,5—21 mm a costa, tria ultima a basi folii orientia, nervi transversi obliqui ascendentes; cirrbus 10—20 cm longus piano- v. con-≤avo-convexus, ferrugineo-pubescens v. glaber, ascidia 8—16 cm longa X 2,5—6 cm lata, semimembranacea, dimorphia, inferiora (terrestria) saepe fasciculata, ampulliformia v. ovata, ferrugineo-hirsuta v. subglabra, rubro-viridia maculis magnis purpureis et stiperliciebus irregularibus diflfusis, alae ventrales 6—8 mm latae, longc ciliatae, os obliquum, postice in collum triangulum elongatum; perislomium 6 —15 mm latum, autice cylindricum et dt angustatum, postice zb transverse expansum et in collum sursum elongatum, crebre striatum, margine intus longe *(%*—5 mm) pectinatum; **oper**culum 4—6 cm longum X 3—4,5 cm latum, ovatum, basi leviter cordalum, extus purpureo-maculatum et dz ferrugineo-pubescens, intus glandulis parvis magnis ovalibus per medium obsitum; calcar 7—10 mm longurn filiforme simplex v. 2—3-fidum, pubescens; ascidium intus per quadrantem v. trientem superiorem glauco-purpureum opacum et deducens, inferne nilidurn glandulosum ct detinens; ascidia superiora aliquanto rara, cirrhi foliorum saepissime ascidiis abortivis terminati, ascidia cylindrica v. infundibuliformia, alae ventrales angustae zfz ciliatae, v. ad nervos prominentes reductao, os leviter obliquurn in collum breve elongatum; peristoinium aequale; operciihiui cordato-orbiculare, 3—5 cm latum, intus ad duarum partium spatimn glauco-purpureum opacum et deducens, inferne fusr.o-purpurctim glandulosum et deiinens. Inllorescentia 25—40 cm longa, ferrugineo-hirsuta demum Inferne glabra; pedunculus 10—25 cm longus, racemus ± laxiflorus; pedicelli 12 — 20 mm longi biflori v. superne uniflori, saepe bracteolati. Sepala ovalia, extus et per inarginem inleriorcin ferrugineo-tornentosa, intus copiose glandulosa. Coluinna staminea sepalis aequilonga v. longior, ferrugineo-puberula demum superne glabra; antherae 8, rarius 6, uniseriatae. Ovarium ovatum, breviter pedunculatum, ferruginfo-pubescons; stigmata 4 crassa, prominent in, leviter sulcata. Capsula 30—35 mm longa, pedunculata, parre pubescens v. birtella, valvae lanceolatae, stigmatibus leviter inclinatis obscure bilobis. Semina I o nun longa, gracilia altenuala.

S. \V. Malayische Provinz; Java: Mahe, in der Nahe von Solfatar Kawaspanda, 1500 m (Rcinwardtlj; auf clem Berge Pangerango bei Tapos, 1000 m (Junghuhn n. **564!);** im westlichen Teile von Java (Blume!, Kuhl!, van llasselt, Korthals!); \w\ Tjibodas (Fleischer!, Rngler n. 4844!); Pangernngo boi Tjibodns, **2500—** 2700 in 'Beccari!, Kurz!); nuf dem Bcrge Malabar, 1200—2?<HI m 'Vnd. n. 2so .

\nv. V. haematamphora Miq. PL Jungh* (1851 i>'J* — Folia aeut.u louccoIaU, ascidifi Jurnlu-rultrn.

Java: Auf den Bergen Patoua und Merapi, 8 00—1100 *ta* (ioirgbubnl).

Va•. ;-. toraentolla Beccari, Malesia III. (1886) 13. — Folia infra, costie, eirrhi ct gemmae dense ferrugineo-pubescentes.

Sumatra: AuT dem Barge Singalan, t»itm m Baccari n. 48!, Cu•< s'. Forbes!).

Eioheim. Namtn: Daocn-kemli, Pukoe serok rartjn.

30. IT. Deaniana M> efarlane sp. nov. — Planta pumila, per innovationes dispersa, iii.ii v. I<M'er scandens. < mli* I —3 dm altus × i —5 mm •~nwaH», *ln'ber, folio ruin basibus amplexicaulibus obtectus. Folia 6—II cm longa × 3,5—4 cm lata, coriacea, obOlato-lanceolata, »cssjlia I subpetiolnit, in basim late ad 1/2—2/3 amplexicaulem gradliilim mi/uslaU. ntnmn i> rirrfauii. attenuata, supra glabra, subtus ^l«Lra «i Lrun- neo-punctata, costa excepta quae pilis longis diffusis adpressis obsita est, nervi longi- tudioaies in paria 5—G dispositi, ;<"" inlimun a triente superiore costae oriens, par secumlutn B dimidio ftoalae, par tcrlitun et paria succedentia a basi v. *tropt humi* laminae orientJa, |»ar inUroum 4— *! nun, par Mcondwn 6—8 nun, par Lertimn 8—9,5 mm u •osta remotum, paria cetera proportione decrescente, nervi transversi valdo obactirt, irrogularilcr reUculaU; cirrnit 10—*i&an* longiw, plano- v. concavo- convexus, juventute stpra denH ft'rnif.'iiM'u-li irsutus lemum spanso puberulis, infra gla[icr, in basim ascidii abrupte ampliatus; astia B— o cm Ion ga × 2,5—3,5 cm lata, obconica. ni'-uiltranacea, juToutute terroginco-bitsula deranm glabra, sooa densa fer- nipint'o-put" scente nib pcriston'io instructa, alae ventrales jinguiU> v. ad 3 mm latae, longe ciliatac, -s transversum v. leviter obli[uum, i> ostice in collum ad I 1—i,5 cm longom elevatum; peri'Minium B—K iiirn Utum, ejitndricum, crebre -iri.iinin, innrgu interior pectinatus, postice elev IIUB, !••• iter angustatus et sub operculo pajftltelii s; oper- culum 1,5—2,5 cm diametro, ovatus ad cordato-orbiculare, extus et margine interiore puberuliim, intus glandulis parvis circularib:* <•!•«' um, glandulae medio copiosissimae; calcar 2 mm longum, filiforme; ascidium intus per collum posterius glauco- pnrpnr eum, opactiin et deducens, ab ore deorsum nitidum glandulosum et detinens, glandulae parvae discretae et immersae. Inflorescentia ♂ 20 cm longa, juventute ferrugineo-pubescens, demu ID L'lahri,].. [tnii ',<i* el rift'inus Ofxjuili ngus; pedicelli <—15 mm longi, b»aiim versus 'lilnlii'i et compressi, sub medio bracteolati, ferrugineo-pubescentes usque glabri, unilliiri. Fiona 5—6 mm diametro. ;>aU < valia, extus dense ferrugineo-pubescentia, intuit glimdui's multis minutis nectariferis tecta. Columna staminea fere se glabra; antherae 8, uniseriatae. Flores pistiliferi et fructus igno

Phili|ij»in.en: Häufig auf der Spitze des Berges Pulgar, auf der Insel Palawan, *30() in (Curran n. 3891; spec. typica in Herb. Manilla!).

Notiz. Nominata in honorem cl. Dean C. Worcester, Secretarii interioris et explora- lOlil! Mi'! efatigabilis illius regionis.

31. N. Alicae F. Sl. f Bailey in Queensl. Agric. Journ. III. (1898) 355 pl. 69. — Plata pmnilii poa ««>! dens. Caulis ascendens, 1—3 dm longus × 3—•; nun crassus, tenuis, erectus, ex rhizomate brevi repente oriens, internodiis brevibus. Fold I—I •) cm longa × :—2 cm lata, sessilia, ad 1/2—2/3 amplexicaulia, linearia ad lanceotala, graita- tim basim versus angustata, apicem versus attenuata, supra et sub' na gluhi i. nervi longitudinales in paria 5 disposiU, par tnUmnm ymm, *f*ar secun-luni 5 mm, pur tcrlium fir&—7mm, pur qoartuni 8—8,5 nun, pur quinlwa 8,5—I nun n costa remotum, nervi transversi radianUs, ramosi et sinuosi; cirrhus 5—8 cm longus, tenuis, aeuu>, aliijiiunlLi ahrup'e in basim ascidii recurvatam amplitUm; ntwitlia ft—7 •m longa × 1— 1,5 • in lata, subcylindrica, inferne leviter ventricosa, supra medium leviter constricta, glnhnt, Jilac vQalrales b;sim versn i—! mm latae, os versus in nervos prominentes uiguatalu, *'s obliqnmD; pvmtututimi 2 mm latum, aequum, cylindricum, striatum, itriae pajollo obscurae; operculum |—{,75 cm latum, orbiculare, extus glabrum, intus purpureum et glandulosum, glandulae per me limn |KIHcae magnae aequaliter dispersae, marginem versus minores et copiosae; calcir 3 nun •ongum, pHitii, r< ecurvatum;

ascidium iulus p*r diiuifiiuni stiporius gj auco-p orpuseom, opacnm el deducens, iul- rne glaadulosum, glaodutae proftmde hnmeraaa, Florae el fractal ignoU.

Auslr.-mala visclie Proving; Cape York Peninsula in N. u. Aastreli&O (I'. I. Jardin e!).

31. W. neglecta Mi farlane e i Iron, Reccarii. — Caitlis i—6 mm cfStMU*, elongatut. trigoous, anguli a warginiboi I'olii superior's tout, MI; . rne ± pubescens, juvenilis fusco-tomcnlosus. Folia mperton (aohim visaj 18—IS cm tonga X-1—i cm lata, Muilia, ad ½ v. ⅔ funptexicaulm. non deeumnlia, obo^ ato-lanceolat a, ajrice in cirrbum ollcnualaj supra glabra, eo»ta excepta quac ± fns' :htus gUbra v. per eosUDn spars? pnl- in paria *tt* rarina 5 par intimum 5—R lum 8—13 mm, pnr tertian) 40—l&inm <-o*ta r.Miolum, ptirin cetera p .nsvcrei ainuofti (Mreiidriit.es; drrbu I cm Ion gradlit, Um in buUn atcidii recurraUni amplialus; m It)—*i* cm longum X 3- ....ovatum anipliatum, Inf. ul.t-nihn • l'fiU* fu«co- f, ferrugineo-titi minis, ad nemw prominentes redo eirooIarn v. laboraLun), i> um v. dr ubluiunni, in eollran I »< elongalom; peri Q *t*—3 nun kd. tndrfcam, utrialuin, iuar|(o us ik-iilirtilatun; opercolam 3—3 iiiitjlure, Itbnnn i nu* ± rermgiiieo-pubffcena, tatna glahr* inrgulnr . csscrUs v. tr 4—A mm ton Mddhui [>cr partcm octaTaoi t. scxlain giauro-inirptit' um ri^n , infenir Ditldtu& gatnritcr i«i» utif mafrnis rtmotis *e/* imir inirhiti

S. W. Malayische Provinz; Borneo: Labuan (Low!, Burbidge!).

No teres distincti mihi a cl. Becc qui fi-liriin |»ar;.vit nominatam. Mihi k «ntfiM |hrrmf;I nt et >\•cimina eiu_ et figu r«j <crat4tiic hanc descriptionem pararem.

33. N. gracilis K.-rt, Verh. Nat. Gesch. Bot. (1839) 22 t. 1 et t. 4 f. 1—38; Spach, Hist. nat. des veg. Mil. (1846) 325, pl. 144; Miq. Fl. Ind. batav. I. p. 1 (1855) HJTI; Book, i- III Ir.in- Lim Soc. \\\\. (1859) 422; I asters in Gard. Cbron. (1872) 542; Hook. f. in DC. Prodr. XVII. (1873) 104; Burbidge, Gard -.i[1] Sun (1880) 122; Beccari, Malesia III. (1886) i ;: Rool i. I] Bril. Ind. V. (1890) *:* i: G. Beck in Wien. Ill. Gart. Zeitg. (1895) 1910. — *N. Korthalsiana* Miq. l. c. 107:, Suppl. (51, 34$, *l 111. Kl. Arch, tad, IS7l) ? pi), — *N. laevis* Linil. in Card. Chroo. (1848) CSS. — Planta gracilis, diffuse ramosa, b itiviler scan'i ens. Caulis 2—3 Hi ftltua X 3—t[1] mm crassus, ••rectui T. rarius prosfrattis, nodoitus el ram os ascendentes producens, trig *atmt* v. tttaogolui viridis usque purpureus, glaber. Iolia 10—20 cm longa × 1,5—4 -in lata, ses*ilin, In earia v. elliptica, basi ad ⅔—¾ amplexicauli, leviter v. profunde decurrente attenuata, herbace* t, •ub*coriticea) Iuci'l(»-Tiridia juventute glabra v. ± |>uliet- centia, nervi longitudinales in paria 5—1 snrpe lit*]ositi, par intimum 4—7 nun, par ifcuntluiii 6—H timt, j.ar tertic ^n 7,5—13 nun, pnr quartum 8,5—-14 nun « i osta reinotuin, p.v ia cetera proportione decrescente, i-nr inlin um a costa basim versus oriens, cete ra it IjiiRi To! ii orientia, nervi transversi irregulariter ascendentes; cirrhus 6—10 cm longus, gracilis, versus hntim a<riiiii r<curvatam leviter ampliatus; ascidia 6—11 cm longa × l—3 cm lata, lucido- v pslli.i o-viridia, extus et intus ± purpureo-maculata, glabra v. minute pu BCUIB suh jt-Ti*u>ini(i loi entosa, s Lbdimorpl ia; inferiora cylindrica inferne ventric ait, a! e ventrales expansae ciliatae v. o; superiora cylindrica v. inferne leviter ventricosa, alae ventrales angustae ciliatae v. ad nervos prominentes non ciliatos reductae, os circulare postice vix elongatum; peristomium 1,5—i tiiin titom, cylindricu nu aequale, margo interior breviter denticulatus, superficie delicate striata; operc ulutii l—2,5 cm latum, cordato-orbiculace, extus fusco-punctatum, glabrum, intus glandulis paucis magnis perithecioideis diffusis v. glandulis multis parvis immersis instructum; calcar 4—6 mm

lungura; ucidhun h tus per dimidium superius *t.* [irttfondiua glauco-viride usque pur- **purev** n, opacum et deducens, inferne nitidum glandulosum et detir**ien*i giandolae superiori**s magnae circulares exsertae in seriem unam dispositae, inferiores parvae, discretae zt intiii'•• sae. Inllon^vnUa 40—14 em looga gr acilis; pedu rmilui 1—IO«'in loi gus sparse ferrugineo-toment •»«ii« demnm glalwr ; pedicelli 1—|,5 mm longi, ternies, unirarius : r ori. Sepala elliptica v. ovata, ex **lot** ioai entosa i obis glanduli multis minutis •l,i) se punctata. Colum na «Ui: inea sepalis brevior, glabr>; nntlienie 8—M, mii- T. itibbiseriulB[1]- ± convolutae. Ovarium ovatum, sessile, dense ferrugineo-tomentosum, stigma disco i*lr«ni i-lobatum. C ap*ul& *1*—3 cm lot.. a, fusifor BIB, Boej»e cuirnta, tpane ferrugineo-tome ntota <• mum punctata et brunneo-nitida, valvis lineari-lanceolatis, apice bilobis. Semina 15 am longa, testa circum embryonem undulata. — Fig. 2 p 4-

S.W. H«! ayische Provi a2: Malafckit **(Jack!,** • Wallich n. 2248!, Cuming 2310!); Singapore, bei 1 raman (R **idlej** n. **i*7S!**; Sing-'imre >i euchte Waldränder- SO in Engler n. 3911!).

JJorti eo: Bei Sintang (Teysm mi 11. 10956!, n. I I <)8S!}; bvi ilem PlniM PolauUu **Muller, fide Migu<**!); Ber **g Pamatloo Korlhalslj; bel Labuan (Lpbb!, Bnrbidj** "co **niinnu along N, W. eowt" Lowl, Barbidgo! ; Hruni, Bintulu andKutcinj** **Sai** natra: Bei Siboga (Kort **halt!, 1** eysmann!, Burck!).

BUJiU n (Riedel, Teysmann!).

Einheim. Name: KcUkin g-monjil. (Teysmann).

sim transeunt, nec dignae **juaJ rji** sepa **rsnlur. ID Herb,** ^iuv specimina sun **I A d. U** N. Ridley (n. 4473!) sub titulo *N. gracilis* var. *arenaria* lecta; plan **LB f-umil.t lui** ida, pallido-viridis purpureo-n **incitl.stA. Ant vtiriiitio r»l In** tempus per causas exteras effecta, **nut VIIHUI** fors **ill eoiuU** ns.

34. **IT. angmtifolia** Masters in Gard. Chron. II. (1884) 5 **ti. — .V.** *grvcili** **lie*** cari, **falesin III. (Issc. B,** — **-•** *tentacul* **ato fom** a G. Beck in Wien. **III. Gat 1** Zeitg. (1895) 188. — Planta tenuis, pallido-viridis, breviter scandens. Caulis **i — ! in nit:** s × **'.—:; nait** crassus, trigono-cylindricus, a **hilim, rjunoius.** Folia 10— **10 cm Inii^'ii ;•: I,** 5—2 cm lata, subcoriacea, lineari-lanceolat **1, si-Milin, Ijfifljs ' j-i(D-** |.|.v.nih. decurrvnte et iraiUUm ad folium proxim mi info ius attenuata, apice in cirrhum attenuata, supra et *subita* gbltra, *uen'i* I ongitudinales in I'iirin 3 — • dispositi, par **iii'iiiiiiitii 3—8 iimr.** par **n, par tcrtittm A—9,S mm. par juiiHao»** 7— **pi mm. par qntnttttn** :,5—11 **:11m a rMti** remotum, nrni In nsversi oblique ascen- **4W** tes, alte **mi vnlirli ttaqu** e ad marginem et tenues ad dimidiam partem marginis cur- **reiil».** • **irrhiift f)—9 11** n longus, tenuis, in basim ascidii gradatim ampliatus; **aaddta 5—7 nil 1** onga × 0,75—1,5 cm lata, cylindrica, inferne leviter ventrico iute ferrugineo-punctata, sub peristomio ferrugineo-pubescentia, viridia rarissime purpureo- ma **iilala, alac M-iunil«** • membranaceae, angustae, ciliatae, os subcirculare; peristomium anguste, cylindricum, nitido-striatum; operculum cordato-orbiculare, extus glabrum, intus sparse glandulosum; calcar breve, simplex v. 3—5- **Sl.lliilli** et ciliatum; ascidium intus per dimidium superius pallido-glaucum opacum et deducens, iuferne glandulosum, glandulae discretae, su **1'iataaae.** Flor«> et fructus ignoti.

S. **W** Miii. !••!!. **I** ovinz; Borneo: Sarawak (**!.irti* 11. 113, Becc«r** n. 587!); Lawas Fluss (Burbidge n. 32 **111 Vt-it^i U**. S. S.).

35. **K. khasiana** Hook. f. **in I". I'rodr. \Mi** (1873) 102 et **ia Gari, chfWL** (1874) **34t. Ft Brit bd, V. (1890)** 70; G. Beck in Wien. Ill. Gart. Zeitg. (1895) 189. — *N. distillatoria* Graham in E **linb. N. I'liil. loarn, ill (1811)** 371 et **in BoL** Magaz. LV. (1828) 2798. — *N. Phyllamphora* Sims in Bot. Magaz. **1111 (1816] ifiin;** Hook. f. et Thor **in. Merit. In.I 0**r. — *N. melamphora* Hook. f. in Trans. Linn. Soc. (1859) 423 ex parte. — *Nepenthes* sp. Griffith Posth. Papers II. (1848) 76. — **x\n 1.**

Planta robusta, alte scandens, ramosa. Ca ill* *6*—to in **alttn** × 8—12 mm cra- **Ma,** cylindricus, glaber, viridis usque rubro-fuscus. 5 cm longa × 5—8 cm lata, subcoriacea, sessili", lanceolata, basim versus ± c expansa, 1/2

tmpleximufia, :fc decurrentia, apice in cirrhura nttenita.li, JBrenilia supra molliter fulvo-pubesceutia defflom glabro, infra |flulu*a el fis-co-punctata, nervi longitudinales in paria &—6 dfepositi, pnria 4—5 inli»i a costa altitndine varia a medio basiru tenuit orientia, par externmn *n* basi orier», nervi transversi oblique et irregulariter ascenderiien ct ramosi; cirrbus 10—18 em longus, molliter pubewen* deeium glabratus, pro rala pra-cilis el plauii-riniM'xus, gradatini versus Utairo nx-idti anipliitlai; a*-id« I <)—S" cm louga X 3,5—4,5 cm lain, menomorphia v. subdimorphia, lon.<• tnbukrea ». iu setidiis iiifcnoriiius inferne ± ventricosa, glaibra, viriilia r. infrrm' viridj-nibra, os vettui rubra, alae renlratei in iiHdili; inferioribus lagustae — *dltaia*-, in afirirtiis superioribua sd nervos protninentes noa uilmtof> reduct os oTato-orbicuIare IrviUT ••i>]i'|innn; pcri-Etnmiiitti &—ttf mm latmn, Qflindricam, viriite, po:-tice sub operculo incoruplcttiin, crebie slrinttim. operculum 4—5 cm lorguni X 3—Ijli cm Inlum, ovale l orbicui.nv. irxtus glulmim riride, in in*, rubro-viriilc ad nilinuu. gtandulosnm, g)todala6 moltae difTutae, majores per mediimn m.iritlnctn iersus minores; calcair parvinn i—G mm Ion.um; ascidium inlus p<T 'timidinm Biifivrius ^lawum, saepc purpurco-iu<i<:tihLuin opacuil et deducens, mftTiie nitidum glandul'osum et detinens. Inflorescentia I 15—60 cm loiiga, ♂ fere liis loitf;ior qnam ♀, juvenii^s pnlx?srens v. subtomentosa demum glailun; peduiiouhjs 15-90 nn lonpus; ntcemus db Injiflurus; podieelll ralgo hitluri versus api<vm racellit unifiorl, taept> *hnn*\ biiicteolati. Sepala ovaLa, cxlu- dense fusco-tomen-tosa dctnum RU:glabra, tutus gtandoiu mull is miimiis inatructa. Colamoa staniiaca quain sepala longior, glnbrn; antherae s — \i COHTDIQUC V. nubbUerialAe. Ore)ium breviter peduocuiatum jHiln^ccy dnnnm gtabruiii qimdrunpulum: !obi stignutid *I* pro-miri•• bilobL Capsub 80—12 mm X i—5 mm, nitida, pnni:latn. Sfiutnn i—5 mm loDga, |i;irvn, DLUFerosa, rubni-fusca.

Provinz des Iropitebea Ilimalttvn: Mast ni'iiitnl. HUI d-n Khasii mil *I*yntea Gebirgen bis 1000 m. KhtiMn Gebirge (Hooker f, ct Thanson!); Jyntea Gebirge (Wallicb D. Ml, n. !•!., Wall. Cat. Mill nom. *N. distillatoria*, Griffith »notes« n. 1140); J(imin in <lem Jvntea Gcbirge [Clajke n. <500j; ohn«- Slmxiort (Col It'll n. ^3!).

