This species has the colouring of *Elaps bivirgatus*, Müller, and has most probably been mistaken for that species; but it is of a much larger size, and easily known by the large size of the vertebral scales.

In the young specimen the spot on the back and sides forms a nearly continued stripe, and the outer edge of the ventral shield is clouded with black.

British Museum, August 21, 1849.

XXVIII.—Contributions to the Botany of South America. By John Miers, Esq., F.R.S., F.L.S.

[Continued from p. 193.]

SOLANDRA.

I NOTICE this genus, in order to confirm what has been already advanced respecting it in the preceding volume of the 'Annals,' p. 176, when I endeavoured to show that its relation is decidedly with Juanulloa, Marckea and Sarcophysa, constituting with these genera a distinct tribe of the Atropaceæ or Atropineæ, and in no degree related to Datura, with which it has been classed by all botanists heretofore. It will be seen to approach Juanulloa in its large tubular calyx, which splits generally on one side, in consequence of the growth of its large fleshy berry, in the structure of which there exists a considerable resemblance in both genera, but it differs from that genus, in its much larger and more campanular corolla. It bears also great analogy with Brunsfelsia, in its large, yellow, fleshy border, with five rounded lobes, greatly fimbriated on their margins, and deeply imbricated in astivation, and also in its large berry filled with pulp; but it differs from this last-mentioned genus, in its general habit and in the structure of its stamens. It will serve to connect the Solandreæ with the Brunsfelsieæ, and in the linear arrangement shown in the tabular view, p. 176, as above quoted, it should have been placed below Ectozoma, and immediately preceding Brunsfelsia. I have not been able to examine its seeds or to find any analysis of its structure, any farther than that the embryo is said to be arcuate; in this respect it will probably resemble Juanulloa, Marckea and Franciscea, where it is terete, nearly straight or only slightly bent, with short, ovate cotyledons. The following is offered as an amended generic character:-

Solandra, Swartz. (Char. emend.)—Calyx 5-sepalus, persistens; sepala lanceolata, acuta, marginibus in tubum longum, cylindraceum, 5-angulatum, inæqualiter et breviter 2-3-partitum, demum hinc fissum, valvatim conniventia. Corolla

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magna, inferne valde coarctata, carnosa, cylindracea, 5-gona, superne ventricoso-campanulata, crassa, 5-nervis, venis anastomosantibus, limbo 5-partito, laciniis revolutis subæqualibus rotundatis margine inciso-crispatis, æstivatione valde imbricatis. Stamina 5, æqualia, ad constrictionem tubi inserta, inclusa; filamenta glabra, subulata, erecta, cum stylo declinantia; antheræ approximatæ, oblongæ, basi subcordatæ, sub-4-gonæ, apicifixæ, 2-loculares, margine longitudinaliter dehis-Ovarium conicum, 2-loculare, placentis cum dissepimento cruciformibus, hinc in loculis centralibus, valde incrassatis, lunulatis, undique seminigeris. Stylus tenuis, subexsertus, declinatus, superne subrecurvus. Stigma parvum, sub-2-lobum, intus glandulosum. Bacca calyce fissa cincta, ovata, apice conica, imo e placentis cum pericarpio demum connatis breviter sub-4-locularis, superne 2-locularis; semina plurima, oblonga, compressa, reniformia, in pulpam carnosam nidulantia. Embryo intra albumen carnosum arcuatus.— Frutices sarmentosæ Antillanæ et Mexicanæ; folia alterna, ad apicem ramorum conferta, obovato-oblonga, integra, subcarnosa; flores terminales, solitarii, rarius 2- vel 3-ni, maximi, albidolutescentes, rubro-picti.