36. **9. tubulota UacAralia** — C: I m v(oitm x "— s aun erawut, cylindriest, Ieviter sinuosus, interne"lii» wp erioribuM 3—8 cm ton|is, juvenili» ftlii idotf>mt?nln*ii!t domum glaber. Folia 20—IS cm lonjfii X *-1—3 cm lain, cv»ri •cea, juvenilia albido- et stellato-pubescentia demum supra glabra Hiiblus sparse iilbido-pnl-'.-centia; petiolus 4—6 cm longus, alatus, alae ai La«i B! enuata laminae licunum an.gustatae, dcin in Iasim pe*m*\\ 1/2-ample•i-Mnl.'in ikon decurrenten: gndntim wpaofcac; Uimina lineari-lanceolata, inferne in •]•< petiolares et superne in cirrhum concavo-co2 longe attenuata, coste• mtliliiH]irominens, longitudinali UT Bill is doobui lateralibus oon-stricta, nervi longitudimnli'ii in pa 11a 6 dispositi, par intirinim | mm, par secundum 0 mm, par Icrtiutn ft mm, p*r quart lira I" run mil i,5 mm, par sextum 12,5—13 uiiio a costa remotum, oiiiuin a v. fer« n basi it on. lnjni, rrt|^ul*riler . ascendentes et ramosi; cirrbus 25—30 cm lo.... , ii .i ,i i.ln h • iin i <•>p raiun elongatam angustam graciliter ampliatus; ascidia MI-ii'ui"n in i. 15~ -(1 cm longa × 2,5—3 cm lata, elongato-tubulosa, inferne leviter ventricosa dein gradatinn in Ibasim ascidii recurvatam angustata, o« Trrcuit i ix v. leviter ampliata, juventute sp'inc Btcll ato-pubescentia demum glabra ft fwwo-punctata, *tkittf.* ventrales valde reductae, iorma nervorum prominentium a basi recurvata ad os continuatae, dein in nervos curvatos circum os solutae, os ovatum obliquum, postice non elongatum; peristomiuMl (—5 mm latum, cylindricum aequale, margine interiore denticulato; operculum ovale ad ovali-cordatllin, nr: >ocitmJiiv»iiMit ia |tor» 7—K <j»fw%«li% ptTMimtii j extus jjluhniiii intus glandulis multis perithecioideis depressis obsitum; calcar i—5 Il •—— lum (jUiiiluliitiini el detinens, glandulae copiosae, ap-proximatae, mediocres v. subparvae, i:<•111!I'SN*>. Flores et fructus ignoti.

S. Malayische Provinz: Poe Gibeh oder Poe Gebe (Teysmann n. 6759!).

Nota. Species haec nova mihi solum nota est e speciminibus a cl. Teysmann lectis. Descriptionum tlcdi sucundum cujriiplt: ia mihi a d, Ti eub sub now, »*N. Rafflesiana* ta lack* missa, a qua species facile dignoscenda est foliis angustis attenuatis, nervttura, colto ft ascidii uulltp. forma ei liLdlml ne peristoinii, (it operculi structura gloidulom.

:\~*L* **N. Hemsloyana Madfcrfone s|>.** now — l'!;inU clon^aU, ecaml ens. Cauli- **6—8** mm **crasnus, cvliodricm v. Icviter Iriqu** etrus. **Folia** no—* i <m lunjiii >•; i—S cm lata, **tnerabi** anacea v. subherbacea, petiolata; pet **aim 5—i a •** *m* longus, tenuis, alis angustis, ad 1/2 —^/j **unptexlcaaBs, '*"-** non v. ± d*«irreiiK; **lamina** lanccol.. ta, basi et apice L;riii|aiiin **sttctiuitta, glabra**, nervi longitudinales in p **ria :• wriai 4 d** ispositi, omnes a liitsi tblii orieules, t"ir **ifH**tuinru **B—J** mill, pur aecnndum 3—12 mm, *ptt* tertiuni **10,1**5—15 m ;1M, **pur** quartmn)3—is nun. **pu (piintmn 15—SI** nun a **o**sta rt'iiHjluiii, IHI'M tnmsrorsi **n**scendenl « jmnilU'li ;± simmsi, 4—3 mm separati; cirihns 15—45 cm lorijrn* gracilis versus **boatm** :i*-iilii 1 ecurvatum ampliatus; ascidia **11**—20 cni longfl .v **t**—9.'' '" l**'? "-embranacea, sparse stellato-pubescentia et brunneo-**punctnta, mb periitomio lumen!** osa, dimorphia; ascidia inferiora subcylindrica, vix v. ± **it basi** *m*\ **OH nn** gustata, alae ventrales basi ampliatae, os versus gradatim angusta '»'•, **lial**ae; asc**idia miperiorn Snfnndibulil** 1 orinia a basi os versus gradatim nmj'li.i ta, dein leviter contricUf a!ae ventr<lcs **ml** <ervos prominentes reductae, os circulare obliqu **nm** postice in coiliini **ttogostitni 1-**—3 cm altum elevatum; peristomium 5—12 mm latum, antice cylindricum aequale, aliquanto angustum margine interiore pectinatum, postice **«arw**im in **colhlm fo**rma jugorum duoru**"i** IAIOI um convergentium pectinatorum ampliatum; operculum 3,5—4 × 2,5—3 cm. **Islum** membranaceum, cordato-triangulare, **. i n** medio valde binervium nervis minoribus lateralibus, extus glabrum, intus glandulis fere aequalibus dispersis obsitum; calcar **10—13 flint** lotifiiim, gracile, attenuatum; ascidium intti Mii.liiiKi superius v. |>rdftinditts tlnimtim. opacum et deducens, inferne nitidum glanc hil>>»mm et detinens. Flores et fructus iitmiri.

S. W. Malayische Prov **JII/; Borneo: i,a*ns-l** Fluss, N. Borneo (Burbidge!).

Sumatra?: (Kor **thaUf, npeclmcn in 11** erb. Kew. nomine — fide Blume — *N. Rafflesiana* designatum, et sub nomine *N. Rafflesiana* var. *glaberrima* Hook. f. in DC. Prodr. descriptum).

Niota. Spe **ttOhue ronfttta «l cum ,V. /;** *fflesiana*, cui similis est petiolo longo et peristomio elongato pectinato. Differt nervis foliorum, cirrho longo gracili, ascidiis angustis elongatis, operculo cordato glandulis diffusis, superficie deducente profunda. In Herb. Kew. sunt exempla ii» *t9p*n* ta, in Herb. Mus. Brit. et in **n • n iifulo. Ibra oawte torn** *N. Rafflesiana* var. *glaberrima* Hook. f. co **ngrtttr*** videntur.

38. **N.** Ka(rt»>siana **J**ack in Comp. Bot. Mag **i**z. **I** (1835) 270, et Calc. Journ. Nat. **Hist l**\. (1844) 364; Korthals, Verh. Nat. Ges. Bot. (1839) 35; Hook. in Bot. Magaz. **i** **MM. i N I: i.** nnr»; **Eorti**. Inn. de Gand III. (1847) 7; Morren in Belg. Hort. V. **193; I**.emaire in Fl. d. serres III. (1847) t. 213, 214; Low, Sarawak (1848) 68; Houlston in Florist III. (18130] **V**; Vriese, Tuinb. Fl. I. (1855) 208 t. 5; Blume, Mus. bot. **I'lu-I. bltav. II.** (18!2) 9; **Hlq. FL** In.l. **btdr. t p. i** (1855) 1070, Suppl. 150, 365; **J. \. in Gard.** Chron. (1865) 1060; Van **i**-outte in Fl. d. serres XVI. (1867) 167, t. **ni«»; H**ev. Hort **ic (I86D) 130** sub nom. err. *N. Rafflesea*; Baines in Gard. Chron. (1872) **I n i; i** Florist (18**2) 221; **i'** Hook. f. in **I-** **i**rodr. **v**ll. (1873) 96; Planchon **in FJ. .1. B<**tl. wii. **i s**") **i**, i, t. 2343; Masters in Gard. Chron. n. s. IX. (1878) 177; Burbidge, Gard. of Sun (1880) 41, 60; Masters in Gard. Chron. II. (1882) 424, *Hit,* **GD, 7 0**; Burbidge in Gard. Chron. (1882) 56; Beccari, Malesia III. (1886) 10; **B o o** Fl. Brit. Ind. V. (1890) 69; G. Beck in **»** Wien. Ill. Gart. Zeitg. (1895) 146; Fenner in Flora XCIII. (1904) 358, t. **f**0, **(!**; Veitch, Hort. Veitchii (1906) 483. — *N. Sanderiana* Burbidge in Flora and Sylva II. (1904) 113, III. (1905) 280 et icon. col. — Planta statura et aspectu variabilis secundum situm, plerumque alta robusta scandens. Caul ad 15 m altus × 7—18 mm crassus cylindricus, ramosus, juvenilis dense albido-tomentosus demum glaber. Folia 20—50 cm longa × 5—10 cm lata, herbacea v. subcoriacea, longe petiolata; petiolus 5—15 cm longus alatus, 1/2 amplexic **-iilti,** alae basi et ad laminam angustae, saepe medium versus ± ampliatae; lamina lanceolata,

clliplira v. oblongu, in feme in pflrultiin grndatim ft abrnpta ..ingiiMatn, «upt i .•irrhuni altcnualn v. abnipu* rotundata, juveatute dcDM albldo-toi i, dcmum subglabra v. glabru, ncrvi tides inconspicoi, iu i»ui i, pur iutimum 13— to mm, par secunduin 19—30 nun, par tcrtium *tG-—;t** ram, {tar qutirtiiin 30—if inm. par qniiit.tini n i — *a* mm a oostn *ttmo* *n* basi iaralnae orieatia, nervi Iraiu- «rst ohs-nn, ..hlnjiii, ueeodeattt, p.'iiMll"li, 4 — s mm u'lKirnli; 30—4C lonf: plants v. contravo-co»VL»iu»t saperne cjHndricni el k amplfatns; asddia 10— 2<> i« X 7—12 I at• dj....rpbi*; intcriora ampullfifiw v. rentrlcosa, jiiTenilla nlbido-tutitcutosa dentum itl.ihrn, palli'lu- •?iri(ii:i *Y.* nitido-albida, jiurpurt' aliqatnto eontraclac, In tac, |iur •ilido> s, tlorso nl in ascidio coloratne, os obli'iuum ovittum, poslicc in 10—10 i oblique inclinetnoi sitperfldt' vafi o« tenninaole, viri<ii ilrlatnat, po rctna in cum «triiis e(denUbiu dcRtMU panllela* produdum; opeteulmn t—*H) cm*)«t 3—S cm l«! Hum Iri ID — purpureiwi lin tnporion H—30 rni Uugti X i—10 < in lata infni isfpureoHrtriata v, macalatj), «!«<• vi.<nlral«« iH'iiios > niimii anlJte nirqua! I lamella! longvm, fili< inm; fiakttr S—30 i nibra *v'* -landitlou. I ituni 4- C.ij^ula 2—4 tm looga, tuepc ±r LIM tale pdl nina 16—SO turn lunpii, toita cirritm braanea atis ulliido-n> vische Pruvim; Mal.ikk Singapore (Jack, Wallich n. 2242!, Beccari!); auf dem Berg Ophir bei Malakka (Mainga: n. ITT.I |); Insel Billiton (Riedel!). matro: Ohne Standort (Jack); Westküste von Su ttuitru [1 orthals). Borneo: Auf dem Berg Kina Balu, 1000 m (Low!); ohne Standort Lobb n. »ft!.' Bangka: Mlann lea Marais* [fide Hi quel). Ein ii-im. iitnldy. Name: Ketakong -mendjaogaiL

Nota. *N. Rafflesiana* var. *insignis* Mast. (in Gard. Chron. XVIII. (1882) 424) vix a typo differt. Varietates tres infra describendae formis intermediis cum speciminibus typicis conjunguntur.

Var. *β.* nigro-purpurea Mr*« in Gard. Chron. XVIII. (1882) *H.* — y scidia ovata, luridо-purpurea, sparse pallido- v. albido-punctata, col Cult., loc. nat. incert. htm flii(|uanto brine, —

DC. Prodr. (or, subcoriacea

Var. •/. nivea ll»«b. f. ii opioso obtecta Wll. IST3; 97. — Mil,

Borneo: Labuan (Motley n. 348!); ohne Standort (B a. 348!); N. Borneo und Labuan (Burbidge!); Montrado in der Prov. Pontiana arber i mann).

Var. *δ.* minor Beccari, Malesia [II (itSI 11. — Cl B&ovttioaibOi pub««- centibus, Mctdin tupt^tiora pirta, itidaio-inrimdibulirot'tiiiii, i ollo valde elongato, opere *via* late ovato.

Borneo: In der **Prov, Ponlianaif** (Teys**MI,'inn n, 109(0 in Herb, i**l. Bot. Bog.!).

Nota. **I**e *N. Rafflesiana* var. *Hookeriana* Mast. vide p. 31.

39. St. Annbroita.6 I". M. Baflej in Q?ecnsland Agric. **Journ. XVI. (190**7) 191. — Folia **(8—SO cm** IOII^H **X 4—5 cm laia, he**rbacea, petiolata; petiol**m S—4** cm longus, ulalus, II**p**erne gradatirii in iHtitiiinin **Bmpll**atus; lamina elliptico-lanceolata subglabra, **nervi loagiladin&les in paria 5 tlispositi, tUTvi tnuuwersi prornim i**tes; cirrhus 10 **cm l»npi**us; asc diiini 10 rin lunvriitn X *»—~ r f " l-it'iin, ^ nUicosnin, ad t>asim abrupte contractum **et acute recurvatuco, ala**e ventrales reductae non ciliatae; peris**tomnuxi** angustum; oper**ciiltui** 3 cm latum orbiculare, **tutus** l**rautUg**sum; as**<-i'lium inlus per Irien**tem superiorem luteo-**-niiiruloluni** purpureo-marmoratum, opacum et deducens, inferne glandiilosiiiu el detinens. **lajti**orescentia (♂ solum nota) ferrugineo-pubesce*M]* peUii elli 10—IS linn longi. Sepala ovat i, S—6 unit **loDga, intua purptl**rea. Coiunma staminea guatn **wpali aliquanto** I01gior; antherae **aput globottun.**

\11 s11-n. alayische Provinz: Coen, Cape Yo**rk** IVninnulii in N. (. Anslt alien (*Miss F.* **trmbra** st).

Not**1. Specie* mihi non viaa,** secundum auctoris descriptione**m dUbrt a »peck-'-**us om**tffaw** adhuc cognitis, sed ex icone valde similis *N. Kennedyanae* est.

40. **N, albo-linoata K H** Bailey in Queensland Agric. J**urn. 111. (189*)** 354, pl. 5**8. — Pbnta lorrwtrii,** <recta, vix scandens. Caulis ! **— *.S in altui X 10—** *[1* **nun** crassus, cylindricus, tomentosus, de**iittim** |.re glaber. Folia 15—30 **HI lonfa** X 5—7 cm lata, herbacea, petiolata; petiolus *i—$* cm longus, alatus, ½-amplexicanlis, iu **iii'**dio angustatus, versus basi**•" Buiploiicaulenj** ± mpliatus non v. leviter ik'CMrnnis, s«rs»m ulii|ii.iii(>.t abrnptc in loniitiain itiupliutut)* l.-imin-i In**c**eolata, apice in cirrhum attenuata, **•**upra **gltkbra** v. ml cm'am et **a paiiibut 1**ontiguis laminae sparse **•lella!**o-pubescens, nervi longitudinales in paria 7 dispositi, par intimum 6—9 mm, |..ir secu*admn* **in** — **1**5 mm, par tertiu**m a 13—in mm, pur quartum 16—*H m***m a co*ia** remotum, tria reliqua fe**•0 3 mm ;i** quarto et inter se distantia, nervi tr**insvcrsi irr.**gulariter ascendentes, radiantes, et fere **2 mm iii(>T Br sopor;'**li; cirr**lira I ft—15** cm **longtu, trurtmin gi**radatim in bas**in asci.l**ii recurvatam ampliatus; ascidi**on tS—-48 cm longnm X 1,B — 'J cm Utiinq**, cylindricum, **infra leviler r<**ntricosum dein in cirrhum recurvatum angustatum, viride et albido-striatum, alae ventrales a basi ascidii recurvata med**nun vena* forma laml**nae non ciliatae continuatae, dein os versus in nervos v. vertices angustatae, os leviter obliquum; peristomium 1 **t**—8 **mm** lad tut, cylindricum, aequale; operculum 3—4 cm latum, ovale ad orbiculare, extus gla**liriini intua** chndulosum, glandulae medium versus magnae, marginem versus minores; calc**ir is—$ ram** long**urn, plaftum,** tomen**'osuin, rwmrvaium;** ascidium intus per dimidium superius glanco-**virlrlc (ijitit-nni** •**nduloKtini** -' deducens, infra gla detinens. Inflorescentia ♂ 30—*Hi cm* l. 1ga; pe**c tiimiiliK 18** cm longus, stellato-pubescens; pedicelli 9—10 mm longi, tenues, uniflori, •.lciloto-piibt;»ccntt;8. **Sepala** 5 mm longa, elliptico-ovat**1, ciltia** albido-pubesce**atia in1ti« v«rpurea** et glandulosa. Columna staminea **<'pal» 1"**evior; antherae 8 **Ullt!**eriatae. Flores pistilliferi et fructus ignoti.

A**isLr.-malavUcbe Provtm: I**ape **1 si Paniiiaula h** N. O. Australien (**iar**dine!).

ii. N, phyllamphora Willd. Spec. **pi, IV. p. :** (1805) 874; Brongn. in **\nn.** sc. nat. l. (**IN»4) U** ; Jack in Hook. Co**fltiK-**Bot. **I** . (1835) 271; Sprengel, Syst. veg. **III. (I8tr.) I I**; **kmllt-ils.** Verhand. Nat. Gesch. Bot. (1839) 28; Blume, Mus. bot. lugd. batav. **ii** (**1**852) 7; Miq. Fl. Ind. batav. I. p. 1 (1855) 1069; Ho**k. r. ti** Trans. Linn. Soc. **CXI!. (1859) i l l, DC** I'HKII \VII. (1873) 97; **Burbi Igi**, Gard. of Sun (1880) 84; Beccari, Malesia I. (1877) 213, **in. [tm it; a «A** f. Fl. Brit. Ind. V. (1890) 69; Villar in Blanco, Fl. Filip. ed. 3. IV. (1880) app. 173; G. Beck. in Wien. Ill. Gart. Zeitg. (1895) 1 ; 8, ubi loco var. a. sub *N. macrostachya* enumerata est; **tamtor i» I** Bot. **M**agaz. **1**906) t. 8067. — *N. macrostachya* et *N. fimbriata* Blume, Mus. bot. lugd. batav. II. (1852) 7; Miq. Ill. Fl. Archip. Ind. (1871) 3 pl. 2, 5 pl. 6; G. Beck l. c. 217. — **-V-** *distillatoria* Wall. Cat. n. 2244; Aiton Hort. Kew. **ed. 2.**

V. (IM 3) 420; Macgillivray, Voyage **H.M. S Rattlo. I.** (1852) 110; **female.] !a Ga**rden I.Wll. (1905) 269. — *N. O'Brieniana* Rodig**a** in 111. **Bort. - t«9Oj** 100. **— *Fkyltampita*** *ra mirabilis* Lour. Fl. cochinch. (177'0) 600. — Plant" elongata, prostrata v. scan**dens, lacido-Tiridw, Caalb** > -8 m Innpiis X 7 — U mm **cratsus, cjrlindricus,** juvcuilis iparsc **stellato-pubetcau demum gJaber, internodi**is supe**rioribus** *i* -7 **an** luugi?, infcriuri* bus ± aggre^atis. Folia 15—45 c**m looga x 6**—8 cm lata, **nembraiiacea v. herb**acea, petiolata; petic'IMS **1—15 an toogufl, leriter** \uberulus v. glaber, basi ½-amplexicaulis ala**lus, ala<** verticales parallelae. **Hornon** grada**tim divergcntw el in** linuiiiiini expansae; lamina elliptico-oblonga, supra glabra, subtus glabra v. per cost**i**tin sparse [nil'erula, mar**g**inibus in plnnti* juvt'inlihiis iJt'nluto-riliatis, tlemiun ciliMli-i v. gl**u s**, »pex Qbi'U|>le et saepe inaequaliter in cirrhum contractus, nervi l«uf:itiii)riiti]t>v in **paria 6—40,** ple**r**umque 7 dispo**s**ili, [Kir inUiiitun 10— **It mm, {Mrsectmdum** SO— **84** mm, par lortitim 26—**-31 mm, |<nr qutrtnin *ii* - -39 two a coita rcmotom, parin reliqui proportioo<** de**crescen le** disiantia, nervi transversi **tiainerofi, ptnlleQ, radlati v.** obHique ascendentes; cirrhut li*—15 '"in IOI.gus, in **Cerne** plum.i-cou»'cju«, sti|t«rne o**l**indii**c**us et MI hasint ascidii recurvata •in **unplietta,** *sparse* pi**l**berulus; ascidia 8—15 cm longa × 2—3 cm lata, monomorphia, sub- yliniiriiit, (liiiiidiufii tut**e**rius leviter exp**Bnsam, (uperius** os **w**ersus leviter contr Miltiin. sparse pubcniluii), *nb* pi**s**tristomio ± fusco-pubescens, superficie |iiillir|it-rjri<li v. **rubro-tii**idi, glandulae perithecioideae ± copiosae et diffusae, **ilae wm**irak's in **as**cidiis inferioribus angustae, bre**»Hcr** v. **noe** ciliatae, ui **asddii**s superioribiis ad ***turttm*** prominentes reductae, os circul**a**ire **ovaluni v. inuurreru eliipUi**um; pe**rislo-mlan) I—7** Him **lati**. . . .ylindricum **T. ISC|**e superficie • ~ plnnuni, **aalfce lutioi**num, postice aliquanto **i**ngustatum, crebre **striutuin, trail-**versum v. ± o**ItlrqtiiiMi.** postice non elevatum, pallido-viride ad purpureum; oper• DUIIII **1—4** cm diametro, s**afaOTatum v.** orbi**ml i**re, extus sparse puberulum et brunneo-pune inUiin **in**tus glandulis multis circul**itlbQB** aeq>ialtt«-r <liv|« r<i'- obsitum; c**i**ili*or 8— Mi nun **longuni;** nsdHium inhii jior **(Jiimidiiim** •iU{"rius glaucum v. rubro-v**tride opa**cum et deducens, inferne **rirtdfi nil**idum et gla**ndalu** niullis **discn**tis subsessis obsit tm, **Infli**rescentia 20—3> cut IOD^JI, gracilis; pedu**acuiiu (]iinai** nii-i'tiiu.* i**n**gior, 'lbido-oL **tieUato-pub**escens; pe**Ucdli (1—Iti mm timgi,** pravilos, inferne biflori v. uniflori, superne uniflori. Sepala elliptica, extus dense **albido-** v. fusco-tomentos**i. ti)**us glandulis multis minutis diffusis. Columr)• •**Innin**nea sepalis aequalis, glabra; **mill**erae 16—20, biseriatae ± conv•**OiiUic.** Ovarium 5—6 mm longum ovatum, albido-tom**M:**osum; stylus brevis; stigmata 4, sulcata. **Capiula** I 8-- **SO** mm l*jn^a polunculata fusiformis, valvae leviter concavae, sparse puberulae. Semina 1[illegible].—1 ti inni !onga graciiiA striata.

innterindisch-ostasiatische Pr**Dvios; '**Cochin-China: »loca humida et agrestia« (Loureiro). **- China: M. Jobni Island b**ei Macao (Millett!, Vachell!, Ford!); bei Kou'i-tsion in Prov. Canton (Delavay!).

S. W. Malayische Provinz; Malakka: **-in-apore (W illich n. «<i!i. Jn**rong bei Singapore (Ridley); **I**'erak (Dr. King's coll. n. 10631!); auf dem Berg Ophir (Lobb!); Tullo Bahang bei Penang (Curtis!).

Sumatra: I'• lang (Korthals!, Beccari!); Kayu tanam (Beccari!); "tlilll dant **m** moist pl**lew «»*! m**vines in neighborhood of Bencoolen" (Jack).

Borneo: Bei Sintang (Teysmann n. 10968!); **Lftbtinn Low!**; Haw ang bei Kina Balu (Burbidge); Sarawak (Beccari!); bei Bangarmassing (Motley n. 755!); Marop in Prov. Batang Lupar (Beccari!).

Centromalayische I'rnrin z; Amboina: Ohne _on«UM Standort (Rumphius!, Botter!).

Provim ilrr Philippinen: Bei Surigao in Mindanao (Vidal u. IS:4!).

PajiuuDif che Provinz; Neu-Guinea: Ramoi und Vandamen bei Geelvink Bay (Beccari).

Cm heim. Namen: Dawon- oder daoen-gindi, gada-gadai, prii'ek-berock (Affen-Krug).

Nota 1. Species supra descripta, omnium specierum generis latissime dispersa, forma et ascidiorum colore, inflorescentiae magnitudine, florum dispositione et structura, maxime est variabilis. Specimina autem rite determinanda in herbariis adhuc parum copiosa sunt. Quae cum ita sit, oportet me auctores priores secutum duas profecto species discernere *N. macrostachya* et *N. [illegible]*. Nec quidem hoc tempore characteres satis claros comparare facile est, nec cl. Blume iis definitis usus est. Forma a cl. Linden introducta, et sub nomine *N. O'Brieniana* (vide Rodigas op. cit.) culta ascidiis a typo iam diu in hortis botanicis c-ill.. maxime diffe**rt.** Forma uttaoi wscnnita ***t a*** Hatnn ***m*** il>irt»tn Kewen**a n** irtii-oducta, aliis r>**bui** inter duas est intermedia, **alib** matiis **divcfu. Varlvtu Bhunfij** *platyphylla* **et** va,ietas Beccarii *macrantha* eodem modo su:»! **vmriibltes.**

Nota 2. *N. Pascoensis* Bailey in Queensl. Agric. Journ. «w. figure m et descriptionem audorls forma i>art-a ft jmmilii *X.piujtUim, phorae* esse videt ir.

42. N, Hoorei P. M. t Bailey in Queensland Agr**Ic. Joorn.** III. **[ISQfl** 355, Queensl. **H. IV.** (4901] L479 — **Planta** erecta non **v.** tawvil er scandens. Caulis 1—2 m altus **X 0—7** mm **cnunt, cylindricu**s. Folia 15—20 cm longa × 3—4 cm **i lain, hcrl**acea, petiolata; petiolus 2—***i*** rm tonttus nlatus, basi ad 1/3 am**plexicanJiB,** l«viter decurrens, sursum in Itiinmum grntlud m expan-JUS; laminu eUi|)Li»:u v. **luiccoUta** a>1 Rpieem **iti** nrrUum attenuata, juvenilis ± albido-pubescens, demum supra et subtus glabra, nervi longitudinales **in]**aria 7 rarius 6 dispositi, par intim**i t—6 mm** . costa remotum et ab ea medium versus ori**s** , pnr **Mcundum** ' **i i** mtn, **pu** tertium **9—I (** n**laremotum, i** paria reliqua proportione decrescente, omnia primo excepto a basi folii orientia, nervi transversi irregulariter radiantes et reticulati; cirrhus 10—15 cm longus gracilis, fere plano-convexus, gradatim in basim ***03***idii rec**i**natam ampliatus; ascidium 8—12 cm longum × 2—3 **I III fIltljlr:** , **m m ;** ium, cylindricum, sub medio leviter ventricosum, viride et rubro-maculatu**11 r,** ± rubi o-diffusum, ± stellato-pubescens, glabrum et punctatum, alae ventrales angu*Ma* nnn cilialae, inf. i ne et superne angustiores v. a**l** nervos prominentes reductae, os trans**rena** v. leviler oblii|<tmit; : peristomium 3—i mm **laluiu** cjilii idricum; operculum ovale v. o**wli**cordatum, g tahruin, • xtus circum margine m bntnneo-j punctatum, intus brunneo-punctatum et glan hilis nniHip neqiialibns fi m <lis|n. rn< <> bitum; calcar **l**—5 mm lung-urn, [>11c111111 ± i recurvatum . uddiuin intii* por rittn • .. • nitidum glandiri**± pubeaceoa; peduocohu 10—1$ cm tcm^.** **6—7** nun **longf, unifl epala dlipUco,** exitt* toniciiluaH. **inttu gluiduBa nauttii** (mrrw obsii a. Columna staminea glabra, sepaiis brevior; antherae 10—12 sinuosae, subbiseriatae. Ovarium sericeo-tomentosum. Capsula 18—20 mm lun^H.

Austr.-malayisc In **Provtx** z; Cape York l'fiiinsiil i in N. '. Au»tralien **(Jar,**In e!).

43. N. Bern(Ly*ti F, M. B ailey in Proc. Linn. Soc. N. S. Wales \. **U81)** t<U, Synop. Queensl. Fl. (1**163)** /\" , Queensl. Agric. Journ. L) {- 9, •' in C_-"u«L Fl. n . (1901) 12'78 — Pltmin pn cumbe**ill** T. **breriter tr.antta**s. Caul **lt** (•—B mm cractui, basibus amplexic otlilitiit follorum i btectus. hnlin 30— 40 cm longa × 5—8 cm lata, herbart'.i v. Mil. coriacea, petiolati; prltolii^ .1 — B cm long iu, nJis vcrticdlibttt, **lmtit ' J-«IO|** plexicaulis; lam ioa flli|itin> ;,nceolata, basi et apice obtusa, margine sparse dentato-cili,!(«, juventute supra et subtus albido- et stellato-pubescens, demum sparse puberula et minute fusco-punctata, nervi longitudinales in paria 7 v. in foliis minoribus 5—6 dispositi, par intim**um** 8—**10 ram,** | i secundum 16—20 mm, par tertiu **Mpit**—18 mm, **par quartuin 1***—34mm a costa remotum, paria reliqua proportione decrescente, nervi transversi oblique et irregu- liiri ter ascendentes demum radiantes; cirrhus 15—25 cm longus, sursum gradatim In l»»»im ascidii recur **xrnUm** amplialu-; ascidium *t—**15-**m longum × 3— I **on** lalum, *m*onomorphium, duabus p **irtibwf** inferioribus leviter ventricosum, triente superiore cylindricum, ± albido- et stellato-pubescens, fusco-punctatum, rubrum, alae ventrales gradat **nt *** **tdfti** ad me listae, dein sur **MMll id** os leviter angustatae, ciliatae, ru **brte, a*** **o*mf** um obliquum, peristomiu **in ill-, tcule -.(ll** m latum cylindricum, ac tum; o **'iT-** culum 3,5—5 cm longum × 3—4 cm latum, ovato-cordatum, extus sp \nr nil-ido- pubescens et fusco-punctatum, margine extus et intus fusco-puberulo, intus

glamlulo3um; calcar 8—4 0 mm longuni, planum, pobcwens, recurvatum. Influn escentia 25—35 cm longa t loinentosa; pedunculus Ifl—15 cm longus; racemus subdensi- Hunts; pcdicclli 10— 12 *ttua* l•ngi, simplices, tenues, tomentosi. Sepala 4 oblongo- cuneata, extus tome utosa, inUis minute glandulo-a, inir)>itro'>-niln a, Coluinna staminea wpjilis nerjuitonpa. Ovarian albido-pubescens; stylus brevis, eras••>is; stigma late exp«»sum 3—Hoburo, loM Sttleatt, Capaula I o— 1 i turn long*, loins stigmaticis lurgitlis coronata. Semin.i in cxoDpla fructifero *t*—3 nun lonj a, sed forsan immatura.

A istr.-iaala/iaohe Prorim: C»; e York Peninsula bi N. 0. AofU alien (Jardir

44. **H. Jardinei** l . M. Bailey in Queensl. Agric. Journ. I. (1897) 230, lll. (1898) 36^; JIasLcrs in (innl. Cluon. u, 3. Wll (\s •7) 337. — Ptnnta robn- ta erecta brevis, uon v, humititr-r sr^ndens. 0uuil» I-—*1 m* ultn × 6—* mm Cftttua erectus v. prostratus, nodosus, rhizomata et ramos ascendentes ferens. Folia 18—30 cm longa × B—^7 cm tina, omja v. plemqi ascidiifera, subcoriacca, pcliolntc ; petio hit *i*—0 cm longus alatus, alae me basi expansae 1/2-amplexicaules, vix v. leviter decurre ales, sutstnii gradalim in lattunam ampliatae; lamina obJoogo-limceoIaU, in dyrbun attenuata, supra glabra, subtus sperse albido- et stellato-pubescens, costa rubro-viridis usque purpurea, margine non ciliata, nervi longitudinales in paria 7 rarius 6 dispositi, par intimum 8—10 mni, par secundum I ft—46 nun, par tertium 1 I—10 mm, pur quartum 19—11 mm, par qtitttlitm 21—26 mm a cosla ronitiltnn, pariri reliqtut i-r- portione decrescente, nervi t• .UMTtni railiflti, is ticulati; cirrhus 15—20 cm longus, rectus v. sinuosus, gradatim in basim ascidii recu I'vatajn ampliatoB; osarlia |0—10 • m IDM^I X 4—6 cm lata, cylindracea, inferne leviter ventr.'.•MI, OJI versiw m i ontracta, purpirw»- rubra, nervi longitudinales prominentes, alae ventrales angustae turn dliAla<, rubrae, a basi «fl « ±T •WUOMC, os obliquum postice in collum latum triangulum elevatum; peristomium 5—6 mm latum, cylindricum, crebre striittutu, po«U» Minmti in coOun prolongatum; operculum 4—5 cm cm, co ex , intus ad marginem pubescen ulcsvur, multae ; calcar i—I mm longnm, planam, recnrYatum; *uadia*\ n intus per <ln idium superius glauco- pai|mreum v. pnrpureo-maculatum, opacum et deducens, inferne nitidum glandulosum et delimens. Inflorescentia 30—35 cm longa, ♂ longior quam ♀; pedicelli 12—15 mm longi, tenues. Sepala 4 ovalia, extus et margine interiore albido-tomentosa, iotui gtondulis multi*in* imtiuli* otmiin. Cuiunu] a stam nee sepalis Mquitooga, i»*niii«, glabra; antherae 12—16 convolutae, sub-biseriatae. Ovarium tomentosum; stigma sessile, i-lobii'um. Capsula 18—20 nun tonga, I alvae niftirmt?«t npice stigmatibus tri tngttlia tulcatis ctirun atae.

: Somerset, Cape York Peninsula in N. O. Australien

Jar dine!].

45. **V. Konnwiyana F. M**ell. Fragm. V. [|8(S) 134; IIook. f. in DC. Prodr. XVII. (1-73J 98; Mailer* ifl Gard. Chron. I. (18 JJ) tS7t f. 38: G. Beck a Wien. Ill. Gart. Zeitg. (1895) 218; Veitch, Hort. Veitchii (1906) 484. — *N. Kennedyi* Benth. Fl. Austr. VI. (1873) 40; Bailey in Queensl. Agric. Journ. I (189?) 301, HI. (1898) 354, Synop. Queensl. Flora (1883) 11 — ManU ebm^ata wnniicm. Caulu I—1 m)•ngus × 5—7 mm rfn*»ii». cylindricus usque trigonus, juvenilis stellato-pubescens dein glaber. Folii 15—3 • cm longa × 4—8 cm lata, membranacea v. subherbacea, petiolata; petiolus 4—7 cm longus, alat it, littti i j-jinipleiicnulii, le»il*r •• ecurrens, superne in laminani gratJatini ampliatii*; luntimi oblongo-Um colala, *upra *xMtrn* tubtiu stellato- pubescens, margine tenuiter ciliata et pubesce its, nerri longtlurlinn, es in paria 7 rarius 6 v. 8 dispositi, par inlimtn 6—10 mm a, j»-ir Kcuodtun 9—15 mm nun, par *itr* II—IS mm • costa reniotujn, par a reliqua proportione distantia, nervi transversi radiati T. • blique ascendentes; cirrhus 15—20 cm longus, gracilis, inferne plano-convexus, superne in basim ascidii recurvatam ampliatus; ascidia 10—to cm longa × *i*—3,5 cm lata, monomorphia, elongato-cylindrica, dimidio inferiore leviter expansa, pirle •up«rifitr «•• versus leviter contracta, sparse stellato-pubescentia, nil ro- viridia r. rutira, «lae Tcntralcs IM sim versus angustae, »• T«mua grad'i'ini r. interrupte

expansae et ± ciliatae; peristomium 2—4 mm latum, cylindricum, crebre striatum, postice non v. leviter elongatum; operculum t,4—t CD × 2—3,5 cm, oblongo-orbicuUre, cilus el. inargine inlws *I< llato-pubescens, intus glanduU> >»'• ltis aequaliter tlisptTsis obritum; calcar 6—9 mm Itmgiim, J.LIIIUMI, recurvtuo; ascidium intus per dimi*limn* »uj erirfauBO-porpureuin v. :rr piirpun o-maculatum et deduce ne, inl erne glaadulosuQi] glandulae parvae, multae, immersae. Inflorescentia (♂) 25—50 cm longa; pedunculus 10—30 cm longus, stellato-pubescens; pedicelli snljtiirii 10 — 15 mm l«i gi, dense sericeo-pu ciiiptica v. obo fere glabra, int M vUti'iulK r«"i ·'«.

Au layische Provinz: Cape Sidmouth (Moore!); Cape York (Jardine!).

Nota. Valde affinis *N. fAfBampkar* , sed satis distincta quae sec auduut f-crav •f<ru lui <ubescentia copiosior, b u « I liorum breviter decurrentes, ilas ciliatae, operculum longius, coloris sp lc&dar A scidii cum peristomio angustiore hanc speciem daflaiuoL

iti, N. Garraway»e P, M Bailey in Queensl. Agric. Journ. \M (1906) 194 et icon. j*— PlnnU) [tnrnila nou scnud^m. Folia 2.' cm loi ga × 6,5 c ifl tnls, hi-rhjuoa, iwliolfct*", petiolus alatus inferne semiamplexicaulis; lamina in drfhiu n attenuata; cirrhus \ *1* — IF. cm ion;us, tenuis, aequus; ascidia 9—15 cm longa × 2,5—3,5 cm lata, inferne ± in lliilii, oa versus angustata, per dimidium inferius viridi i, fxr superius fusco-rubra, *thus* 5—4 ram latae, ciliatae, a basi ad os continuatae, fusco-rubrae; os ovale; peristomium U—6 nit n latum postice non elongatum; o erculum 4,5—5 cm longum × 3,5 cm latum, ovato-orbiculare, fusco-rubrum, intus glandulis mi ositum; calcar valde recurvatum; ascidium intus per diinidiaiD tu| perius glaucum et c , dein glandulosum et detiuens.

Austr.-malayische Provinz: las I rail etween York Downs and Wei a** V. Garraway).

Nota. Species mihi non v En, «ecui idum auctorem inter *N. Bernayeii* et .V. AViiid^K intermedia.

47. IF. BMcariana M&cfkrlane n. «p. — Caulin U>—13 mm nratAiis, glaWr . I Folia 30—40 cm Ion. a × 7—9 cm lata, crasse-herbacea ad subcori ici'fl^ period ta; petiolu» 1 — HI rni I ngus, alatus, .iui* Enfferao leviter fspmiiat-. 1/2-amplexicaules, gradatim in laminam superna ; amjiliiv ae, basim v crtui T. per toti i«i iupr>> et subtus fusco- v. fe rrugineo-hirsutae; lamina elliptico-lanceolata usque obovata, juventute ferrugineo-hirsuta demum fusco-puberula, costa subtus prom sparse cirrhum versus fusco-hirsuta, nervi longitudinales HI porin 7—8 dispositi, par intimum (S—SO n m, par secundum l(t—^oiimi, par tertiino |3— 38 mm a costa remotum, p irk ruli<nin proporUone decrescente, nervi transversi numerosi, oblique ascendentes et paralleli; cirrhus 25—35 cm lonpus, rrnssiit: ± fus o-j>ube*reiw; n-cidia dimorphia; inferiora 15—18 cm longa × 4-—1 em In'a, inferne urceolato-ven Hcnfsa, u* \< • sus tubulosa, extus et circum marginem exteriorem operculi juvenilia dense ferrugineo-pubescentia, de mum [ntnctato-ptibcnli, alae ventrales inferne late expansae, superne gradatim angustatae, longe ciliatae, os obliquum ovatum po*ice in collum breve elongatum; peristomium 1*0— IS mm lAltim, imiiumo.it, postice i: flo«.. atum, margo exterior recur valui, terior brevite fa serratus; operculum 5—7 cm longum × 3,5—5 cm lat Mil, f>V ato-cordatum, extus et intus ± ferrugineo-hirsutum, intus per regionem mediam basalem amplificatum, per totu >ll glandulosum, glandulae in medio numerosae nae, marginem versus minores; operculum et ascidium extus glan luli* mifnii p*r thecioideis dispersis illecebrosis obsitum; calcar 12—15 mm longum, filiforme, tpice cfara tum; ascidium intus per dimidium SUj"erius purpureo-rubrum et coeruleo-maculatum opacum et deducens, inferne nitidum glandulosum et detinens, gl in-Jular «ub«fipnMunMl*tf timmrMo; ascidia superiora 25—30 cm longa × 4—6 cm lata, cylindrica, sj^l^ vr, trales ad lobos inaequales a nervis longitudinalibus orientes reductae, peristomium angustius, magis elongatum et obliquum 40am in ascidio inferiore. Flores et fructus ignoti. — Fig. I 7.

S. W. Malayische Provinz: Auf der Insel Pulo Nias bei Sumatra (Modigliani! in Herb. Beccar.).

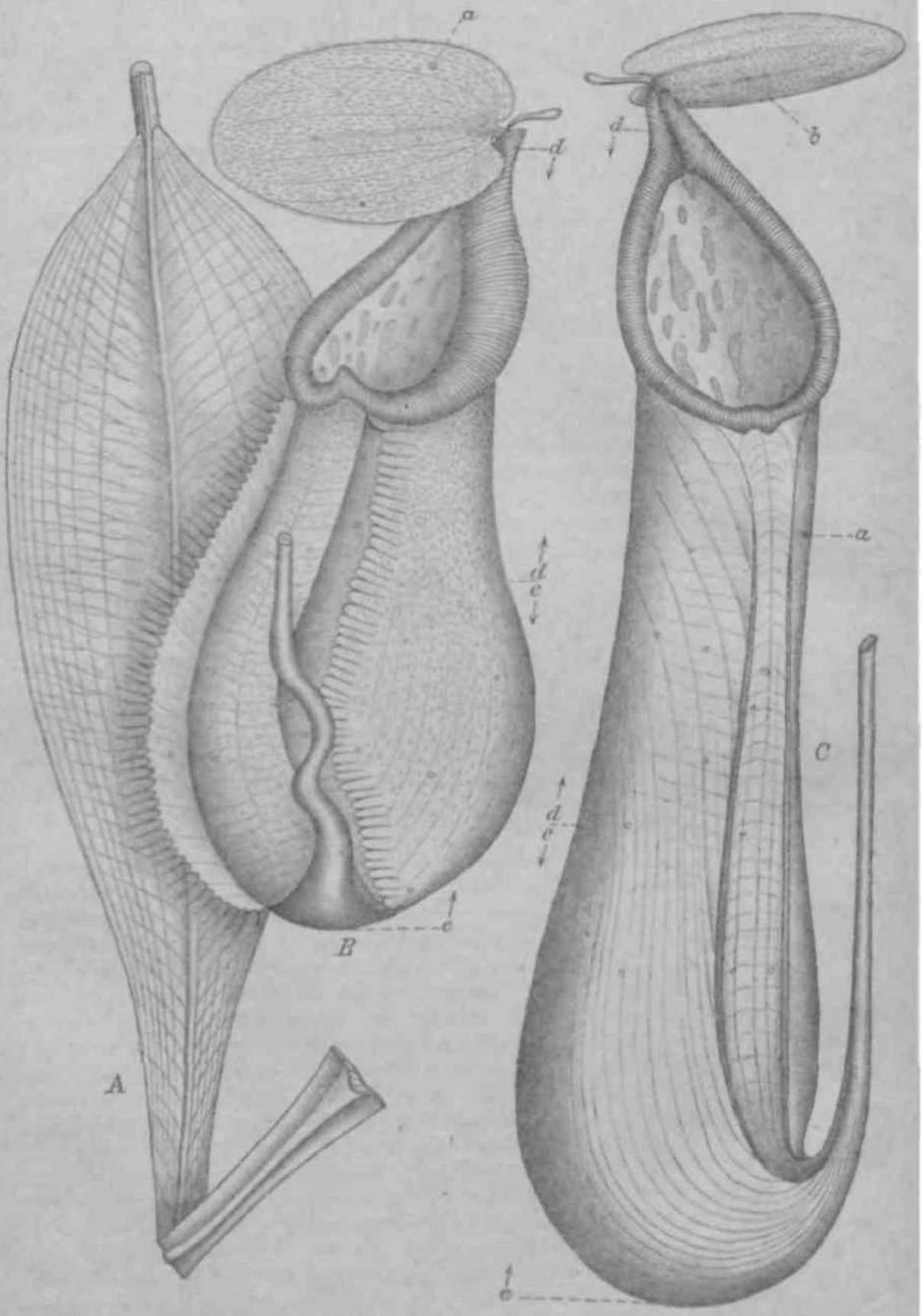


Fig. 47. *N. Beccariana* Macf. *A* Lamina. *B* Ascidium inferius terrestre. *C* Asc. caulinum; *a* gland iiln* (••'nUurfK-'idrav j]li'it.mte», • glandulae operculi, *e* calcar, *d—d* area deducens, *e—e* are as. (Icon. origin.)