- 1. Solandra grandiflora, Swartz, Act. Holm. 1787, 300. tab. 11; Fl. Ind. Oc. i. 387. tab. 9; Rchb. Fl. Exot. ii. 41. tab. 134; Jacq. Hort. Sch. i. 21. tab. 45; Salisb. Linn. Trans. vi. 100. tab. 6; Meen, Exot. Pl. Kew. tab. 6; Bot. Mag. tab. 1874; Tussac, Fl. des Antilles, ii. 49. tab. 12. S. scandens, Wild. Reliq. Rom. Sch. iv. 700. Datura sarmentosa, Lam. Encycl. vii. 463; —viscido-pubescens, caule sarmentosa, radicante; foliis alternis, aggregatis, petiolatis, obovato-oblongis, acuminatis; floribus terminalibus, solitariis, rarius 2—3 aggregatis, laciniis corollæ obtusissimis, crenato-laciniatis, antheris sublunatis, 4-cornibus, apiculatis, basi parum fissis, genitalibus subexsertis.—Jamaica.
- 2. Solandra nitida, Zuccag. Cent. Roem. Coll. 128. no. 40. Portlandia grandiflora, Hort. Batav.;—caule arborescente, ramis flexilibus, elongatis, divaricatis, cortice rimoso; foliis glaberrimis, nitidis; flore glabro, calyce 4-fido, corollæ limbo 6-7-fido, segmentis rotundatis, crenato-undulatis, revolutis; antheris 2-cornutis.—Jamaica.
- 3. Solandra guttata, D. Don. Bot. Reg. tab. 1551; Tecomaxochitl, Hern. Mex. 408. cum icone;—frutex erectus, ramosus, ramis foliorum lapsorum cicatricibus hispidis; foliis late elliptico-oblongis, acutis, subtus lanuginosis; floribus terminalibus, solitariis; calyce tubuloso, 3-dentato, dentibus inæqualibus, acutis; corolla ampla, pallide lutea, fauci purpureo-maculata, tubo longiori infundibuliformi, limbi laciniis latissimis, rotundatis, crispato-undulatis.—Mexico.

Dyssochroma.

A recent inquiry into the different species of Solandra, with the view of determining the true limits of that genus, has convinced me that a considerable difference of structure exists between Solandra grandiflora and S. viridiflora; upon comparing these carefully, we cannot fail to arrive at the conviction, that these two species must be held to be generically distinct. In the former instance, the calvx has the shape of a large and cylindrical tube, irregularly cleft in the mouth into three unequal rather short teeth; it does not increase in size, but, in consequence of the growth of the fruit, splits on one side, by a longitudinal fissure, to the base; in S. viridiflora, on the contrary, the calyx consists of five, very distinct, lanceolate divisions, all free to the base, which at first are slightly connivent by their somewhat thickened margins, but which are easily, and soon become, separated into distinct sepals. The corolla in Solandra grandiflora is much larger, more campanulate, of thicker consistence, of a yellowish colour, with deep red nervures, and with a border of five large rounded lobes, remarkably crenated or fimbriated on their margin, and these are considerably imbricated in æstivation, one lobe being quite interior, and another altogether exterior: the stamens are also very glabrous. On the contrary, in S. viridiflora, the corolla, of a greenish lurid white, is deeply divided (half-way down) into five equal, revolute, lanceolate, acuminated and entire segments, which are quite valvate in æstivation, and connivent by their somewhat inflected tomentose margins: the stamens are swollen and very sericeously pilose at their base; in drying, both calyx and corolla become black, which does not occur in the true species of Solandra: in the latter genus the flowers are always terminal, whereas in S. viridiflora they are solitary and axillary, or at least grow out of several nearly terminal axillary fascicles of leaves: there are some other minor points of difference that will be traced in the details of the characters described. From these facts it will be seen that the new genus, of which the Solandra viridiflora may be considered the type, must be referred to the true Solanacea, and that it will belong to the Jaborosea, serving to connect that tribe with the Iochromeæ, and closely allied to Salpichroma and Nectouxia. I have called it Dyssochroma, from δύσσοος, æger, and χρώμα, color, on account of the lurid sickly green colour of its large flowers, which become black as they wither, or lose their moisture in drying, a character common to all the Jaboroseæ. I have not been able to examine the embryo of this genus, but we may expect it will prove very different in form from that of Solandra. The following may be considered as its generic character:—