Nota. Cujii.1 specimen utiiruin n d. B<ccari benigne mihi comm,unicatum est cui clarissimo viatori magna cum volapUte oandena dedico.

18. Hf.Eowanae F. U. BaHej in Quecnd. Agric Journ. I. (1897) 2H •••im L, lit. (1898) 355;: Jt.urn. lim-. Hurl. Soc. XXII (18 **D8j** Hi. -- **PI&oU robnsta** erecta non ernii dens. Caulis 0,'**75—I na** allus X **8—10** tmn crassus, dense tomenti)»u», 1'olia **SO**—30 r-tn **lottg**a × 4—7 cm lata, coriacea, petiolata; petiolm lale alnlua, **b**asi ½-amp;.'\ir,Miiiv, **alae decurrentM, sunrain in lanriaaia gradttim T. abi**rupte expansus; **tsminti elllpl**ttu, **B«J •** albirto-pobi**ublos ±: pubescern,**]nteribus costae dense pubescens, nervi lonvituiiiuolee in jmriu 7—8 riittpositi, par inlimntn *H* mm. pnr secundum 13—14 mm, par tertium **I"**,—**I ft,5 nun,** pit quartum io—**14,&nu** **mi* ilcei** **i'i (i** costa remotum, paria reliqua proportionescente, nervi transversi nurnerosi, leviter ascendentes; cirrhus 20—25 cm longus, plano-convexus et pro rata sparse pubescens, versus basim ascidii recurvatam gradati•ii ampli atus rotundatus et «ubden»c pulwscens; ascidin is — **iO cm** i onga × 5—8 cm lata, **ilbnJibttliforinUi r, pjrifonnut, '•.** p«lnescentia **ct bmnneo** pimctata, sub |"ristomio dense brunneo-**•tomeatoM, rabro-viridia** \. **lui**do-viri-lia, Him' ventralci **oliqunnto approximatii**e et ad nervos val•<>• proinincnte* reclu ctae quae **a** bfisi o» vcniii continuatae sunt, os ovatum, olili^uuiK, antice ± depressum; peristo**Ctlutt) 8**—10 nun lutmn, antice cylindricu*m,* db plniuin, marginibus externis in partibus poaUotv-lnh'rjililmw *n\>i\u*sis; opeiTiilum **D**—6 cm diametro, s**db-orbksalwi** **et** glaoduliit **Kparsis perithei**oideis, in**iu** j^lantlulin **snuHk na** agnis mediis et parvis **laiornlihus obmtam]** colcar **ll**—iiimui **loagum, plsauoi,** tomentosum; ascidium intr »*& i—2 c**m** uliiUidiiuB |il;uiuin, **dedi**cens, i**oferna nHhliim giandutowtn,** t'laii'tulfte **iinmerMe,** Flores et fructus ignoti.

A ii si **p** -malayis ii «• **Proi** inz: Somerset, Cape York Peninsula in N. O. Australien (Ell',*-|to» an!, F. L. Jardin••!).

40, H. TreuHana W.iptmri: **in** I";;glers Bo.'. **Jahrb. \)U. 1801 (i«**. — *N. Bosciiiuwt* var. *mw<tiwn<t* **Mk|. PI. tad. bat. I.]>. I IS!**55) 1071 et Suppl. 154; Hook. f. in **IK:. Prodr. \\n. is:**3) 98. — *N. maxima* var. *sumatrana* Beccari, Malesia III. **(1886) 3. — Planta robuata «csrn)** ens. Caulis 6—10 m altus × 8—12 mm crassus, U-iiiotmst v. siiliiyliiniricus, glaber, internodiis superioribus 2—5 cm longis, alatis. Folia **<5—-io an Inu.**a × 7—8 cm lata, coriacea, petiolata; petiolus 4—10 cm longus, ½-**(UDpleiicaulh olnin»<t .tlue li.-isi lei**iter expansae, oblique fere ad n **odtun taferioran** decurrentes, medium versiiB "i mgustatae, gradatim in hiinmnm **impli**tae; lamina **elliptkn v. I**ato-lanceolata, apice in cirrhum attenuata v. leviter peltata, juven**iim fcmt-**gineo-pubescens demum gla l>t« el niinutt* **puj**ctata, ucrvi ton):itutiuitUea in \iaria 7—(0 **dfepdiitt, onwei pan taUmu eKccpto** a basi orientes, par intimum 7—**-8 uim a coitii** i-....'Kn **fit** H ijuurUt pjjri e infe**rinna,** p»r *....**indura II-—i** 4 mm, **par LerUtno i6—to mm a cutUi remolam, \m<**ia reliqua proportione decrescente, nervi transversi approximali, **obliqui**t ascendentes; cirr**Inu SO—35** cm longus cylindricus, gradatim in basim ascidii recurvatam an**iplialu*;** ascidia 10—20 cm longa × 4—7 cm lata, juventute **r.-i-niu'inrv-]**pubescentia **riimin •**glabra, dimorphia; inferiora ampullacea v. ventricosa, altLn **veatralM** basim **ventn** 5—(» nun latae, ciliatae **r,** BOP ciliatae, sursum ad **10**—ISnmihul peristoiiiio in nervos |prominentes aliquanto abrupte angustatae, os fere transversum postice leviter elongatuna; a«ci>ita tupiTKir infundibuliformia, alae ventrales angustatae **T, mi** DCTVOI **prominoi**ntes reductae, ob oblim**m a** !>«*< ice in e**JJum trtani** elongatum, superficie **ririd il**regulariter p**nrpunro-uia-nilatA rl afeobu; p<**ristomium (5—**10** uim *Uuiui,* margine exteriore ± expansum, interiore incurvatum minute den-Utum: npi'rruluiii **orliicular*;** extus sparse pubescens v. glabrum, intus iiiiiii>!ult> T»ri««r magiiiludiniH d.nse dispersis obsitum; calcar 6—8 mm longum planum; ascidium intus fere per totum nitidum glandulosum et detinens. Inflorescentia 40—60 cm longa ± gineo-pubescens; pedunculus 10—15 cm longus validus; pedicelli 20—30 mm longi, tenues, basim versus saepe bracteolati, *WAWi* **v. tpiec ncttnl tmillori. S.'p«Jn 4, obo**vata, extus ferrugineo-tome**DIOM,** irjtiis clninJiii is multis minutis dense dispersis obsita. Columna staminea sepalis ae iijuh*, **gUhra; a**utherae *ii* — **30, •l<t)»u<-, puna'**, l discriatae.

Ovarium obo **Yuluro, ferrtigincn-puboitceiu; lobi stiginaium triangiili. Capsuln JO—21** mm longa ± cu **rvatfij vntvat* bruBaeo-nii** idae sp **M-•** *pnbi* rulae v. **glnliruc, raro glanduloi** ae. **Scmina 7 — 8 mm longOj per** embryonem ferruginea.

S. *W.* **Ualajj** sche Pr **oTiiiit; Sumatra: Bei Sil** boga (Tey **mnnn n. 535 in Herb. Kew. ex Miqiiell, iu I** Herb. Calc., Kurz don.!, utraque sub nom. *N. Boschiana* var. *sumatrana*, **in H*rl>, I:** ot. Bog. sub nom. Nepenthes sp.!).

I'd **apuanische Provinz;** Ne **I- I.IUN** ea: »Nicht selten an der Küste des Mac Cluers *'"Met* in holländisch i ?Veu-Guinea an r]en **Sandsleinabh** ängen« (**Warburg** n. S05«l in **Herb. B** erol.!).

50. **N.** «chinoitoma **Book. r. in Dl** Prodr. XVII. (1873) 95; Bec **cart, MaJesla** III. (18^3) 9 t. II.; Macfarlane in Ann. of Hoi, \I|. (1*93) 133. — Fwlin fsohim *u* ota) 4S—60 «n longa X C—1) cm lata, fan **rl'** a v. stibcoriacen, pt-'liolala: polioins A—8 cm longus, alii'! s, alae **nieJio** angustatae v. 0, ad ba **lo lavilir** <\J»HIISII- et $^1/_2$-amplexicaules, **turniia** in laminain {rraiinlim mnplialse, **rapre** aiiilur. **mbtm** ± fusco-hirsutus; lamina u **Hif.** ico-lanceolata, apice acuminata v. pel iU, mn:gine ± ciliato-denticulata, nervi longitudinales **in** |t-.iri;j **N — 9 diapositi, pnr iuliruimi s i c i** um, par **s>->uiitliini t 4 — n n i m** t **pur Iciiiiunt 20 — i i u i i u, pur quartan** 26—31 mm **• ;:ir ijuinlnni** *[in* **— Hi mm a ci•"** !UJH $_T$ **pariarctK|im)>roportiiiii<** decrescente, ne **rrttniu<**versi oblique ascendentes sinuosi, para ta remo **Jleli, 5—fi nu** n inter se distantes; cirr **li"K fio—60 cm toflfus, valiJws, u^|iialut** $_T$ **rcrt** us basim ascidii recurv **itiuitlei** iter ampliatus; ascidium **12—10 cin Jooguoj** × 4—5 cm latum, subcylindricu **n, a Irfiii ail mi** dium gradatim expansum, dein os versus con **Uw* tsm,** :*j'.. rse fusco-hirsutum usque glabrum, alae ver **-'rnJon «»gus'** ae non cili **•»«, O» i>** vale obli qutun in collum triangulum leviter elongatum; peristomium **1• -1** a **nun (atom,** superficies in seriem exteriorem et interiorem dentium **• 10— 1** *i* **mm loi** gorum inc **irvuntin •** lissecta, dentes exteriores pyramidati apice meatu singulo, dentes interiores **lnli, I'l.nii. j**—3-lidi et eodem numero meatuum; operc tlinn ot longum, **mtoi glandulo** sum, glandulae per medium magnae. *mzrsmrm* **v^rau p«rr*e; c«k** < i 2— **I** 5 mm longum, flexuos -mu, obtus **•mi; Rt'niifini Enttn** per di **i drum enperitts glnunini T. pui-pt** reo-coeruleum, **;'.'1111** et deducens, inferne viridi-luteum, nitidum, glandulosum et detinens. Flores et fructus ignoti.

S. W. Malayische Provinz; Borneo: Diese Art ist nur in zwei Blättern bekannt, die Beccari bei Sar **iirak in Kutcin| upMrnmrU bst. Eta*** s dieser Blätter ist jetzt im Herbarium Beccari, **la» afidm** im Herb. Kew (Beccari n. 111').

51. **N. Burbidgei U** ook. f. ex Burbidge in Gard. Chron **n I. I8&1 84; hurl;** dge, Gard. of **Suii. •** ine nom. (**1880**) 107, **ap p. 343;** Beccari, Malesia **til . 1 •** 886) 6. — **I'lnnla robmta, alle wnnHt'im. <l»iilis 11 —15 ra aJtm X II — Ilimiu rruistu, «** cute **lritmctjlun** $_t$ **obtti** v. jugosus. **juventul«** brunneo-puberulus demum punctatus, internodia in speci **nintbuA** notis 7— **10** *na* **longa,** alterne angulis duobus alat **• r, jugotn, nn^tUo** tertio nu **liu Folia 10** —35 cm longa × 6—8 cm lata, coriacea, longe-petiolata; petiolus 7—10 cm **11 loftgm, aUtoa, «U** e medio angustatae, basim versus gradatim expansae, $^1/_3$—$^1/_2$ amplexicaules et ad nodum inferiorem . . decurrentes, aliquanto abrupte in laminam superne ***x(Htn«ar; Umioi «•** ptica in cirrhum attenuata, supr **t gUtbnt vt l^niin** eo-punctata, su **Mus** sparse p **abnreat** *mqut* **glabra 1** punctata, margine de **DM rrrntf?in** eo-pubescente, nervi longitud **titles in pa** ria 3—4 dispositi, sub-marginati, par intimum 18—30 mm, **i'«r** secundum 21—35 mm, par tertium 23—38 **• i.iiii.** par qua Hum *1* —39,5 mm a costa remotum, nervi transver **• i radUatc* 1** ecedentes, inferiores oblique nervis longitudinalibus conjuncti; ci **rriuu ||** —25 c **i) lonpij.** × 1,5—2 c **m Utui ± brno«o-** pubescens, in basim ascidii recurvatam ± ab **upic tmpMifiw; a*** cidia 6—10 cm longa × 3—5 cm lata, ut cognita t **•ronowofphi* >c<i «<tmM** ile dimorphia), infundibuliformia, ad os leviter **-f fOfttrteU,** ± : **ubewratSft t. MbhimtUi, MOB a o t o M** sub **periitiwttii) in»tnicla,** *mart* co-alba purp **uno-u.«rui»ta.** alae ventrales infer **ir furtna BWIfianni pri** minentium evolutae, **tlcttl** medium versus ampliatae ciliatae, os versu **1** ± angustatae, os circulare tr **|Q»>** ***rr»»im,** postice in collum elevatum; peristomium **x** —**11** *wan* **I •t •**m, cylindricum, aequale, postice in collum 1—2 cm elevatum, crebre albo- et purpureo-striatum; operculum late cordatum, **nurainf ui** dulatum, extus sparse puberulum, purpureo- et albido- ad

viridi-striatum, intuI *bUi* r.diii.iliiin. .-mina **mlida i**nultiglan**lukisn,** superficies per totum glandulosa, glandulae circ**•tares vulgu •1 ifl'u-**ae; calcar 2.—**10 !•"**n long**iin CP«B>--I**m, **abttuum,** pubescens; ascidium intus per totum uiiidum, glandulosum et detine-- - area superior postice triangu**Jaria (J!.V**ea et deducens, glandulae supra multae, m**iiuii ir**, infra **nMuorM M pttucion i,** flores et fructus ignoti.

S. W. Malayische Provinz; Borneo: Auf de**ta Maria Pw**ie Spur des **BeiT**es **Jinn i**alu a**I 1000—1400 >**n (Low!, Burbidge!).

Noln. Cm in spi-rii! imi'brae specimina a cl. Low primum lecta sunt, qui eam ap**|-nil*** vit "the painted Nepenthes" (in Herb. Kew.). Quam speciem post annos triginta Burbidge **a** collegisset novam esse cognovit.

5*. N. Boschiana Kotiliii^, **Vert**. Nat. Gesch. Bot. (1839) 25 . **1 e(4 f. 39-**54; Blume, **Mun.** lioi. lugd. batav. **tl. [198**2) 8; **'•**iq. **!** ,nd. bat. I. p. 4 (1855) 1074 et Suppl. i:.t. ll<...k. *f.* **m I***. Prodr. SV1 (1873) 98; Beccari, Malesia I. (1877) 214, III. (1886) 9 in jtarlc sul> **n**om. *N. maxima*: **Buri**dge, Gard. of Sun (1880) **107**: G. Beck in Wien Ill. Gart. Zeitg. (1895) **tsi: 101**. *N. Boschiana* var. *sumatrana* M**(***I.* **). .-.** it*—; nec Hook. **r.** in DC. Prodr. l. c. **•« (iimc** *N. Treubiana* sunt. — Planta robusta, alte s**clindens. Cuidis 0—10 HI alt**us × 8—**II im**n crassus, subtrigon**it, nlnt**us, juventute f**Trajriiico-liirBiUiis domain 0***l'**t**»>- **F°1'H **—3° ri» l<mR« X 5—***1*** cm lata, coriacea, petiolata; petiolus 4—9 cm longus, alatus, ½ amplexicaulis, alae amplae, ad 2—3 cm decurrentes, sursum gradatim in icrricam attenuatae; lamina elliptico-lanceolata usque ovata, apice acuta**, copra ftialirn, nui.i -±z Mftiwa, Mtbtus l»ruuni***>4iir»uU** demum brunneo-punctata, nervi longitudinales in paria 3—4 dispositi, par infi**mum 18—?**0 mm, par secundum 21—25 mm, par tertium 23—28 mm, par quartum **- i—30 i**mm a costa remotum, ner**vi tnuuner**si irregulariter **radunttt.** *kartw*dentes, **1—3 tm**n distantes; cirrhus 20—35 cm lc dldus, sursum gradatim in im ascidii ampliatus, pilosus v. puberulus, demum glaber; ascidia 20—35 cm longa dimorphia v. trimorphia, inferne viridia v. rubro-viridia, superne et per operculum pallido-viridia, purpureo-maculata; ascidia inferiora 10—15 cm longa × 7—8 cm **n l«u,** urceolata, alae **TfBtrmtes «j**mplae expansae, os circulare, postice non v. leviter in collum elevatum; peristo**iain** .'-—10 mm latum, aequale; ascidia superiora subcylindrica usque infundibul**iformia, >>a»i**s leviter ventricosa, alae ventrales inferne ad cri-I0« 4l)»m»f«« T. nervos prominentes **n-**ductae, superne **gniUttm o« Ttimm [a «Us rili«!«» aonpJialii« rrl n n m n** *I*orma **• . . tin** prolongatae, **** oratum, {wilier in** collum .' **— 4 cm alto Hnrtpai**um; peristomium 15—25 mm latum, obliquum, margine exteriore antice expansum, recurvatum, margine interiore incurvatum denticulatum, postice gradatim angustatum et in collum elevatum, striae distinctae prominentes; operculum cordato-orbiculare, extus ferrugineo-pubescens et glandulis parvis illecebrosis diffusis obsitum, intus basi in carinam auriculatam ampliatum, glandulosum, glandulae per medium magnae, sparsae, ad marginem minores copiosiores; calcar 10—12 mm longum, ferrugineo-pubescens; ascidium intus glauco-purpureum, opacum et deducens per cinctum angustum sub **I "ftsLuti.** io et per collum, inferne nitidum glandulosum c, discretae. Forma tertia ascidii media inter duas supra **1.--**criptas producta est. Inflorescentia 30—70 cm longa, dense ferrugineo-hirsuta; pedunculus 6—10 cm longus, in plantis ♂ brevior quam in ♀; pedicelli inferne biflori superne uniflori. Sepala ovalia extus et margine interiore ferrugineo-tomentosa, intus glandulis rnnnnnn niffusis obsita. Columna staminea 4 mm longa, infra ferrugineo-pubescens, supra glabra; antherae 8, 4-seriatae. Ov**triiim mbtfahdn**gulare pubescens. Capsula 15—25 mm lon**pi, tilitgunntd m«ti»l»U** + *pu*bescens demum nitida; lobi stigmatici sessiles, obscure bilobi. Semina 7—10 m**nJo»*.i**, tenuia; testa circ**unt«n>i**ryonem brunnea.

S. W. Malayische Provinz; Borneo: Auf dem **Bug Sak(wn,h*v**g, 1000 m (Korthals!); auf dem Berg Mooloo (**l.nv)**, Beccari!); bei dem Flusse Lawas (Low!, *Burbidge!); auf dem Berg Dulit, 1000—1500* *** m** (*tl*aviland-Hose, n. 3304!).

Einheim. Name: Dawon-sompitan.

53. **N. aUts Bl**neo, Fl. Filip. ed. 1. **1837) ROB, ed, t. (184**5) 555, ed. 3. III. (1879) **214, IV. I**73; Hook. f. in DC. Prodr. XVII. (1873) 99; G. Beck in Wi*m* |ll.

GarL Zeitg. [1895) 221. — Ptanla krreslris *. epiphytic*, Mandens. Caulis I—;i *m* •Km × 8—-10 mm eramtl, obtuse iriannus. ramosus, jnvooUil Lomenli^ns den um glfther, virid lifi Ufque pafpuren*. Folia 10—30 cm Ion. × 2,1—i rm liit.ij licrl acea v. subcoriacea, pet iotntaj peliolus :s—Q cm luneu-, ad 1/3—1/2 amplcs suits, til atus, alae ?nj>lntini in luntiiimu Kursum dilutatue, Miprn fere ghbru emn areis aJdllaribtts ferrugin teo-liirsutis, nibl us pilis dispersis obsiLae; Inmiiui Hli|itica usque laocCoJai a, apice superficie superiore cirrhi acuminat', jTivcnilis fnsc<j- ustpu ferrugioeo-pi bescens demuin glab ra et *tusat-puadnU,* norvi lonpiudiniik-s in pat-iu 3rarius i <linpoi.iti, par intinnnu 4« — a<> unit a costa remotum et oblique ab ea al n»ns 8p«Uo jiarlis I. rtiae basis defi- ciens, par secundum 14—27 MINI, par lertiuill 18—'<' nitn n i^nta remotur.i, iilniK que a basi laminae iiriens. oervi Inu sversi costae rectae v. ± defle \ac; drrbttt *it*—S- cm toogtu, infra lenua, gradatim id btwd MCWU unpiUUn, dt pubescens v. pi,.ber; ascidia 8—20 cm longa × 2—5 cin liita, naonornorphin v. dimorplila; *lnt*<riora c Uin- ilvi'co-ventricosa, superiora c •'Itiulrii'ti, h<•••acea r<l <'<>rinr'i>0₁ albldo-v. fuwiy- et ste Uftt0- pubescentia, nervi longitudinales et 'ransvcrsi aumcrnsi, ulao ventrnlei infra nervof promi nentes formantes, sursu i in Lnititiiiis cilUiu expansae*, ot OT&dom obtiquom, po tice -*Jz* in collam brer* Lriaagul are product mnj perintoinhun s—5(1 plerumquo 7—*H*\ mm latum, cylindrici itii, fri'ipi.ili' -v. t rissime regione exte i >re per ma rginem postico-later ilein late expansum, postice sub oper ulo marginilniH 1 arallelis et approximatis, crebre striatum; oper uliiin ntlii! membranaceu-("I, ovalo- ii d orbiculari-cordatum, extus stellato-pubescens, inlus rarina buvtili a riculata copiose gla ii'hilosn el glandulis rttoHIi MiiuuLi« cirrtilarit<iis nec larifcrii otwitum; *takar* 8— IS nun 1 ngum filiforme; ascidiu m inlns f*r Lotum dimi- diutii supt'rius cocntleo-purpurcuiii opactim el) educens, inferne luteo- riride ad fii* um pJUdma ghmditlowan BI detiiwiw, Wim n n o i gkndniae Diagoao csnuittc el isc rf tae. In- llni.'scentia 25—70 tan lun^tn, . ? looglor quam Q; pedunculus (0- '<o r m longus, fusco- v. ferrugineo-pubescens; pedicelli 10—! ; tmti tout: . interdu 'in t).isr versus bracteolati, iiniflon. Sej ala 4—5 mm longa, obov ntk, »^tus et margine intus tomentosa, intus porpi rea et glandulis multis nectariferis d-.[M-rnis nliitila. Coliininii »tm inea infra puberula, supra glabra; antherae g—*K* 0, uni- v. sub-biseriatae. Pislilluin 4-carpellatum, ovarium albido- ad ferrugineo-tomentosum; stigmata 4 tria ngula, •UICAIV. <Capsula 20—25 mm Itjjtjta, ftmiformia, niliitn, punt-lAtn T. spam*.[1] pubescens. Se mtnft II—I ! mm longa; l^st' circu a <-mi.i'\ onem undulata.

l*i.vinz der Philipplnen: won«n >bi ndant and form ing thickets by •treomi'* bfa zii ioiio in *auf* tfen Berg Mariveles in Luzon (William s!), u id bfa 1400 *m nut* dem Berg Apo in Südost-Mindanao (Williams); to s. La on: Vintar (Blanco); Tonglon (Loher n. 445!); Dupax in Prov. Nueva Vircaya (Vidal n. 3944!); Lampola (Warburg li. I 3 11 J ; au; dem Berg Mariveles in der •Prov. Bataan (Vidal, Meyr q, S 11 11, Merrill n. 3229!, 5181!, Elmer n. 5854!, 7022!, Borden n. 1375! Whitford n- 419!, Williams n. 402!, 66 if]; tor dm Berg Isarog (Vidal); Prov. Albay (Cuming n. 91T'); Imii.in F 1 B » *v* Prov. Inrantn (WhitT"rd n. 805!); Baguis (Merrill n. 4655!, Topping n. 76, Cu i ran n. 4832!); Lueban (Elmer n. 5854!); Trinidad (Willi m i n,)0(K !); Benguet (Loher n. (|<!; In s. Panay (Cuming n. IfStl ; Ins. B »hnl Cuming n. 1812!); lot. Miniliu ao, Bogobo auf dem Berg Apo (Williams n. •'.• 0!); Surigao (Bolster n. SB8l, t l i 0!).