Dyssochroma, gen. nov.—Calyx magnus, 5-sepalus, persistens;

sepala lanceolata, acuminatissima, primum marginibus in tubum 5-angulatum conniventibus, semicylindrica, demum libera, erecta. Corolla carnosa, tubo imo cylindrico, angulato, superne infundibuliformi, aut ventricoso-campanulato, 15nervi, limbo æquilongo, 5-partito, laciniis æqualibus, longe lanceolatis, acuminatissimis, integris, 3-nerviis, circinato-revolutis, æstivatione valvatis, marginibus tomentellis, subintroflexis. Stamina 5, æqualia, ad constrictionem tubi adnata, erecta, longissime exserta; filamenta subulata, imo incrassata, et sericeo-pilosa, superne glabra; antheræ lineares, apice mucronulatæ, imo cordatæ, in sinu dorsi affixæ, 2-loculares, loculis connectivo angusto parallele adnatis, intus longitudinaliter dehiscentibus. Stylus erectus, staminibus longiusculus, apice Stigma 2-lobum, lobis oblongis, adpressis, intus incrassatus. et marginibus recurvis glanduloso-viscosis. Ovarium conicum, disco carnoso magno impositum, 2-loculare, placentis centralibus dissepimento adnatis, multiovulatis. Bacca; cætera ignota.—Suffrutices Brasilienses, scandentes, glabræ; folia alterna, in ramis laxa, in turionibus florentibus fasciculatis, ellipticis, acuminatis: flores pedunculati, e fasciculis solitarii, cernui, siccitate nigricantes; corolla albido-viridescens.

1. Dyssochroma viridiflora. Solandra viridiflora, Sims, Bot. Mag. tab. 1948; Link & Otto, Ic. Pl. sel. 101. tab. 47;—foliis elliptico-oblongis, utrinque attenuatis, glabris, petiolatis, deciduis; floribus magnis, solitariis, calyce glaberrimo, corolla tubo viridescente, limbo lurido-albescente.—Brasilia, Prov. Rio de Janeiro, v. v. et s. in herb. meo et Hook. (Gardn. no. 502).

I found this plant growing at Tejuca and in the Organ mountains: it is altogether glabrous: the stems are sarmentose, and in the younger branches the leaves grow in dense fascicles, which, as they fall off, leave them covered with crowded cicatrices, giving them an areolate rugose appearance; these terminate in a straight, angular, smooth stem, covered with a shining bark that readily peels off; the axils here are from $1\frac{1}{a}$ to 2 inches apart, and each solitary petiole is articulated in a projecting cup, from which a sharp ridge becomes decurrent on the stem below it; the leaves are $4\frac{1}{2}$ inches long, 2 inches broad, on a channeled petiole $\frac{1}{2}$ to $\frac{3}{4}$ inch in length; the peduncle is $\frac{3}{4}$ inch long; the cally $1\frac{1}{2}$ inch in length, $\frac{1}{a}$ inch diameter; the corolla including the lobes, at the period of opening, is 4 inches long, and when the segments are coiled back, $2\frac{1}{2}$ inches long; the cylindrical portion of the tube, ³/₄ inch long, is included within the calyx, from which point it becomes gradually funnel-shaped, and a little below the mouth is somewhat ventricose, and about 1 inch in diameter, the lobes of the border being $1\frac{1}{2}$ inch in length and 5 lines broad at base, these are marked by three parallel nerves which are continued

along the tube; the stamens and style are exserted $1\frac{3}{4}$ inch beyond the mouth of the tube, the anthers being 6 lines long and a line broad; the style thickens towards the summit, and is terminated by a stigma formed of two adpressed lobes, lined within by a thick viscous gland; the ovarium is about 3 lines in diameter and 3 lines in height, quite conical, and seated on a large fleshy and coloured gland.