Einheim. Namen: » !!«l-l.n« ldor; Cadung, Igorrote, Tuma li ;ili n< (Vidal); »Inomangcalao« (Borden).

Var. ,*i.* eeriaUta Macfarlane var. nov. — Carina operculi reducta v. 0, glandulae operculi paucae, mediocres usque magnae, irregulariter dispersae.

>lindanao: Prov. Mi*ami«, auf dem Ber% Miiin- lang ('fenrii* u. IIn'chinson n. 4C31'.

Var. *y.* biflor* M.v farlane var. nov. — Gl irp«ltijji^ operculi in medio parvae similes, marginem versus magnae et irregulariter dispersae. Pedicelli 2- rarissime 1-flori.

Negros: Westl. Prov. Negros, auf «l m Berg Selay (Whitford n. 1537!).

54. N. Veitchii Hook. f. in Trans. Linn. Soc. XXII. (1859) 421 ubi cit. cst descr. in Dot. Magaz. (4 8">8) t. 5080 sub nom. *N. villosa* err., et in DC. Prodr. XVII (4 873) 96; Masters in Gard. Ghron. (4 872) 542; André in III. Hort. XXIII. (1876) 192, cum icon. 261 quae *X. lanata* err. nom. est; Burbidge in Fl. Mag. s. 2. (1877) pi. 265 et in Gard. of Sun (1880) 60, in Garden XXVII. (1880) 542, pi. 237; Masters in Gard. Chron. s. 2. XVI. (1884) 780, f. 152, 781; Burbidge in Gard. Cbron. XVII. (1882) 56; Watson in Gard. Cbron. s. 3. XX. (1896) 239; Burbidge in Journ. Roy. Hort. Soc. XXL (4897) 259; Miller in Cycl. Amer. Hort. III. (4904) 4072; Veitch, Hort. Veitchii (1906) 484. — A", *lanata* Lindl. in Gard. Cbron. (4 854) 375 (nom. nud. sine descr.); André in 111. Hort. XXIII. (1876) t. 264, vide supra; Masters in Gard. Cbron. s. 2. XVII. (4882) 478; Bcccari, Malesia (4 886) 6; Veitch, Hort. Veitchii (4906) 302. — A[r]. *villosa* Hook. f. in Bot. Magaz. LXXX1V. (4 858) t. 5080; Lemaire in III. Hort. XVI. (4 869) 45. — A[r]. *sanguined* Masters in Gard. Cbron. s. 2. XVIII. (4 882) 808 nom. err. pro A'. *Veitchii* quae descr. et depict est. — Planta epiphjtica prostrata, dishVha, luteo-viridis. Caulis 1 — 4,5 m longus X 8—4 2 mm crassus, cylindricus v. plerumque elliptious, sinuosus nodis disticbis, internoditi brevia v. :h elongata saepe per superficiem glandulis allectantibus tuberculata, fusco-villosa. Folia 4 5—50 cm longa X 5—10 cm lata, allernanlia, saepe decurvata et circa arborem amplexicaulia, coriacca, petiolata; petiolus 3 — 4 0 cm longus, lateraliter compressus, alatus, alae verlicales medium versus angustalae, ad basim dilatatac et ad $^{7}/_{s}$ amplexicaulcs oblique decurrentes, externe glandulis alleelantibus dt tuberculatae, supernc in laminain abrupte v. gradatim amplialae; lamina late elliptica v. obovata, apicc acuta obtusa truncata v. cordata, in foliis nun ascidiiferis amplissima, in foliis ascidia magna gercntibus db reducta, supra luteo-viridis glabra, subtus rufo- v. fusco-villosa, marginc fusco-ciliata, nervi longitudinales in paria 5rarius 4 v. 6 dispositi, omnia a basi orientia et ad apicem in cirrbum incurvata, par intimum 15—20 mm, par secundum 22—30 mm, par lertium 26—36 mm, par quarlum 29—4 0 mm, par quiiiluui 30,5—42 mm a cosla remolum, nervi transversi versus costam angulo recto dispositi, costa crassa subtus prominens; cirrhus 8—20 cm longus X *I*—3 mm crassus, sursum in ascidium gradatim ampliatus, fusco-villosus; ascidia \t—30 cm longa X 5—8 cm lata, monomorphia, oblique inscrla, cylindrico-ovata v. subcylindrica, luteo-viridia rarius rubro-viridia maculis purpureis, fusro-villosa, alae ventrales expansae ciliatae basim versus angustatae ante os auriculatae, v. alae angustae, leviter v. non ciliatac, os ovatum obliquum postice in collum triangulum elongatum; peristomium 4 5—60 mm latum, anlicc angustatum marginibus incurvatis et recurvatis, lateraliter extus late expansum et ad marginem planum v. undiilalum, intus ifc indinatum marginc pectinatum, superficies per marginem interiorem dense et crebre striata, striae marginem exteriorem versus divergenles, luteo-viridis v. rubro-viridis; operculum 4—8 cm longum X 3—5 cm latum, ovalo-ohlongum, luteo-viride, v. rubro-viride, cxtus fusco-villosum, intus sparse villosum, basi in earinam auriculatam expansum, glandulosum, glandulae per medium magnae, ovales, marginem versus minores; ralcar 4 5—20 mm longum, recurvatum; ascidium intus per collum triangulum glaum-viride, opaeum et <leducens, ab ore inferne viride v. luleo-fuscum, nitidum glandulosum et detinens, glandulae superne parvae, immersae, inferne magnae, ovales, discretae, *zh* exsertae. In-Ilorescenlia 25—35 cm louga, fusco-tomeulosa; pedunculus 4 2—4 5 cm longus; raccmus subdensiflorus v. densiflorus; pedicelli 8 — 4 0iftm longi, billori, rarius versus apicem racemi uniflori. Flores 7 — 8 mm diametro. Sepala obovata, extus fusco- v. mfolomentosa, intus glandulis mull is minutis dispersis obsita. Columna Klaininea tenuis, sepnlis longior, sparse villosa; anlherae 8 uniseriatae db convoltilae. Ovarium ellipticum, rufo-tomenlnsum; stigma pcltntuin (|uadrilobalum. Capsula 25 mm longa, lineari-lanceolata, nitida, sparse villosa, valvae lanceolatae stigmate piano triangulo coronatae.

S. W. Malavische Provim; Borneo: Auf dem Berg Gunong Mooloo, 300—900 in (Lobb n. 14");!); Gunong Mooloo und Lawns Flust (Low!); Lawas FIUBS (Burbidge!);

auf (Inn HIT/ Suitnln.ii- I., i Kiii.;.... n. . . . .;'

S3, N. itenophylla Matlorc in Card. Chnm. B. 3. Viii. fiS9n) 240, XI. (IS9*} 404 cum icon. 88, 401; B. Beck in Wicrt. |)|. Gurl. Zeitg. (1895) 324; Veitch, Hort. Veit. t:lui [190C) 303, 486. — Plaiita gracHis, raraosa, 80;-ndens. Caulis :|—3 m longus X 3— ti mm crassus, rylimiririus, glaher, minute fusno-jiunrlnliis, intcrnoiiis inferi(^ bnnnbafi, sirfierne •—3 rm loii^ij. Folia 15—ifi rni lujijrn X 1—'!.•> era lata, subcoric.cea, peUolata; peUolos 3—6 •m longus alatus, ;lac a bast lamiuut' deorsum gradatim uni-tulalne c?t vcrticatiler directae, basim versus leiKcr eip ansae et ad $^1/_4$—^{J}; j amplexicaules: lamina lunccolata v. elliptico-lanceolata, E&fene in alas petiolares et suipcruf in cirrhum atteuiiBln, supra glibra •"• otus fusco-punctata et sparse pubentula, marginib at- lerilcr dlinlir:, tervi longitudinales in paria 3 dispositi, oinites *a* litisi folii orientes. t»nr inliiniim 6—8 nun. par secundum 8—11 mm, par tertiim 8,5—40 mm a toata rt'imilum, ricrvi Iransrerid nalJtT oUmri, irregulariter ascendesites <t rcliculati; rirrhui 10—50 cm longus, gracilis, concavo-convexus, sursum leviler am; liatus, in hubini ttsi'iilii *ibni|(tc' rsfiiiiniiiifi, ± Iusco-punctatus et puberulus; ascidia 8—15 cm longa X <,5—S,5 cm lnla, lubulosa, inTerne ±; rentrir>'sa, medium veP«ua trajustata, dein biirsiiiiL in os ohliqinim. expaiisa, palKdo-viridin naculis et aieofis purpuicis difftufs, :± fusr.ii-|>uli(.'rujQ, oJoc ventndea tnfelnA in nirvos reductae, medium versus gradKilim expan sue non dliatae, lupcrac 2—3 mil latae B! sub iieristomio abrupte rotundalae et ciliatae, os 2—5 cii X I—J_T5 c«i ovatit-longatum admoiluin obliquum; peristomiuiD 5—7 mm luhnn, Tftldt oUiqauni, cylindricum, antico i)uato ponlice anguatiiut, itiorgiiiibtu sub oporculo appositis, ••rehre strinlitm. m).rum; operculon i—i cm longuni X 1)5—1,5 on latum, ovato-rorduiuin, cxlus fusco'pubcruliun cl piwctttlnm, btis ad basin csrii a media levi et glandulis multis parvis circuliiribtts i) spersis obsitum; calcar 7—10 i m longum, puberulum, filiforme; ascidium niMis *p*<r dimidlima *v.* dual pirte supvriiTrs plaii«i-[puqiiirPUtn if. pnrpiire o-macultUBl, I^KII HIM el dtdiif.ns, inferne nitidum glandulosum .ct iletinens, gl•inliiluc copiosae, discretae, expositae. Kiurta el few us ignoti.

S. W. Malayisc In- ProTlna; liornoo (Curtli pt hort. VrfUAlJ.

SG. H. maxima Kcimr. in lill. ad Nees v. Esenbeck in Ann. sc. o&t. Ill. (1824) 369 t. 20, f. 2; Bmm', Mix. boi lugd. batav. H l(852) 8; Mi|. PI I. d. batav. I. p. I (1856) 1078; Book. f. hi I-C. Prodr. XVII. (1873) 105; Beccari, Malesia III. [IBs6) 9 ex parte. — *N. Celebica* Book. f. in tJl. Pi-ir. XVII. (1873) 100. — *N. Curtisii* Mast. in Gard. Chr• -ii. II. (1887) 684, 689 f. 133; Hook. f. in Bot. Iigas. [i891; (. 7138; Masters !ti lllu-tr. Hort. \\\\. (1888) 65 t. 59, et in Gard. Chron. II. (1889] 6«1 F. 90. — .V. :•</•'•' G. Beck in Wni. HI. tinrt. Zeitg. (1805) 191. — Planta saep>f rolmsi.i alte - nideiu. Caulis 3'-11) m *ai* us × '.0—12 mm crftssus, juvt'iiilis fulvu- v. fcrniyineo-pubescens, demum sparse pubescens v. glaber. Foli» tu—40 ttn *U>v*gc' × 5—S cm lata, sub-coriacea v. coriacea, petiolata; pet<>*at* 4—10 cm loiifms, ttlnlus, alae verticales mecllo angOitaUie, buim versus gradatim imp! iatae, divergentes, ad $^1/_2$—$^2/_3$ amplexicaules, basi non v. leviter decurrentes, in laminam sursum aliquanto abrupte ampliatae, marginibus fusco-ciliatis; lamina elliptica v. ol longo-lanceolata, lucido-viridis v. luteo-viriIti, «uprn piabra, subtus juventute stellato-pubescens demum fusco-punctata, costa supra dense hirsuta demum idfJ.-il1r-.-i, -ubl.nl ferrugineo-puberula, marginibus ± ferrugineo-ciliatis, apice acuminata, rotundata, v. i peltata, nervi longitudinales obscur:. in dim leriore LIIMIJI iae in paria 3 dispositi, par intimum 21t—3') mi, par secundum 27— in mm, par tcfUum 18 t" nun ti i costa remotum, omnes inferne oblique in costam vergentes, v. nervi omnes a costa ol•liqiie orientes et irregulariter nervis Lnmnrand s conjuncti; cirrhus 15—25 em longus, sparse kirsutas ft siclhto-pulM'sr^na, »unttitn in tiusim a* idii recurvatam gradatim nniplialua; ascidia (0 — Sf« cm longa, × 3—5 cm lala, nimorphia v. trimorphia; inferiora inferne ventricosa superne cylindrica, alae ventrales basi 0 v. angustae dein, nbruptc amjiJiatae, ciliatae «l nd IM continuiritie; Mridin hintermedia cylindrica, alae ventrales angustatae non v. vix ciliatae; ascidia superiora infundibuliformia, alae ventrales ad nervos pro-ami es reductae, ascidia omnia luteo- v. pallido-viridia, diffuse maculis et areolis

purpureis **obtecta, i** jmlji-scenlia zopu fulva v. i. nugineolomenlosa suit perist.omio insiructu, o;; **ovftlum** "liliquuin **postice** in crilliini ii-i;iiiL'uliiiii **eloDgalum; peristomium**

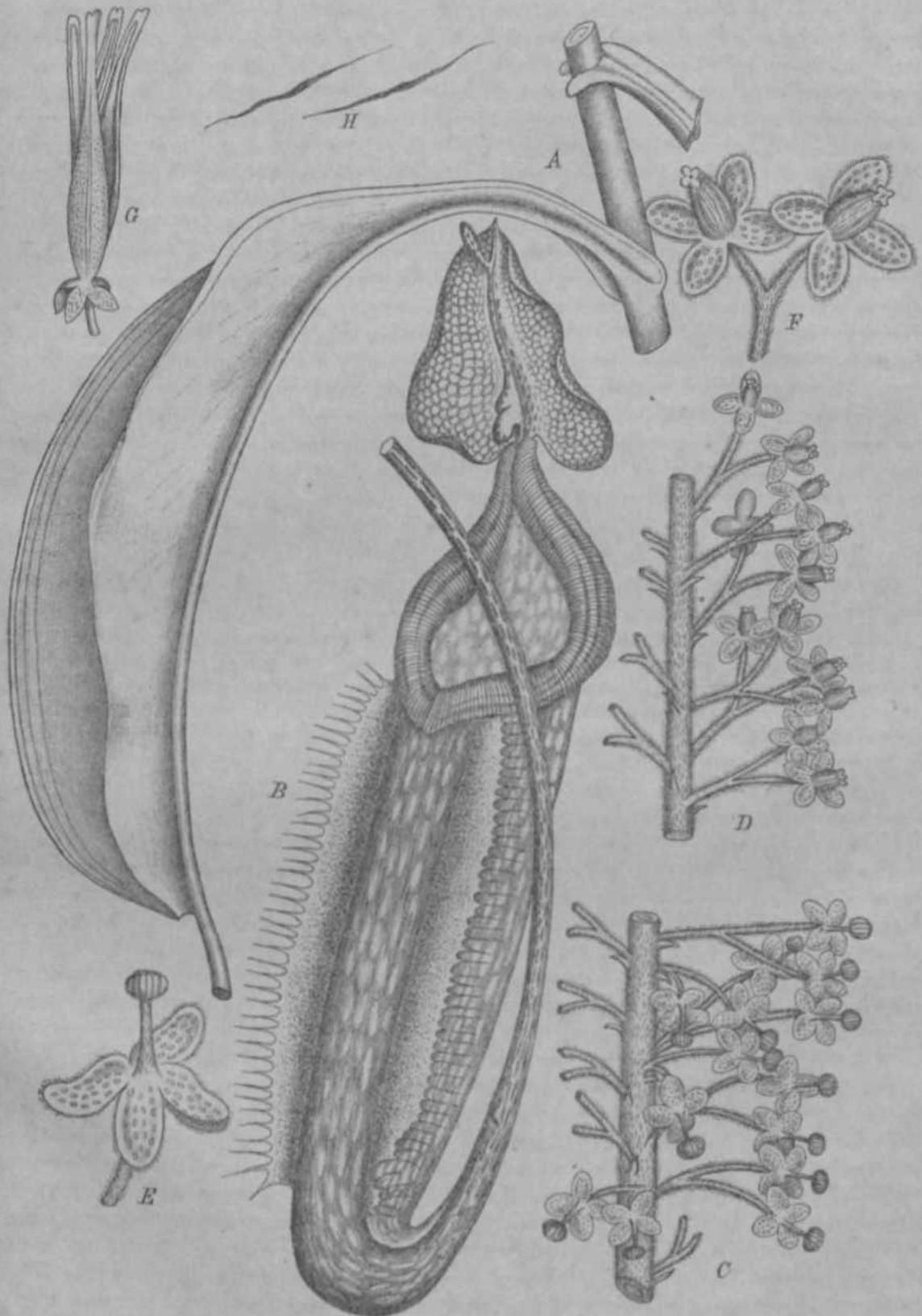


Fig. 18. *Nepenthes maxima* Reinw. *A* Caulis et partes foliorum. *B* Ascidium. *C* Inflor. pars. /' **lorfor. S paw.** /? **i**Fl. ♂ auctus. *F* Fl. ♀ auctus. *G* Fructus dehiscens. *H* Semina. (Icon. origin.)

fO—30 mm laluro, i . . . , margine exl eriore sinuosu* in iticulttum, pa rte postico-laterali ac i inarpinem exLeriortm lute exptuisiiin, ad umryinein interiorem den Ltculatom, poslicc in collum diTiinhim, siipeH1rie viridi-jmrpim'mii nd parpurein n; oper rcoJum 3—6 cm a longa n × 2,5—4 cm J [SUHD, contatttat, eitns gpursc et^Iltil'^piibf!*«on« v, gluhruuj, iulm uervo iiu'diu pt-'reursum, qui bstsiiu versus in carinam (ttiriculnUm rimpUcttm — mriiK 3—3-lobntam — expansus i?i versus npieem in calcar elongatum prolongatus est, siip<?rli<ie basim v TSUB p^r rjtruBfitii ct marfrinem versus copiose glan luiosum; '-iilrnr *it—\Ti* mm Ionium OUfomt, » collo 5—8 mm s ih insertione opcrculi orioos; nKci-litun intOl »tih innr^in^ ct per colluin frhmmilimi v. etiam ad dimid ifim glaocuin v. ghtnco-^mrpuiwua opacum <• deducens, inferne glandulosum et detine :is. (I,I).I. scentia 30—50 c .in longa; peddnealna 10—'(5 cm lon^Mn viridiK, pubi scens; racemus simplex laiiflorux; pedicclS 20—2 I nun lougi, grarilL'tt, ini' in.- !.i(!.)ti. popcrne uniOon. Sepiila elliplicn, titns [>u)ie«rcntia demtun Bubglutiru. ifitm glttlldulota. Colunuu itaminea M.'imlis awniiloiipn v. l«mifi«r; anlln'i ae 8 onbKjrtatae. Of« ium ovato-quadrangu dare, suk&Uim, |>ubcsceiu; siianm i^lobatum, Capsul[1] 30—35 mm long*, fttfifomtlt, epw^e pubescens, punctata. St'in'ma SO—15 mm lODgtt^ tetla rirttim entbrjQneai lirunHiM, »lis rolore •tmnnteo. — Fip. is.

Centro-malayische Provinz; Celebes: A ii clena Berg Uiimengan {llcinT-i rdt 11. I537!j; oboe genauen SUndoi t (Mey••r! = *N. Celebica* took. r. 1 c.); Gutuing AbnawH Fa rat en D :tol!), — Aittboina: Oha genauen Standort 1 hrittopher Sm•Hi n. i;i h, r«j -in 11.1. 11. leaf, B< ccari).

S *W*, Malayisch I Provlox; Hornro: Sarawak (H.vmrt 11 2386!); lux-SUndori I a I is!).

Papuaniacbe Protins; Neu-Guinea: Aufden Berg Arfak (Beccari!); Sc'gari Gegend (Forbca n. etatj.

Nota. Ex synonymia speciei supra descripta «ihn cutu *N. Bosch* rtcrna liano pturum intelligi satis constat. Foliorum itruelurt ol vi'iii*, ii«i'iilit fi(itir•>ore, o |temili iluobui |iroc«iiibui, tnir'u et seminil nib maun is, facillime a ceteris distinguitur. Reinwardtii specimina *N. maximae* in Herb. Kew. asservata atque specimina *N. Curtisii* Mast. et viva et exsiccata itie ullo itubio ad unam eandemque speciem pertinent. Descriptio Reinwardtii forsan ni nte bmit #ed «c- •rata omnino definita est.

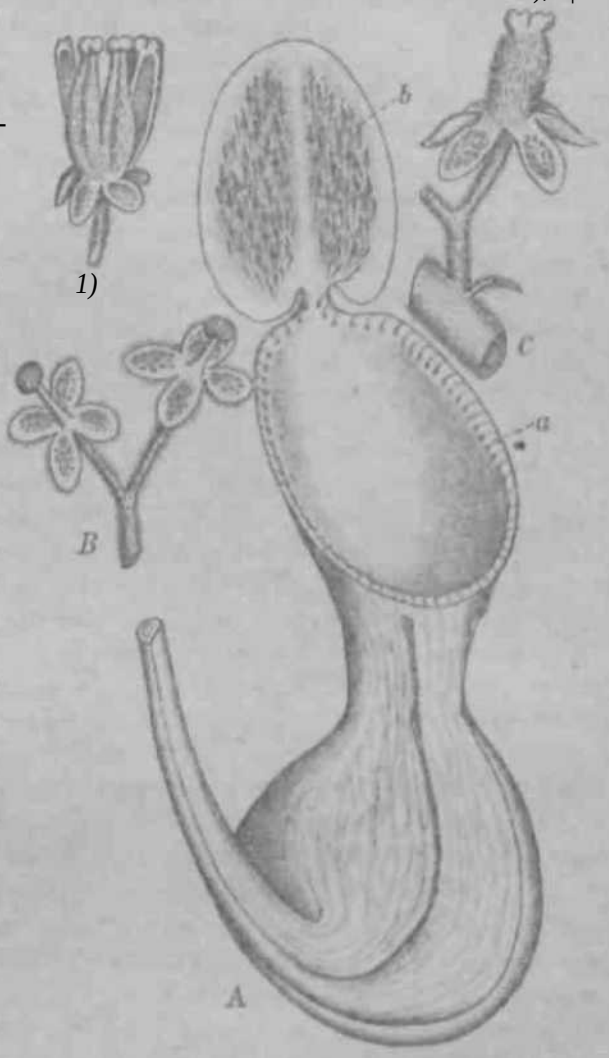
57. H. lowii H'»'k f. in Trnr.*. Linn. Soe. Wit. fl»5«) *JO t 71, ol in DC Prodr. Wll, |l 873) 94; Spencer St. Jo i.i,, Life For. Far East II. (1862) I »79, 33*, 343; Burbidge, Gardens of Sun (1880) 90, 58 *i* ; Macfarluu in Ann. of Bot. VII. (1893) 429 et seq., pl. 20; Whitehead, Ex -tor. Mt. Kiua 1alu (1893) (66; Burbidgu in *toum.* Roy. Hort. Soc. XXI f*897) 258. — fl.inttt robiHCiif f^rrcitlrif T. eptpttvttca, »oniideii». Caulis 2—4 m longus × 6—7 mm crassus, cylindricus, glaber. Folia SO—3 • cm long •» X •—10 cin lata, coriacea, petiolata; petio !ui R—8 cm longus, ± pubcr>lus, oJni us, basi oblique ad 1/2—2/3 amplexicauli, alae angustae verticales sur nin in I amiiiatn at>ni|it e ampliatae; lamina elliptica v. obovata, lucido-viridis, supra glabra, su.tus furfurui •- o-puberula, ner vi lojicitti'linaW es in paria 3—4 dispositi, sinuosi, |Hir hilimum 15—3ft HUM par secundum 30—43 mm, par tertium 33—47 miii, ji^r iinrtrlitui H5—50 mm a costa remotum, nervi transversi sinuosi, laxe reticulati; cir ;iiu>i IG— in cm longu», Yttli'lii-. in basim ascidii ventricosam aliquanto abrupte e pa i «»; «».i.||.i (Jimorphia lif—10 1 in luu| a × 5—15 cm lata; inferiora (fide Whitehead l. c. 166) pyriformia ad ventricosa, viridia, margine rubro-lineari; superiora oblique curvata, dimidium inferius valde ventricosum, medio constrictum, dimidium superius os icrni* gradatim et oblique expansum, per totum ... ;- viride demum brunneum coriaceum, alae ventrales ad nervos prominentes reductae v. costis sub peristomio jugo transverso conjunctae, os obliquum o ralum, j ostice in collum leviter elongatum; peristomium «im(tU>x erectum, margine aequali, non v. leviter reflexo, superficies interior re iDitl f Btl lata et serie orum glandularum marginalium obsita; operculum 6—12 cm longum × 4—8 cm latum, ••••«• sum concavum, ovatum, Imii pr< fundc cordat um v. «uhouriculttut:i, eitua «t iuai. i'[1,1] riore villosum v. brunneo-punctatur'*, ialiu KLU umluv Itingit 1 gidi< pe 1 l us

ulnmn[ue lineae mediae v. aequaliter dispersis e' t'tan-liilis **multis perittiei**cioideis immersis intermix iis **obsUoin;** calcar 20—30 mm longum attenuatu **m, SH)J** apice colli inse **rtuin;** iscid glauco-viride maculis rubro-fuscis de scum ter otum glandulosum, dulae superne parvae discretae ± immersae, inferne magnae, oarctatae, nnila e. In florescentia 20—30 cm lon . .; [icitutirTlluB (0—(5 on lonpt × 6—8 n m crassus; racemus densiflorus, ferrugineo-tomentosus; pedice Hi 50 — Sft mi ongi, Ititlori, basi bracteolati. Sepala elliptica v. obovata, extus et per marginem in- iorem puberula, intus per medium glandulosa. Columna stami . . . asr vill< sa, superne ^lal»r»un **iepal**a primoilia; **anthcrac 8—** mmn fu ulidtiri), | *(ri,* **unitcrial** ae. Ovarium ov ilum. *M* nse 'erruginco-pul escens; **ttigmi** i-lobum. Capsula 20—22 mm long urn X fi 1 mm lat um longum, ± cens, sti **pol** mul- tibus bilobis **expansft.** — **Fig.** i 9.

S. W. Malayische Provi-

neo: Auf dem Berge Kina Balu, itioo— 2500 n• **(Lovt);** auf ilrm kiau **Rucken** des Kina Balu (Spence **;r si. J** >hn); auf Kiiin **und** auf der> Mai;. i Parie Spur, I5i0 m (Burbidge!); **KIoii** and Melung- **ksp** il'-s Kni.i It.iln *[* bile head!).

CS. N. Mticfarlanei Beajnler in **Pro<**. Linn. Soc. (:905) 12 et it. '.ml Chron. s. 3 \\\MI. (I'H)5) **341,** 260, in Hook. Icon. p **I WIV** (1906) I. *8U, 28H5. — Planta scandens saepe epi- phytica. Caulis t—3 m altus × 6— 8 mm ITQUIIII, **i** Iritjtititi**K, suk**atus, gla praeter nillas l'f)lii>nim, **javeotlil** de nw fi?rnii(iiifi'i-liirsiiti].-. demum sub- glaber. Folia 6—20 cm **lungs** X **2**— 3,5 cm lulu, w ssilia, semiamplexic itilm, coriacea, o >ttu-Uni:c<*lnU ad oliiitaM, apice in cirrhum abrupte rotu nd«U, i.abra praeter • Lutjui «iipra i uberulam, infra glabra, nervi longitu .<iiu«lm HI |mi-in 4 dispositi, par intimum a triente inferiore co xtae orients et ab ea 8—12 mm remo- tum, l»«i secundum 10—14 mm, par terlium K)—13,5 mm, pi ur quartum 11,5—15 mm **a** rosU dinUin*, **n** ervi transversi obscu in, **reeUngule v.** iter obliqui irregulariter reticulati; cirrhus 10— 20 cm longu« aexju. *»im ascidii recurvatam abrupte amplialus, juvenilis dense pa escens demum supra ± s- cens, subtus gl *brr; i ascidia 8—15 cm longa × 2,5—4 cm lata, juvenilia ferrugineo-pubescentia dem arse pubescentia ad brunneo-punctata, pallido- v. albi purpureis, dimorphia v. sub- **Irimorpfa**ia; ascidia inferiora subovata v. ventri **rOM,** »lae ventrales inferne angustae, sursum **gTBdalhn** aiuplin tae et ciliatae, os ovat am nl.lii, uum in collu in (r>aiu elongatum; peristo tium antice **njtlDdrtcmn, ratrgii** exte rinrf po stico-late **r»li** leviter dilatatum, tenuiter striatum, margine interiore pectinatum; operculum 3—5,5 cm latum cordato-orbiculare, extus glabrum, intus setis longis unicellularibus rigidis deflexis et



*Vm, t*9. *Nepenthes Loreii* Hook. f. *A* Asc *urn* * fronte visum, *a* os glandulae marginalis, *b* oper- cnlum pllox tongos et glandulas depressas perithe- cioideas gerens. *B* Flos ♂. *C* Fl. ♀. *D* Capsula. (Icon. origin.)

plandulis magnis circuliiribtn neclnrilens intermixtis obsitum; calcar 8—10 *turn* longum ftmcilt:; ascidiuu itiius per trienU'in v, dimidium tuipiirius glttuco-purjiurcmn opacum et deducens, inferne nitidurn et glari>iii)osutn; usddiu superiom crlindrfca v. inftindibiiliforiiiM, hii^i A cirrhv *tin*upte ampliata, alae ventrales angustae jion rili.atae v. ad nervos pronin ntes reductae, os transversu*tu r.* lcviler obliquiuu, fix v. non in eollum •levatum; peristomium icqnak cjlindricum; A»cj<lium intus in forwis cylindricis per Iriciitem v. dimidium stif^rius glauco-purpureum et deducens, inferne glandulosuul, in 1ormis inrninliliuliforiuilnis per supierficiem U'ituigulaiu *ii|eriorem postice glauco-juirjpureum opacum et deducens, inferne glandulosum. Inflorescenti i 15—IS an)•onga, pedunculus 10—15 cm longus, juventute ferrugineo-pubescens de(man glaber; raeomus subdensiflorus; pedic(Mi (0—IS *mt* longi, ferrugineo-hirsuti, biflori, ad fufcam l>ract<'oUU. Sepal* 4 u, alia v. ovata, >\IIIR ferugineo-pubescentia, inlit-«t piiibrn «• glandulis multtii parvla obsita. Columna staminea sepa[is *aetjoa*lis, inferne ferrugineo-puberita, mtperne ginbra; antherae 6, uniseriatae. Ovarium bi[1]viter stipitatum, •tviiiiuui, pubescens. Capsula 44—10 mm longa, nil idn, sparse pubescens, valvis lanceolatis; stigmata 4 depressa, billoba. Semina 10—12 Bin longn, cimmi cmbi yonem brunuca cl i-igosa.

S. *W,* Hal ayische Pro^iur: Malakka: Auf dem Berge Gunong Bum bei ivrntl l&nij — lift" m (Murton n. 36, »E. G. R. — !'•. 10ng's Coll.« n. 7395!, 742I ; Gun Ottg Bob! um 2000 m (Wray u- 339', n. 1643'. n. 38i»!}; bei 1'erak (Scortech iui!).

II\III'MI;H' nrLIIiciuli'S.

Nepenthes **Alioniana** Mori. .-\ Millet- tnGjcL Amer. Her!. [If. (4904) 1071; Cal. Siebrechi[1] .unl *V.* adley (1884) i9; pan ntes ignoti, descriptio imperfecta.

H. amabilia Bort. ex Nicholson, >ict. of Gard. Supp1. (l»8[k]) 571; Miller in Cycl. Amer. Hort. Q| (1901 i "7*. - •ybrida inter *N. Hookeriana* et *Rafflesiana* similitadfne parenti* prioria, A»cirtra pal!ido-viridia et lurido-rubro-maculata.

N. Ameiiana Veitch in Gard. Chron. s. 3. XIV. (1893) 756; G. Beck in Wien. Ill. Gartenzeitg. XX. (1895) 147. — *N. Rafflesiana* × *Hookeriana*?. — Ascidia pallido-viridia rubro-maculata et mx-taLtt, operculum late ovale, extus obscure-viride, intus ± nibro-nmculiitutii.

Bri V^ilcli erzogen u trl 48U3 ausgestellt; von *N. amabilis* nicht sehr ver• lii-den.

H. Andrleyeniii Bort. ex G. Beck in Wleau Hi. Gartcnwitf. XX. (1895) 222. — Syn. *N. Morganianae* q. v. p. 85.

N. Amoldianie Hort. ex G. Beck in Wi.n. ill. >artenzeitg. XX. (1895) *at.* — Syn. *N. Morganianae* q. v. p. 85.

V. fttro-iangninea. Matkn in Cafd. ibron. •. 2. Wll (|88J) 8f6 et icon. 827; Nicholson, Dict. of Gardi. Il (1885) 435; Veitft in Joitrn. Koy. Hort. Soc. XXI. (i«97] 240; Miller in Cycl. Amer. HoL HI. (1901] 1073. — Parentes incerti at probabiliter *N. distillatoria* × *Sedeni.* — Poll* 15—30 cm × 8—Ij crn Jipifc in rirrhtim «t-tenuata; cirrhiM fan Arqitnlm; aaridin *utfcc* ie ± ventricosi, niptnU! olindrirn, rtiln'»-por]urea et ± luteo-viridia maculata, alae a basi4(1 oa <ontinuatae et ciliatae, inferne late expansae, superne ± angustatae, os obliquum; peristomium aequale cylindricum, postice leviter elongatum rubro- et pir|tui>'o-»tri.'um; operculum oblongum, emarginatum, viride et pi.rpu«o-!HI maculatum.

Von Taplin im Etablissement Such (Amboy V. S. A.) erzogen, und roa Veitch in *den* llaixl el gebracht.

V. BalfourUna Hort. ex Masters in Gard. Chron. s. 3. \\\l (IB9I) 90 et icon. 91, Desloges l. c. s. 3. XXXVI. (1904) 97; Veitch, Hort. Veitch. (1906) 304, 488. — *N. mixta* (*N. Northiana* X «•*" •• [= *Curtisii* Mast.]) × *Mastersiana* (*N. sanguinea* × *khasiana*). — Folia gl«brn. apice rotundata; ascidia 15—30 cm >< r,—I2 cm cylindrico-ventricosa, viridia maculi« patten iMfrnift [tui^mrria prr tnlai<a superficiem |>rnc<iitj TOI pra«clfm« «• «viw iltii oh*lU[t] alne a baai ad <w cmliwiaU*, kuge-

ciliatae; peristoruititti 3—6 mm latitin, **mir;:** ine exteriore ± •i mi. viridi- et nilro-striatum; opereuliiut 6—9 cm × 3—lci< subrotundatum i, riride jmrfmreo-mueiiliitum cl lLiiiiUnii, iiiiutt BJicem versus cludatum; axidium intus glauco-viride et puq>nreo-maculaton.

Von Tirej Em BiabtistCTuaal reitdi •rzogen, **und** (HCJJ ausg«'Mdli.

N. Boisiana **D**esloges in Carl. Chron. s. 3. XXXVIII. (1905) i79, **J.** ourn. d. Hort. 4. 7 I. i i i. M ; — *N. Tivoyi* (*N. maxima* var. *superba* × *Veitchii*) × *Morganiana*? (*N. Hookeriana*? × *phyllamphora*), — Ascidia cylindrica, elongata, pallido-**viridia,** copiose et irregulariter **nibr.**-macula**in, ttla«-** ae; c* **orate; ptritlutuiuin viridi-mbroiti; opereuk**m ova**tuna, eilus pailido-viride *rl* mi**ro-macu**ilatuiii, iut»» J>oii** profunde c**irinahit**a et per superficie**i glandalosuiB.**

Von **D.'vi ogei eraogen and 11**905 ausgestellt.

K. Broomeana Hirt. ex Lindsay in Trans. and Proc. Bot. Soc. Edinb. XV**H**. (1891) 2**17. — I**arentes **i^uidi.** sine descriptione, ergo nomen nudum.

H. cbelionii Veitch ex Masters in Gard. Chron. (1872) 542; Burbidge **n Ganlcn Will.** (1883) 493 et icon. col.; Nicholson, Dict. of Gard. II. (1885) 435; G. Beck io Wi.-i,. in Gartenztg. \\ . i -95) i 47; Veitch in Journ. Roy. Hort. Soc. XXI. (1897) 237 et icon. 239, Hort. Veitch. (1906) 304, 487. — *N. Hookeriana* × *Dominii* (*N. Rafflesiana* × spec.?). — Caulis cylindricus; foli**i SS—5))** c•n × 8—10 'in. g]sbro, peUofal**a**; petiolas c—10 cm longus alatus, basi 1/2-amplexicaulis; lan**linn loii^i'.-u, oblon^n, api'•**e in cirrhum attenuata; ascidi**i ^—11 tw** × **B**—7 cm la**te ovntu, In**teo-viridia et purpureo-**uiaciilutii, :iliif ia(i**e, a basi ad os continuatae ciliatae et angustatae, os obliquum; peristomium subcylindricum aequale, rubro- et pu**r**o-viridi-striatum; operculum ovato-cordatum, medio viride, lateribus ± purpureo-maculatum; **fUM-irlill**m intus glauco-viride et purpureo-maculatum.

Von Seden im Etablissement Veitch erzogen und 1872 ausgest**illL**

Nota. *N. chelsonii* var. ***exccHtn-*** Veitch est *N. c**li»m*i** (*N. Rafflesiana* × *chelsonii*, vide p. **81.**

V. Claytonii Hori. ex Mliter in C.vcl. AIIHT. **Hurt, lit** (tool) 1074, ex Cat. Pitcher and **Haada** (1895J. — siix- descriptione, parentes ignoti, ergo nomen nudum.

Tf. coccinea Hort. ex Masters in Gard. Chron. s. 2. V\lll i -82) 169 et icon.; Nic*n*\-son, Dict. of Gar«J. 11 (1885) 435; Rodigas in Ill. Hort. XLI. (1894) 153; G. Beck in \\ien. Ill. Gartenztg. XX. (1895) 223; Miller in Cycl. Amer. Hort. Ill. (1901) 1074. — *N. Hookeriana* × *phyllamphora*. — **i**olia 20—50 cm × 6—9 cm petiol**tu;** ian-ina lanceolata subcoriacea, apice in cirrhum attenuata, margine polite fimbriata vel *4enV*ata; ascidia 12—20 cm × 5—8 cm, inferne ventricosa, superne cylindrica, per totam superficie,'" **purjH**ureo-rubra lentiginibus luteo-viri**dibm, i,**[1]ae ciliatae, os ova**ttim** postice leviter elongatum; peristomi**ID s-—I**2 mm latum, rubro- et p**uqnireo-**striatum; oper-**culuiti ••**vato-oblongu**HI piilliilo-TJ**ride et **rubru-mu'ulutitti**a; ascidiu**i iuiua** glauco-viride **rubro-ntnculatuin.**

Vo**D Taplin ii» BUbliiMi**nent Such erzogen und bei Williams in London in den Hand gegchcn.

K. compacta Hort. ex Baines in Garden XXVII. (1885) 496 et icon.; Nicholson, Dict. of Gard. Suppl. (1888) 571; G. Beck in Wien. Ill. Gartenztg. XX. (1895) 218. — *N. Hookeriana*? × *phyllamphora*. — Parentes probabiliter ut in *N. coccinea*, *N. Morganiana*, *N. Wrigleyana* (q. v. pp. 79, 85, 89), at peristomium luteo-viride.

Von Taplin erzogen und von Williams in**i den** Httild v**e**bracht. Diese Hybride dü**rfIfl wobl i**mit der obengenannten zu vereinigen sein.

N. Courtii Veitch in Gard. Chron. s. 2. VIII. (1877) 441; Regel in Gartenfl. XXVIII. (1879) 369 et icon. 370; Masters in Gard. Chron. s. 2. XVI. (1881) 844 et icon. 845; **(ichol**son, Dict. of Gard. II. (1885) 436; G. **i.** ..eck in Wien. Ill. Gartenztg. \\. **i** 895) 487; Veitch in Journ. Roy. Hort. Soc. \\I. **i** 897) 238, Hort. Veitch. (1906) 305, 487. — *Nepenthes* spec. ?borneensis × *Dominii* (*N. Rafflesiana* × spec. ?borneensis).

— Caulis **d: purpureo-robcr** •t villosus; folia 2[illegible]• — 35 *em* x -I—T <m, •obscure viridia, subcoriacea, lanceolata, basi amplexicaulia; ascidia 15—25 cm × 5—8 cm, inferne leviter **rentriCoia,** r>»|nTnt: rrliudrirn, viriilio ±: pi[illegible]rpureo-macilnla, **alftQ** iicqunles **CUd**[illegible]tae, os fivntiuii **tevRer obliqnum; perbtomium crlindrlcum aequale;** operculum ova**torn, viride,** purpureo-niflcti];t!inn.

Von Co 11 **rt** iui **EtabUtwioenl Veilch i**rzogen. Nach Vei**tcb wtu**[illegible]de der Bastard mit **.V.** ***kybrida*** **and A', rtfi***ro-maculata* von denselbe**a hybridi**n Samen erzog**en.**

N. Craigiana Hurl, ex **Killer in C?d Amur. Boil** III. **im• i I07J**, ex Cat. Hort**.** Siebredil ami **Wn**dley (1889) 49, ubi descriptio imperfecta est; parentes ignoti. Nom**icu iiLjiliiin.**

N. cylindrica **Velteh in C**ard. Chron. s. 3. i[illegible] (1[illegible]8[illegible]: 521; Nicholson, **I)**ict. of Gar**t. Suppl** (1888) :." I. **0. B**eck in Wien. **IB-** *C,* artenztg. \\ (1893) 2[illegible].; Milli-r in Cycl. A**nier. Hart. I**II. (1901) 1072; Veitch, Hort. Veitch. (1906) 305, 488. — *N. distillatoria* (sub nom. *N. hirsuta* vnr. *g[1]abrescens* Veitch, Nicholson etc**. supra) X** *Veitchii.* — Caulis ascendens **intornodfe ± dongalls;** foliu ir.-—40 cm < 4 — K cm obovata vel oblanceolata, inferne bas' ' j'-niitplexicnulta, conta i jiurpiirt**o-rubra;** (isridia IB—20 cm × 3—5 cm quam cirrhus longiora, subcylindric>, infra medium Icvii**r** expansa, luteo-viridia maculis **put;**[illegible]ureis parvis dis**riTsa, III)**[illegible]e inferne **incompl'**[illegible]tae, superne dentato-ciliatae; peri**iftomi**um **10—15 mm laUnn.** viridi-luteum; operculum ovale rectum vel ± inclinatum, intus multiglandulosum.

Von Tivey im Etablissement Veitch erzo**•in mi**[illegible]1887 ausgeste**IlL**

N. Deslogesii Jarry-Desloges in !-• i ir'. \'\ **1903 13) ••-•'.»** [illegible]**eel.**; **Ibuttn ia** Gard. Chron. s. 3. XXXVIII. (1905) 379. — *N. Tiveyi* (*N. maxima* var. *superba* × *Veitchii*) × *mixta* (*N. Northiana* × *maxima*). — Ascidia 20—24 cm × 3—5,5 cm, viridia, copiose rubro-striata et maculata, alae late expansae et longe ciliatae; peristo**niimn** rubro-purpureum, margi**in- extfi'i • 1**[illegible] ± undulatum; operculum ovato-cordatum, extus polite purpureo-maculatum, intus basi carinatum.

Ein schöner Bastard, in den Gewächshäusern von cl. **M. J**o**rry-Desloges** erzogen.

N. DJduoniana Lifldsay ex Masters in Gard. Chron. s. 3. I**•**. (1888) 543 et icon. 544; Wittmack in Garten(L \\W)||, (**|8f**[illegible]9) 465 et icon. 466; Lindsay in Trans. nnd Pi[illegible]oc. Bot. Soc. Edinb. [illegible]Wll I8«) I 236 et icon. col.; G. Beck in Wien. lit. Gartenztg. XX. (1895) 144; Veitch in Journ. Roy. Hort. Soc. [illegible]. (1897) 238, Hort. Veitch. (1906) 305, 488. — *N. Rafflesiana* × *Veitchii.* — Caulis elongatus, sub-cylindricus; folia 20•—50 cm × 5—1[illegible]• cm coriacea, petiolata; pe**liolus** *1* — **| fi rrn** longus, **(it.'ttu^, •la* :**± verticales, basi ad ¾ amplexicaules; lamina 20—[illegible]**i0 <m X** 5—1[illegible]• *cm elliptica vel elliptico-obovata, supra glabra subtus* ± *pubescens, nervi longi-*tudinal**t *M* a^ 1.In IS— 1**5 cm × 5—'0 cm cylindrico-ventricosa ± villos**1, fulvo-**viridia et purpureo-maculata, alae a basi ad os continuatae, longe ciliatae; os ob**ii'l until.** peristomium 10—-(ft **nin»** to**tum, it**[illegible]**clini inn,** pallido-viride [illegible]; operculum 4—8 cm × 3—6 cm oblongum, extus pilosum et purpureo-maculatum.

Eine schöne Hybride, von Lindsay im Botanischen Garten zu Edinburgh erzogen und von der Firma Veitch in den **H**andel gebracht.

H. Doran:[illegible]ii Veitch in Gard. Chron. (1862) 398; Masters in do. (1872) 542; Nich[illegible]ict. of Gard. II. (1885) 436 (sub nom. *N. Dominiana*); G. Beck in Wien. **·ii-i-n, 1>** lit. ***u*tiMuU*** XX. (1895) 148; Veitch in Journ. Roy. **H**ort. **Sot XM** (1897) 238 et icon. 243, Hort. Veitch. (1906) 305; Miller in Cycl. Amer. Hort. III. (1901) 1074. — *N. Rafflesiana* × spec. ?borneensis; probabiliter *gracilis.* — Caulis cylindricus, pur-pureo-ruber, folia 30—40 cm × 4—6 cm petiolata, petiolus basi amplexicaulis et de-currens; lamina lanceolata, subcoriacea ad coriacea, nervi longitudinales 5—6; ascidia **10-**[illegible]15 cm × **i**—5 cm inferne ve**ntri*I'M. %tj{»ri**[illegible]e cylindrica et os versus contracta, viridia et purpureo-maculata vel marmorata, alae a basi ad os continuatae, inferne latissimae, os versus :ir itnmt»tal.'[illegible]e, longe ciliatae; peristomium 3—6 mm latum cylin-dricum, postice in collum 8—15 mm altum elongatum; operculum ovatum, viride et purpureo-maculatum; calcar 10—20 mm longum filiforme.

Von i'. . . . .in> tin Blablissemenl Veitch ni Exeter erzogen und 1861 in den Handel gebracfat.

N. Dormanniana Williams ex Hasten In Gard. Cliron. s. *1.* MIL (1882) 525 el icon.; Balnea in Garden XXVII. \ I s • . 496 et icon. col.; $C&Q)SOD, EHct of Gard. [I. (1886) 136; G. Beck in Wien. Ill. Gartenztg. . . \ \ , I so.'- 223; Miller in Cyd. Amer. HorL lit. 11901) 1071. — Parentes non accurate n JU, at probability *N. Rafflesian* < X *Sedeni*. — Folia elliplico-ianceolata, apice acuta, margine ciliata, oenri t< ngitudinales 5 — *;; iiscidi.i 1*—|g rni x 5—8 cm cyiindr ico-ventricosa, viridia el pa*] ureo-m ieu- lala v.| raarmorata, ae a baai ad os continue tae et ang islalac, ioferne ± sinuosac, i. . . .-gine >! ntata ve 1 ciliata; pcristomiom 7—is mm Inltnn, fere aequale, o bUquum, postice BOD elongatum, palHdo-viride; opercalum 5—8 cm × i—6 <'iu late ov iluw, \iriili'. naargioe purpurto-macula l. . . . .vel Btriatnn ascl liiun inttu glauco-vu ide.

Von Taplin enogen mi'l »on Williams in den Hand el gebr idht.

N, Dyeriana Macrorlanc num. nov.; Mas era in Gard. Chron. i *i.* WVIH. (1900) 250 ct icoi . 257, KXXVIU (1905) 315; Veitch, Hort. \ - itch. (1906) 307 f 489 omnes, sub nom. »Sir W*. I. i. Djrei). — *N. mixta* (*N. Northiana* × *maxim* 0 X *Did soniana* (*N. Rafflesiana* × *Veitchii*). — Caulis elongatus, ascendens subcylindricus; Iblia 30—45 <m X 8—*it* cm coriacea, petiolata; petiolus 5—I') cm ongus, brunneo- villi. sus, basi ad 3/4—7/8 amplexicaulis, id S—S cm decurrens; l -ittiiia Dvafa' s ad elUpl ico-obovata apice rotundata tubpellala vel ; eltata, nervi longitudinales 5—6; - in-luix (•[•!• aequali s; ascidia I 5—3 ien X 6—10 cm cyliodrico-ventricos*, lu teo- viri.i ia et copiose purpureo-maculaU] alac latae, fe *et* aeqtu les, lo ciliata <• lli— quum; p eristomium 2 i— 38 mm talom, extus late expanatun el ! - inuosum, postice in „11,111! elongatum ; operculum 5—10 cm × I—6 cm oratoi n margine ± sinuos lint, extus pallido-viride et copiose purpun o-maculatum, basi extus ca rina promim te; calcar 10—25 mm l"ii.. . . . inli 0M |<»r- pai eo-macul .iiuiii,

Bine prftchtige Hybridc. \"n Tivcj bei der Firmo Veilc.*b* erzoge i und i 900 ausgest • III,

N. edinensis Lindsay ex Dixon in Ga rd. Obi on. s. • HI. [IK8^ 170; Dicksoo in Proi . Re y. Soc. Edin. \lt, (1884; 381; C Uw in At- ner. Fl. VII. (189*) SSI fig.; Lindsay in J] ans. and Proc. Bot. Soc. Edinb. win |K«J1} *S7; G *Bi ek* in Wien. Ill. Gartenztg. XX. (1895) 148; Miller in Cycl. Amer. Hort. III. (1901) 107 I. — *N. chelsonii* var. *excellens* Veitch, ll•-. L Veitch. (I 906) 304. — *N. Rafflesian* 'X *chelsonii* [*N. Dominii* (*N. Rafflesiana* × *N.*?) × *Hookeriana*]. — Caulis validus c | lin- dricus; folia 25—40 cm i X 6—8 cm co riacea petiolata; petiolus ad 4—12 cm 1/2 am- plexicaulis; lamina lanceolate; cirri. us laminae aequilongus, fere aequalis; ascidia 8— 20 cm x 3—(o cm ovata ad ventricosa, luteo-viridia et brunneo-rubra maculata, alae late expansae, basi amplissi in*-, og veroa ± angustatae, longe ciliatae; peristomium 10—45 nut) liitinn tubcylindri cum, fere aequale, postice in collum 15—10 nun altu » .hnikMtin ; opere tilum 4—c '-m X 3—S cm Otftblffi.

Vor. Lindsaj im Botaniachen Garten zu Edinburgh erzogen.

N, Edmundaii Sort ex Miller in Cycl. Amer. Hort. Ill. (1904) 1874 « (Cat. Pitcher and Handa. — Pan ntes ignoti, sine d j scriptione, ergo nomen nudua.

N, ElmenJiorstiana Hort. u Miller in I ycl. Amer. Hort. Ill. (19M 1874 ex Cat. Siebi recht a (I.| Wad ley (1889) i9. — I Parentes ignotae et sine descriptione, ergo nouten titidn m.

N. elongate ". Beck in Wie *a.* 111. (• artenztg. W. (1895) 2-T. obi pro var. *N. hybridae* habetur, at *N. elongata* est var. *N. Hookerianae* (vide M ... Gard. Chron. I. 2. VIII. (1877) 4 ii),

N. excelsior William* in Garden \\\lli. (1885) 463; Nicholson, Dict. of Gar< |< Suppl. (1888) 571; G. Beck in Wien. Ill. Gartenztg. XX. (1895) 147; Miller in Cycl. Amer. Hort. III. (1901) 1074. — *N. Rafflesiana* × *Hookerian* /, — Ca ulis val .(ins. juventute d us.- pobeto ens; folia JO—GO cm × 5—10 cm subcoriacea, petiolata:

lanlina dliplica, iipiee subrotuntta; ascidii SO — SJ> cm X <•—fl cm ejlindric*-ventricosi, IiHlfiili^viriiii.i <:*i hir'uiu-* Td bnanHSO-parptireo-maculata, ilac lulae, tongc «iliatae; perirtomtoia 10—IS nun Intum, aequale, police in i-ofium I—S cm tillum •elongnlum; opercdlum flvnlo-mi.umlalum.

Von TupI'm enogen sad von Williams I8sr> in dan Bandel gebf&chL Die Elteen siml die nimHCheo vie bfti tl<?n Ihnri'lrn *N. amesiana* wB* DUtd ,V. .1 O&d tOfl nod nalu? terwnndt.

N, Eyermanni Mori. Millc-r in Qjrd. Amer. Horl. III. (1901' 1671 tx Cat Sicbrecht and Watl!ey (1889) 51. — 1'arentes nun accurate QOti tt probabllitef *N. pJiyUompkara* .-. £2bo!riana. — Folia Juteit-viridia, Biilnort«cea, margine polite deatato-ciliata; iiscidiu |(i—I ft rm x 4^-5 em rabrp-purpurta et (mr*'*1 vin-li-mftriilala; alae inferne ii'in i iii.-ihic, SIIJICIne ciliatae; perisi'iniinnt aeqaife, cjiindricum, pov& levitcr elongation, pnllidu-viride et sprabro-itJri atum; operoolum snbruUiinlnlum extus rb ptirpnreo-iDftculatQfn,

S. FindlRyana Hort. ex Riefaokoo in DfcL of Gud. Suppl. I8H8J 57S; Miller in Cjrd. Amer 11 •• • r? HI. (1901: IO7i- — Pitrtnt'es et or^|> ignoli.

S, fonnoaa Hon. ex Kew Hull, is[1]*: ;i>7, obi iwirtsntM jtf. *chelsonii* × *distil-Irifont* in.Jii\iU siiiit. Ortu ignoto et sine descriptione.

IT Foarniftri Gan:ier in Joitrn. Si c. Nat. d'Dort I. *. IV. (19IJ3J 5»9. — *N. Northliana y.* OFxta (*N. Nc trtiuma y maxima*). — PltintAC aspectu *vl* usciilii forma *N. Northianae* consmiilis, at sscitliiiru iuferae mbnitn rl]iiirjiiirt'o-nr(irnln(iim. tbu late expiinsae; p•i*rit>ti7iniiiin nilnum Mtro-puqiiir^uin •tfiatumj ucidtuin inlius viride et rubro-maculatum.

Von C.mti«r iin 'Garten v"ii Dr. I....rnier ewi'-gen und 1903 ausgesteill.

N. Gatnftrii Desloges in Gard. Chron, ». 3. XXXVIU. (1&0.'ij 319, Juum. d'flort. s. i. VI. (1905) 194. — *N. Tiveyi* (*N. maximaf vjir. superba* × *Veitchii*) × *mixta* (*N. maxima* × *Nurtitiiuta*). — l(*rpnlr» rrgo ul in *X, tideslogesii*, *N.* et *remilliensis* (q. v. i, (tt aacidia ijiar purpureo-maculu* peri*(oiuiuni !tiui^iiiin.'o-iul)i > in; ppflj culum oblongo»tcfittini, viride et rubro-suffusum, basi intus cirina laevi.

Von M. Jarr,r-Dcil'ges erzogen und 1901 au*f{fKi'-lli.

N. Oantiari Bort la Joum. Soc. Nat. d'Hort. s. 4. IV. (19<>3] 589. — *N. Narthiana* × *wLila.* PBr€iil<*» ct •cmintt ut in *N. Fournieri* (q. v. p. 82), hybrida ei valde simJis.

V. Huniltoniana Mori, n Miller in l>r). Ante. Hort. UL (4901) tO7t, tilbi synO)1'um est *N. coccineae* (v. V. p. 79).

H. H«nryan» WilHami in 111. Hort. XXIX. (1882) 125 et ic•>. Ho, Rodtgw, Dp cit. XXXIV. (1887) 43 et icon. col. 15; Baines in Gai.-ii W M I. (|8t5) 496 et icon. col.; Nicholson, Dict. of Gard. Suppl. (1888) •7J; (., \U'<i in \\I.-II . |). Gartenztg. XX. (1895) 220; Miller in Cycl. Mner. H..H, III. (|901) 10 174. — *N. Hookeriana* × *Sedeni* (*N. khasiana* × sp. incert.). — Folia 20—40 cm × 4—7 cm coriacea, petiolata; lamina lanceolata apice attenuata; ascidit (S—20 cm × 4—6 cm cylindrico-ventricosa, inferne rubra vel viridi-ruibm *ii(.t nir nil'ro- et viridi-Oi&cultli I el punctata, alae inferne late expi< ae os ver-us ± •D<tn«t.il;n-, ritialti; peris.'"tnitlill 7—II mm aequale, cylindricum, ± viridi- et rubro-striatum; operculum ovale, exlujt rubro-maculatum; ascidium intii* dlauco-viride et purpureo-maculatum.

Von Ta pirn IU \rjil.< .-Mi on y N. J. erzo• M zu Ehren Henry Williams benannt. Von Williams 1881 in den Handel gegeben. N. *Outramiana* und *N. Willia* '«« nahe verwandt und von 4hnlKb«'ii |Jl. rn *b»J M ihren Eltern abstammend.

N. Hibb*rdii Nicholson, Dict. of Ga,«|. Suppl. (i888) 572; G. Beck in Wien. Ill. Gartenztg. XX. (1895) H»; MilW *in* Cycl. Amer. Hort. III. (1901) 1074. — Parentes ignoti, at probabiliter ex structura similes parentibus *N. Henryanae*. Char*tf*teres ut in eo, sed ascidia inferne purpureo-viridia, superne purpureo-rubra maculis et punctis luteo-viridiUna tliHUM*.

Eine der litjiliia'schen IM<ritlfn, dmvti **die** Rnflfla William I in 'ten lUndel **gebracht.**

V.* Hookerae Hor**. ex G. Bwk **in Wieo,** fit. **Gartaiztg.** w (1893) Ml; Kew ISDIL **(1891** 405, **Hbl** jinrmles afflrnmti smil **ease** V. ***II*afflesiana* r X *phiflhmphara,* **•ed orlaa** ignotiui e»L — R«c)f sagl **»mir** schwieri i **dtnrd** die Färbung d. h. größere gelbe Flecken ton A'. *Morganutt* (» A' *MorgantQiw) y.u* **ontericlieidesc.**

H. hybrida **Hasten in G ran.** Gard. Ch. **I87S** r>4i; Nicholson, Dict. of **Gard.** II. (1885) 436; G. Beck in W..li. Ill. Gartenztg. XX. (1895) SSI; Veitch iu Ji-tint, I: **liorl** Soc. XXI. (1897) 238, d. Hort. \eitch. **IB06J** 487; **Wller to *i* in. i'hi i) 1074.** — *N. khasiana* × sp. incert. bornee**"SIH. probabDitu** ftT. *grneQU.* — Caulis cylindricus glaber; **Tulin (**5—25 cm × 5—6 cm breviter peti**..|«ln, |(f(iu](is ol** atus basi ad 2/3 **amptes** caulis **ad i — I - in** decurre **u: latnbia obiongo**-lanceolata apice acuta, glabra, costa excepta juventute ± brunneo-pubescente: aaddia i<» — i 5 cm × 2— :t mi rvliti.hi.., mciifitii \>TBII**s** leviter contracta, **viridia,** alac *U*>e aequales, ciliatae; *on* ovntiiiii ubliqniiin; **pemlornittm 5** — "mm **latam obliquum, cjlindricum,** postice non **clodgatam, viride;** operculum uhiiuifium **virfde,** iniu* **glandulonun ol ipam purpu**reo-diffus**UDI.**

Var. a. **typioa <i.** *Btck* **v, a.** — *kwdi* lia viri**IU.**

Bei Dominy im Etablissement Veitch erzogen und 18•36 in «lt'n Handel gebracht.

Var. b. m**vculata** \.ii.li 01 Dombrato, H. Ma^-. VII, (1868} «9, Gard. Chron. (iHTT^) 5ti; **Wien.** 111. Gartenztg. III. (1878) et icon.; **Vrftdb in Jo**urn. Roy. Hort. Soc. \\l . (1897) **t3H,** IIort. Veitch. (1906) 300, 48: — Ascidii yiridii, extus et superficie saperku'e intus ± copies? **parpurto-matulaU el niarniarala.**

H, intermodia Vrftch la Carl Chron. s. a. III. **[t878 MH; i<**obinson(?) in Garden XI. (1877) 429 et icon.; Masters in Gard. Chron. n. s. **& VII. 111**882) 178 et icon. :79; Nicholson, Dict. of Gard. **II. (|f**885) 436; G. Beck .-, **W , i** Ill. Gertenztg. XX. (1895) 448; Veitch in Journ. Roy. Hort. Soc. VTll (1887) 238 et icon. (sub nom. *N. Dominii* var. *intermedia*) **.it ,** II ort. \•eitch. '•••• 305, 487; Miller in Cycl. \IIIH-. Ifffi Ill. i•01) 1073. — *N.* sp. incert. borneensis × *Rafflesiana,* ergo parentes ut in *N. Dominii* (q. v. p. 80). — •Caulis validus, juventute ± brunneo-hirsutus; folia **10*—35** cm × 5— **II** cm, coriacea, pet**IDIHUI; laim;** lanceolata apice atte**uu«U, »upr»** gla**ira** sul>tiu ± binmli; ascidia 15-iSrm X •»— - cm inferne ovata ad subve»*^f*-c**"- superne cylindrica et gra**datim ail oi** contracta, viridia et purpureo-maculata vel punctata, alae a ba**ii ad D9 toutinutttar, on Tcrtus ± no,** ustatae, longe ciliatae; peristomium 3—7 mm latum cylindricum, postice in collum 10—20 mm altum elongatum, pallido-virid**ik* *ti* **purpurei**. .**vatw** ± concavum, viride et p**trpuiTo**-striatum; operculum ovatum ± concavum, viride et purpureo-maculatum; calc;r i 5—20 **nun longtim,** attenuatum; ascidium intus glauco-viride et purpureo-maculatum.

Von Court im Etablissement Veitch erzogen, 1875 ausgestellt und dann in den Hand•1 i.r't'hrachL

H. Johttir, Hort. ex Miller in Cycl. Ame,. ||,>rl. Ill. (1904) **107*** ex Cat. Siebrecht and Wadley (1889) 54, ubi descriptio est, "in the way of *N. picturata* (q. v. p. 86) though of more robust growth. The pitchers, which are highly colo•Wi, **ar* produced ir..**ely'. \arentes non **accurate** •oti.

H. Lonowoodii Hort. ex Miller in Cycl. Amer. **Hort.** III. **1901) <0"i, ei** Cat. **Sidveebl and** w'adley (1889) 54 (nomen nudum).

H. tawrenuiami Ma>>U» in Gard. Chron. ». J. M\. (1880) 40 et icon.; Rod'«** La 111. Hort. \M\. **(|ts|** |. 460; Nicholson, Dict. of Gard. II. (1885) 438; G. Beck i» **Wien.** IU Gartenztg. XX. (1895) 221. — Probabiliter *N. phyUamphora* × *Hookeriana.* — Caulis cylindricus ± polite pubescens; folia lanceolata vel ovali-lanceolata, subcoriacea, margine leviter ciliato-dentata; ascidia 8—15 cm × 4—5 cm cylindrico-ventricosa, pallido-viridia et copi**DM nil** ro-maculata, **alu'1 a bail nd ol** continuatae, fere ••"'JUKIORJ ritiiiiac,]> ristomium 7—8 mm latum aequale, lu**!po-->iri**de et rubro-striatum; operculum ovale *m*\ **ttn!** rotundatum ± rubro-maculatum.

Eine v•ft den durcb Tap I in enngi'm-n hybriden Fonnen, von der Firirm Wiliiams 188>* in iii^u IlnmlH gebraHiL

N. lyrata Veilcb in <;nrd. Chron. (1817) 4, 4U, uhi pro hybrid* A*, *hybrids* X *l&tfflaiatin* htbelur, stid rine descriptions, ergo nomeii oodum,

H. Maria-Louisa Gtutier in Jotirn. Soc. Net. d'Hort. 4. s. IV. M9O.i B8». — *N. Northiana* × *mixta*. — Pflrentea ct seimnu ut in iV. *Fournieri* >t .V. •*Gautieri* :<(. v., at asi;idia :±r pellucidu, iimmvi-alha et sparse rubro-punclaUi, alae angustat[1] ± ciliatac; peristomium angustum luteo-album sparse rubro-ktrifttam; operculad) a! peristomium coloratum.

Eine -r-Ii.ii!.> ii ybride, V»D Gautier in den Gewm:iu-i äusern ron Dr. FOUI-HMT enogen.

H. MafterBiann Veitch ex Mast entn&u rd. Chron. s. 1. Wl. (t«si) 74*,XXl. (1884) J48 el icon.; Hiirliidge in Garden Will, (iss i) 193 el icoa. ol.; Regel in 6ai tenfl. X Will (188i] 208 et ion. iO9; Kicholion, Dict. of Gird. II. (188D) i38; Rod Igu in 111. ll-ii \\\IH. M886) 618; Biirliidg*- in Morn nnri Sv va II. (1901) I I-*: '•• B«k in Wieo. III. Gartesxlf. SOL (1895) 185; Pudolph in Jown. Soc. Nat. Hort. Pr. (1806) 4:.; •Veitch in Juurn. lloj. Borl. Soc. XXI. (1897) 237 et icon. 2II. II.at. Veitch. (1906) 306, 4«7; Mill-T in Cycl. Am». Bort 111 (I90IJ '071- — A* wwyw^*ea* × *khasiana*. — Caulis lovitttr Irtgoniu v. sulirylindricus, gl ilia I » IB 001 X < — S nu, basi ft^srtilin V'j aiujiWit'iiulia saepe ±: decurre alia., Inininn subedriaccft glahra Ml jnvriilui.- polite pubescens, ner\\ lunfrifinliiialrs 4—G paria; asridiii (0—56 cm X ft—8 wu aub- dimorphia, inferiorn inferne ^z ventricosa superne cjrlindritt, superiora tubulosa, rubro- viridia el ofctctife ruhro-fDOJculata vd in spccii minibus colore inter medio rariantibui ad omnino ptirpurt'O-difTusa, alafi in ascidiis inr«rioribus ex]ansae -iikie(|ij«lcs$_F$ cilintne, in tirtcidiis superiori sun ±: ireductae; os leviter obtiqoum; perhloraium 10—SO nun lalona . viiriilririim aequale. ut MCdium coloratum; opercahua ovato-orbkulure; calcix <o— 20 am fllfforaiG; uctdiuin UIUIB gUactMrlride tt rubro-DMcuIatuni ad omnino glauco- purpiirp/mn.

Eine pi ächtige Hybride, welche Court iiK Etablissement Veitch auferxog; (1884 wurde sie tBig[1] estellt iod 1813 in 'ten HanHt! gebracht. Die on Farbe der Ka on wechselt tehr I- deutend von scharlach-grün bis scharlach-rot und dankd pitrpurn (var. *purpurea* hort.). fihor MI Tariicreu auch die Eltern, besonders *N. sanguinea*.

N. Mayi Hori. <x MtlitT in Cjd, Atner. llorl. III, (1901) 1074 ab Cat. Siebrecht and Wiiilrr (1889) >I - - l'n.ntt'5 i^uoli, siiti[1] de8t:rij«i one, er^o nomen DUdum.

H. Morcieri Umifirr in Jotiru. Sot- Nal. d'Hort. 4. s. IV. (1903) t .90. - *N. Northia*"i X "•*ixta*. — I'nrcntet ol sctnina ut in *N. Fournieri*, *Gautieri*, *Maria-Louisa* (q. v.), at ascidi• viritlin spone niltrn-pimrlata, hlfmtf OH vt>rtju» copiotte \<unc- tain el maftilatn, alie late Mpansne; perttLomtunt aniruslnin viridt nilro-Hriii'tum; operniliim ririd sparse mbro-fl aculatum.

Vo a G A all er erzogen und 1903 ausgestellt.

H. mixU Masters in Gard. Chron. 3• Mil. 1893} 46 et ic ii. 47; •Gentil in Rev. d'Hort. Beig. XXI. (1895) 268; Gard. Mag. \\\M. (<s93) 754; '• Beck in Wieo UK Garlcmk. XX. (1895) 145 et icon. col.; Miller in Cycl. Amer. Hort. III. (1073; Veitch, HorL V« itch. (•9•6) 306, 488 et tab. — *N. Northisii* Veitch in Gard. Chron.. :i. s. XII. (1892) 561. — *N. Northiana* X «MU»«O. — Caulii e-—8 m × 7—»«u n cylindric^; roli* i 5—»'0 •m × 4—10 cm, wl coriacea, petiol*i«; pc iolus 1,5—S I m late alatus, basi ½-amplexicaulis, profunde decurrens; lamina rilipi ico- lanceolata apice rotundata subpeltata vel peltata, margine pellucida et juventute ± bru HMW rlHtl a, nervi longitudi i;U« 3—4; Mcutia i"—16 cm × B—I cm, inferne luteo-viridia et sparse purpurco-maculata, os versus maculis majoribus et copiosioribus, alae mediae vel ang taiae t asim versus ± incompletae, a medio os versus continuatae et ciliatae; peristomium 10—35 mm oblique, antice et po angustatum Uin aliter tat« expansum, poftk« in <tWi*m 1—S cm *luun dcvatiam, tiwto jmrpuftum vel intus

ltOf]

margine purpureo-viride v.-i ^. purpureo- el ririili-striatum; operculum ovato-elongatum, basi ± cordatum, sed sin.- calcaribus *a*iediis duobus inlentis J\. *maximae.*

Bei Tivey im Etablissement Veitcii aufaraogen imd tH9:i in dun Bamlel gebracht. Erne Behdoe und leicht sm tuUtlviereodo Hybrid), welc be die Gtnraktcre bcidcr KlLem miteinander vereint.

Var. Bonguiuoti Hasten in Gard. Chron. 3. s. Wl, (iK?i) 3t8; \'eitch, Hort. Vuitch. (1906) -ist*. —• Asciriia fuscti-juluM, maculiii magnj* brunneHpurpveJa dbpetsa; iiorislomium iiellucido-rubnun.

X. Morganiana Veitcb es Hasters in Gard, Cbron. 1. a, Wl. (1^1) :tsi; •uch in i.arden XX. (1881) 188; Mi!.ler in Cycl. Amer. Hbrt. Ill (1901) 1074. — *N. Morganiae* Masters in Gard. Chron. Li \l\. issi; mo; Burhidfie in Garden Will. [I8fl3) 493 et icon. col.; Meholsoa, Did. of Gard. II. '1S85) 43S: G. Beci iti Wien. 111. (.luri. nztg. X\. (1895) 119 ; ^eitch in Joura. It. Hy. II rl. 5oc Wl. (1897) 238 et icon. 147, Hi•!. Veitch. (I yOfi) 487. —• I'arentes nao accurate uoli, prubabilitti *N. phtflbtmplwm* ;• *Hookeriana*, — I aulis c *fUadtbiu* s glaber; folia 30—*3<t <-m X* 5— I n cm Hiibcoriaeca pcliold ta, petiolus r»—8 cm Ion. ius, alatus, basi 1/2-amplexicaulis; lamina lanceolata, daro-Tiridis, glabra, nervi longit udioales 5—6; atiddta 15—SO >;ui X 5—8 cm cylindrico-ventricosa, omnino par] pureo-rubra et sparse l"i^o-viridU inHctUal^i vel punctata, alae aliquanto angustae, superne ciliatae; peristotniuni G—10 nun lalum i*lilii|(iuii'. fere aequale, pallido-viride ul purpmreo-strie•iriui; opercuhnn ovale ad orbit'tilnice, viride et sparse purpureo-maculatum; Bscidiotn intiu glaaco~ vet laleo-viride et purpurco-i ttum; maculatum.

Bei i•plin im Etablissement Such erzogen und i rau Morgan in New York (»-widnjet. Später gab sie i rau Morgan zu \'eitch, der den Baalard isnI ausstellte.

K. NorthUn Veitch in Gard. Chron. 3. s. Ml: 892) 561 est syn. *N. mirtae* Masters (q. v. p. 84).

JT. OBrieniana Linden ,t Hodigas in Illustr. Hort. w\tl (1890) 109; G. Beck in wifto. ir. Garteriztjt, \\. i 895) 224; sec. G. Beck pro var. vel forma hybrida consanguinea *N. rufescentis* habenda est, quod Auctori erroneum esse videtur, qui *N. O'Brieniana* sub liltilo vun> tatis geographicae *N. phyllamphorae* enumerat (v. p. 64).

K. Oiborniana ll»ri. ex Miller in Cycl. Amer. Hort. III. (1901) 1074 ex Cat. Siobrethl aid Wadley (1889) 54, sed sine descriptione vel nominibus parentum, ergo nomen nudum.

H. Otttrftmivia Williams in Gard. Chron. s. I. XU. (1879) SOS, M. (1880) 40 et i»n. i); Dean in Flora] Mag. (1879) t. IH 1; Moore in Flor. and Pomol. (1880) 156 et icon.; Qcholson, Dict. of Gard. II. (1885) 483; G. Beck in Wien. Ill. Gartenztg. \\. (1895) MOi Miil.-r in Cycl. Amer. Hort. III. I'M.) 1074, — I'arentp* non accurate noti, probabiliter *N. Sedeni* (*N. dist Xllatoria* X ip. incert. borneensis) × *Hookeri*m«. — Kolia J5—35 cm X 6—7 Cm nubcortact a, breviter petiolata, lan*aiaa.* tain eolata margine ± hirsuta, nervi longitudinales 5—6; as cidia 10—45 cm X 3,5—5 'in, i •• Ini'li-K-ventricosa, pallido-luteo-viridia maculU n bris co pioac ilifTuM$_f$ shw a baai ml os conliaiiaUe «:ili;n ae; peristomium 7— I n mm laltitn, acqtialc, pallido-riri'purpuri o-striatum; operculnil ovali basi e vlu« [mj-purvu-iiiaiailqluni.

Bei Tapl in erzi e Firma Williams IK«O in dcu Handel gebracht.

N. paradiiao II-:t. ex Ni•hol«on, Dict. of Gard. Suppl. (1888) 573; G. Beck in Wi.-n. III. Gartenztg. CX. (18S5), ex Cat. probabiliter Siebrecht and Wadley (1889) 51. — *N. Hookeriana* (?) × *phyllamp horu,* — Folia 10—58 cm × 5—8 CD subcoriacea, petiolata; petio•iu« 5—8 < in kmgtu, nlninii, In mina lanceolata apice acumi aata; us.Mia *a -to* en X 5—8 cm inferne expansa et venti icosa, medium vers iu coiuii »uj»r rne cylindrica, inferne purpureo-rubra, gradatim ad os ± luteo-virid in inaruUta, alae in ascidiis inferioribus exAitaae < et ciliatae, in superioribus ± angustatae; peristomium 6—8 mm latum aequatlr, poll! do-viride; operc uluttt ot»k nd n bovatum, extus viride et sparse rubro-maculatum.

Etnc von <kn durdi Taplin erzogeofln amorikaniacbfin IIybriden, bei Williams 188 t ousgeatelli. Naeh Niehol son ist sie nach den »Paradiw Nurseries* getmru t.

IT. Patertonii Hort. ex Miller in Cycl. Amer. Hort. in. (|*fl i) roH ex •Cat. Saul Washington et e% Cat. Siobi ecbt and ViTadtej (<8&0) fit- — Par-ntes ignoti, ;it s<c. str nctnram prubabiliti'i *N. phyllamphora* × *Hookeria on;* Bpecrauoa in Hurt is Americarus iiiittt- tiaepc culta «tmt. — Folia 30—40 cut X *— 10 cm berbact i ad subcoriacea, petiolata; pe lotus aJaiiu, lm*i yj-impIexicauHs, laniin.i elJip tica vel elliptico-lanceolat •«. gtabra i margine ciiiaio-d entata, nervi longitudinales 5.--6; at'idia 8—i 2 cm ×, 1,6—3,5 mi eyilndri o-ventricosi <il cj lindrica, medium versus leviter angu•tain dii eo-viridia et co pio« rubro-tniirmornta, alae a basi ud o» c^fttiiivuH ae et ± angustatae, margine ciliatae; peristomium aequal B obtlquum Intro-viri-.e; operculum ovale extus margin em vers us ± maculalmn el ra armoratnn; osctdium i atus glauco- et pallido-vi) ide.

Wnl'rscheinlich eine von de ti nmcril anischen Uybrittca,

N. picturata i lort. ex Gordon in Gard. J.i^-. \l.\ I. (1903) 670 et icon. 677; BtirbHlgc in Flora and Sylva II. (mo4) fis icon. 09; \eitch, Hort. Veitch. (1906) 306, 4V9. — Pnrcnl« ul in *N. Dyeriana* (q. v. p. 84), hybrida vix differt ab ea, ergo synonymum.

If. Pitcb«ri i!ort. ex Miller in Cycl. Amer. Hori PL [i90!] 101 ex Cat. Pitcher and Ma uda (18951, w*l stnr descrip.'ionft. — .V. *purn disae* × *Henryana*. Specimina ignota.

N. BatclifSana Veitch ex M[aatcn in GanL Chron. s. 2. XVII. (18 il) ftl et icon.; Nicholson, Dict. of Gc.nl. II. (1895) *:i<i; G. Beck in Wien. Ill. Garten Big. N\ (1895) 221; Veitch in Jumn):oy. Hort. Soc. XX:. (1897) 240, Hort. Veitc i. (;906) 306, 48*. -— *N. ph•yllamjihora* X *Hooke* tana, ei-o parentes »f in *N. coccinea*, *N. robusta*, *N. Stewartii* et ,N. I!"- *igleyana* (q. v.). — Caulis cylindricus, juventute dense albi t>- vet fafco-puttesccoi; folia 8(' —45 cm × 6—8 c m nbrariac«a. |etiolata; lamina lanceolata basi et apice attenuata margine ± serrulata; ascidia 12—18 cm × 4—6 cm ampulliformia sub medio ± ventricosa, viridia et purpureo-maculata et marmo-rnla, alar; a t>n*i ad os conlimiaLae, l.tt.i<*, *otigt* cilialar; peristomium 5—10 mm latum obliquum, aequale, viridi- et rubro-striatum; operculum 3—4 cm × 2—2,5 cm ovale viride vel basi extus ± rubro-maculatum.

Bet C.otirl erxogen mn<i dun h die Firma Veitc b 1881) in den Ham el gegeben. Benannt nach i lltrrrn U;itcliff, Eilghnst* n, Engl and.

K. rcmillieniii Macfarlant u«n>. run.; Must, rs in Gard. Chrwi. I. *i,* XXXVIB (1905) 379, Desloges ii i Jottrn. -l. Sort i. 1, VI (4905) 664. — *N. Tiwyi* (*N. maxima* var. *superba* × *Veitchii*) × *mixta* (*N. Northiana* × *maxima*), parente> ergo ul in *N. Deslogesii* et *N. Gamerii* (q. v.), sed a*<idia obscure viridia el [turpur'o-reticulata, operculum basi leviter car ttatum<

Bei M. Jarrj-Oe sloges in Remilly erzogen und 1905 unter dem Nam n Nu *Rem*'% aus^cst>llt.

BT. roboita Sort « tt*f(«n in Qu d. Chro u. 2, a. wn. (1880) 40 et ic op ; Soore in Florisl an>l Pomol. (1880) 156 et icon.; Nicholson, Dict. of Gar I. II (18IS] 439. — See. Willi amso parentes sunt *N. phyllamphora* × *Hookeria* 'id, ergo »n in *N.* c tflciiwa, X ITn^fcyrtw.j etc. j. p?J, — Characters similes, se i aam ia 10—15 cm × 4.—5 c in pvrifonni.i, medium venw s contracta, superne cylindrica, alae basim ve W laUw «XptHMe, os rer*tu gradatim ui>KUstn> •; peristomium fete til s-vemim viride.

Voa i iplin mil.gen und 1880 durch die Firma Willia mi in den tin del gebracht.

K. Roeblingn Hort. ex Miller ia C,yrJ. Amer. Marl. III. (IVOIj 1014 N Cat. Pitcher and Manda (1895), tibi dpMcriptlO <*1 "pitcher aluwsl (jhilpnl.tr. i medium-sized, spotted". Parentes ignoti.

N. rubro-maculata \eitch ex Masters I. . . .ird Ciinra. s. I. VIll. (1877) 441; wii. ,issi) Ui el leon.; Nicholson, Did. of Gal L D. (i885) 439; G. Beck in wi.-n, ill. Garteoitg, XX, (f898| 1*3; Veitch, Hort. Veitch. (1906) 306, U7. - *N. hybrida* var. *macula* >fa x si>. in cert. borneensis. — Caulis cylindricus, ruber, purpureus ± pubescens; folia 25—35 cm × 4—6 cm coriacea, petiolata, basi 1/2-amplexicaulia, spice rotundata, margine polite rilinlH, inni longitudinals 3— i a cettla remoti; <tsririia I 2— i wm X S—& <an cylindjrico-ventricow, (inllidu-vij-Miki cL purpufeo-raannoimta, ilae o basJ ad «> continuatae, late expansae, longe ciliatae; peristomium 6—9 mm latum cylindrico-depressun i. itilu-o-viride ml mUrtini, operculum ovale ad ovatum, extus rubro-maculatum, intus copios•: glow)'losum.

Bei Court erzogen mi.i durefa W'iich Isot in den Bsndel (p bracht.

N. rnfeiceni Masters in Gord. Chron. 3. H. IV. (IS88) 669 et icon.; G. Beck in Wien. Ill. Gartenztg. XX. (1 H9flj Jii; Miller in Cjd. Anier. Hort. D l. (1904) 1072; Veitch, *N. dasit... Sra × Courtii* [*N.* «p. incert. ''Ornocniii[1] X '''J'' *minii* (*N. Rafflesiana* × sp. incert. borneensis)]. — Caulis cylindricus, ruber; foli a IS—3 5 cm × 4—8 cm coriacea, petiolata; petiolus 1,8—3,5 cm longus, basi expansus amplexicaulis et longe decurrens, lamina elliptico-lanceolata, costa rubra, nervi longitudinales 3—4 marginem ve; HUB; ftfi-idia 20—25 cm × 5—I 5 cm cylindrica, viridia ± rub so-dilTiiv i vel rubro-maculata, alae a basi ad os continuatae, aequales, ciliatae; peristomium In — I 5 mm latum, oblique-lifl), DUrgine leviter undulnLittii. poslice in collum 1—1,5 cm elongat unt, valida itriatiun; operciilum *Aihn*igum 5—6 cm × 3—4 cm, •scidium ID'[1]s glauco-viride.

Bei Court im Etablissement Veitch erzo pen nnd Iftth ii> den H andel gebracht.

N. Savagaana Bort. ex ICIlo[1] tn Cycl. Amer. Hort. III i 901) 1074, ex Cat. Siebrecht and Wadley (1889) :. I nl) i descriptio est "in the way of *N. Craigiana* though it differs from lhat variety in that the pitchers are not quite as long but broader, like lliose of */looker iana*". Parentes i^noli.

K. Sedeni Masters in Gard. Chron. (1872) 5 i ?; Florist and Pomol. (1872) 54; Nicholson, Dict. of Gard. 11. (1 (85) 439; G. Beck in Wien. Ill. Gartenztg. S \. (i895) *tti* ; Veitch in Journ. Roy. Hort. Soc. XXI. (1897) 237 et icon. 235, Hort. Veitch. (1906) 307, 487; Miller in < y,-i. An er. Hort. Ill. (1904) 1074. — P arentes non accurate noti, at sec. Masters "raised from the poUrn of *N. khasyana* (= *distillatoria* of |:ardens) applied to the female flower of an undeterriiinwl »pecies". — I aulis • dindricus, glaber; folia 15—25 cm × 4—6 cm, basi ± decurrentia, coriacea, lanceolata, gtsbi a; ascidia 8—15 cm × 3—5 cm cylindrica, basi leviter dilatata, medium versus leviter contracta et ad os ± expansa, alae ciliatae; peri«kiuiiiiiu • vatum, cylindricum, ptMtJce ± elevatum; operculum cordato-orbiculare rubro-punctatum.

Von Seden im Etablissement Veitch erzogen.

N. Saemannii Hort. ex Miller in Cycl. Amer. Hort HI I'.MI I) 1074 ex Cat. Pitcher and Manda. — Parenlea ti^nnti, sine descriptione, ergo nomen nudum.

V. **Siebrachtiauu** Hort. e i Miiln v. s. ex Cat. Siebrecht and Wadley (1889) 54, ubi DotninaU • st *N. Siebrechtii*, sed descriptio imperfecta est et parentes haud indicati mint. Sec. tpwaauM in llorlo Luiv. IVnnsylv. awscrrala iiircnics probttbilit<'i sunt eidem ac in *N. Dormanniana*.

N. Sbelburaei Boil in C«l. Siebrecil and Vt adley (IHS9, 61. — Parentes non iiiilicnli et descriptio imperfectus, ergo nomen nudu a).

9. SimoaJi i.m.li.r in .1 urn. Soc. Nat. d'Hort. 4. *. IV, (1903) 589. — *N. Northiana* × *mixta*'. — Paxeu tes et semina ut in *N. Fournieri*, *Gautieri*, *Maria-Louisa* et *Mercieri* (q. v.) at ascidia viridia rubro- jtuudaU, atni* unptat, interne uodulatae, longe ciliatae; peristom niiii late npaamm, margtoe Brteri ore undulato, viridiluteo leviter rubro-striato.

Bei Gautier in Neuilly-sur-Seine enogcD uud (903 magi stellt.

H. uplendida llori. ex Cat. Pitcher and Kindii. — Sec. specimina in Horto Univ. Pennsylv. asserv it* f»«rf«(*rs probabiliter sunt ei Liu «r in *N. Ratcliffiana*.

It. Beck in Wi.'ii. HI. GartCBXtg. \\. (1896) 22it; Miller in CjrtJ. AIINT. ll<iri. III. (1901) 1074. —- Parents non accurate art), tad i!\ itractora probaii iliter *N. Sedeni* (*N.* »p. incert. X *di^ilbttori't)* >; *//.ookeriani/.* — Vis dn Tert a *N. Henryana* et *N. Outramiana* porcotihus simililms, asrirliis rujsptis, quae iu *N. Williamsii* luteo-rnbra vcl palG do-rubru niMt'ulis multis sauguineis colorul* d in tus superne ^luucti-rulna ftl [nirpiuTo-maculnta sunl.

Ik-i Tnpliii crzogen uml Ton Williams 1880 in den Handel gebrachi,

H. Wittei Veitch in Joum. i:-, Bod Soc !D I. (1897) 238; Kevi Bulletin (1*97 S38, «d>i |'-i rentes (*N.* sp. incert. [a wciori onints cli aracteres hybridae indicant *N. steno-phyUa]* >(n *maxima)* indicati sunt, sed line »iescrip(iono Deflcripllo subMtfatina «el ex specimine in Hort. Bot. Uni>.».T»Unli s Pennsylvaniae uBS«rvm o, quod cum speciminibus kuwen*ibu8 et Vcilchinnw rongruit. — Cattfia fiparse puberuhia; folia SO— 30 rni X 4—6 cm mbeoritcea peliotata; pcliuliis tlaiiiK, *n\&b* iiifdiiitn versiiN ± UHU ustatae, baei ±z eipnns:* e et ³/₄ -innplciicaules, I....ton eUipUoo-0 bovata apice roitintlatit vi>l p*K tata, iuddo- ad hrteo-viridis, supra glabra, suhliui ylnlmi costa et margine exceptis, qoaa En rugineo-hirsuta et <ilialn aunt; aacidia m— j t t n: a × 2—2,5 cm cylindrico-Uibotota, iHiiiiiiiii vewus levthir contxarUi, stiti pcrbtni nio cinctu brunneo-pubescente iiiMrucla, htftguliriter rubro- rel pui purpureo-maculata, alae inferne reductae, os versus et ante os grailntiiii etpatistii et ciliatae; M ohli()t um; 1 ri*.|,i»niiiiii) antie< et postice angustat uit media ± late .\^;insitm, poatico bn eolltun •longatum; operculum 3— 4 *cm* X *t*—3 cm OTaton ordatum, extus rubro-striatum et maculatum, oliu bad carina vertic;ili i»Hii uctum.

it«'i Wiii*[1] anogen uod ihitch < 1 • • - Flrait Vailch au*gi geben.

H. Wrifflejana Hort. ex Masters in Gard. Chron. 2. s. \\ll [Ms.* u3 et icon.; Nlicbolaoa in 1 ict. of Gar -1. 11.(1885) 43u; 0. Beck in Wieo. in Gartenztg. \\ (Ua5) SJ3; Veitch, Hort. Veitch. (1906) 307, 187. — *N. phyllamphora* × *Hookeriana*, ergo pare•"> ut in X *mi*<*inea*, *N. Eyermanni*, *N. Lawrenceana*, *N. Morganiana*, *N. p•aritdimr*, N. *Jtaicliffw na*, *N. robusta* et *N. Stewartii*. — Cbai acteres in ilti« hybridis fere eidem sed varia |iilt?». Atictor pro ats nomi n unicum i>r<n onit.

Nomina ouiia v. tnrcrtn.

N, criitau Brottgn. in Inn. 1 . nat. 1. s. I. (1824) is.

N. Lindleyana Low ex W. But. in Louden, II rt. Brit. S *-y* Ml. *'i t* 50) 593.