2. Dyssochroma longipes? Solandra longipes, Sendt. in Mart. & Endl. Fl. Bras. vi. 159; Walp. Rep. vi. 573;—fruticosa, glabra, foliis congestis, glabris, utrinque acutis, integerrimis; floribus nutantibus; pedicellis calycem subæquantibus, vel superantibus, fructiferis valde elongatis: calyce 5-partito; corolla infundibuliformi, e basi sensim dilatata, limbo breviter 5-fido, laciniis acutis revolutis: stigmate longissimo spatio in stylum decurrente.—Brasilia australi.

The above is all the information I have been able to obtain of this species: it will be seen to differ in no respect from the preceding one (as far as we may judge from the foregoing characters) except in the shorter lobes of the corolla: the gradual dilatation of the corolla, without any sudden ventricose enlargement, is very often seen in *D. viridiflora*.

CACABUS.

This genus was first proposed by Bernhardi for a Peruvian plant of Dombey's collection, which was many years before accurately described and figured by L'Heritier (Stirp. Nov. Angl. p. 43. tab. 22), under the name of *Physalis prostrata*, and which appears to have since escaped farther notice: I find other species allied to it, which are all distinguished by their inflated calvx, generally of very delicate texture, remarkably reticulated, marked by dark green lines and veins, and which, swelling after the fall of the flower, eventually incloses the fruit, as in *Physalis* and several other genera. They have all herbaceous stems, are of a prostrate or straggling habit, and they bear a very striking resemblance to Nolana, especially in their fleshy flexuose branches, often geminate leaves, large campanular blue flowers, with a somewhat pentangular border, and marked with fifteen longitudinal nervures, as in that genus: the stamens are also included and somewhat unequal in size: indeed so near is this similarity in external appearance, in one species, that I have constantly passed over, without suspicion, a specimen of Mathews's collection, named by him "Nolana spathulata, R. & P.," which I did not consider it necessary to examine, as it was not in fruit.

There exists in Sir William Hooker's herbarium, a plant belonging to this genus, which appears to correspond well with the description of the *Nolana inflata* of the 'Flora Peruviana,' a spe-

cies which its authors neither saw nor examined, the drawing and details there given having been furnished by their draughtsman Tafalla, who probably never looked to the structure of the fruit, concluding the plant to be similar to the other species of Nolana there described: it is to be observed, that these species are as yet quite unknown to modern botanists, except from those descriptions, and may therefore be doubted as appertaining to

that genus.

In all the specimens I have examined belonging to the genus Cacabus, the ovarium is 2-celled, with a slender membranaceous dissepiment, along the axile line of which, the free placentæ are respectively attached at right angles; these are furcated and fleshy, extending near to the walls of the pericarp, so that when the fruit is cut open, the dissepiment being scarcely visible, the placentations, with the attached seeds, appear disposed in a somewhat cruciform shape, seemingly as if the berry were 4-locular. The fruit, according to L'Heritier (loc. cit.), is a berry with an aqueous juice, as in Nicandra, and which, upon becoming dry, leaves a subcapsular, brittle, valveless shell, and which is bilocular with a membranaceous partition: as in Physalis, this berry is inclosed within a much larger ventricose calyx. Upon the summit of the ovarium and of the immature berry is seen a small flattened prominent gland, out of which the style originates: this bears much analogy to the larger epigynous gland so conspicuous in the ovarium of Hyoscyamus, and to which is attributable the peculiar mode of dehiscence in the fruit of that genus; but in Cacabus there is no such opercular dehiscence, although the gland is visible in the apex of the cells after the opening of the pericarp; a similar disc exists also in Thinogeton. I propose for this genus the following character:

CACABUS, Bernh. — Calyx ventricosus, urceolato-subglobosus, membranaceus, inflatus, 10-angularis, 5-dentatus, dentibus inæqualibus, acutis, erectis, angulis nervosis, persistens et accrescens. Corolla campanulata, tubo imo breviter coarctato, subito ampliato, limbo campanulato, magno, margine explanato, subintegro, sinuato-pentangulari, 15-nervi, nervis in angulis ternatim parallelis, æstivatione ignota. Stamina 5, inclusa, fere æqualia; filamenta ad coarctationem tubi adnata, filiformia; antheræ ovales, erectæ, 2-lobæ, lobis parallele adnatis, margine longitudinaliter dehiscentibus. Ovarium ovatum, substipitatum, apice glandulo parvo carnoso donatum, 2-loculare, placentis dissepimento tenuissimo utrinque adnatis, cruciatim dispositis, et demum divaricatim 2-fidis, multiovulatis. Stylus filiformis, longitudine staminum. Stigma elongatum, 2-lamellatum, lobis crassis subconniventibus intus stigmatosis. Bacca intra calycem auctum, vesiciformem, venoso-membranaceum,

reticulate pictum inclusa, subrotunda, exsucca, cortice fragili evalvato, 2-locularis, dissepimento tenui, placentis subcruciatis seminigeris. Semina numerosa, subreniformia, compressa, testa rugosa, hilo laterali marginali. Embryo intra albumen carnosum teres, subannularis, radicula angulo basali spectante et hilo evitante, cotyledonibus semiteretibus æquilonga.—Herbæ Americæ meridionalis prostratæ, subsuccosæ, pilosæ, Nolanæ facie; folia in axillis alterna, geminata, ovata, sinuato-angulosa, petiolata; flores gemini, extra-axillares, pedunculati; corolla violacea.

1. Cacabus prostratus, Bernh. Linn. xiii. p. 360. Physalis prostrata, L'Herit. loc. cit.; Jacq. Ic. Pl. Rar. Am. tab. 38; Andrews, Rep. tab. 75; Nees ab Esenb. Linn. vi. p. 480. P. Limensis, Retz. Observ. v. p. 22. Physaloides prostrata, Mönch. Method.; —herbaceus, annuus, pilis articulatis patentibus vestitus, caule prostrato; ramulis dichotome flexuosis; foliis radicalibus oppositis, caulinis alternis, et geminis, altero minori, late ovatis, sinuato- vel repando-angulatis, basi subinæqualibus, obtusis, supra glabris, subtus villosis, margine ciliatis, longe petiolatis, petiolo canaliculato dilatato, ciliato, folio æquilongo: pedunculis solitariis vel geminis, in axillis lateralibus, floriferis erectis, demum reflexis, elongatis; corolla cærulea, imo albidoradiata; bacca globosa, glandulo parvo epigyno apiculata, calyce membranaceo multo majori recondita.—Peruvia, in maritimis? ad Chancay et Chorillos, Prov. Limæ.—v. s. in herb. Soc. Lin. (ex hort. cult.); in herb. Hook. (Palaria, ad sinum "los Chorillos" dictum, MacLean).

It is unnecessary to offer any detailed account of this species, as we find so excellent an account of it given by L'Heritier, who described it from living plants, at that time growing in England; it seems however to have been long lost to our gardens, although it was cultivated in Lee's nursery grounds in 1793, according to the specimen preserved in Sir J. E. Smith's herbarium. The leaves are from 2 to $2\frac{1}{a}$ inches long, $1\frac{1}{a}$ to $1\frac{3}{4}$ inch broad; they are finely reticulated, with a number of raised minute dots in each areole; the petiole is about 2 inches long, the flowers are quickly fugacious; the corolla is 1 inch long and 1 inch diameter across the mouth, the contracted base of the tube being 3 lines in length; the filaments are 3 lines long, slender, and hairy below; the fructiferous calvx is white, and almost transparent, hairy, globose, contracted in the mouth, with ten longitudinal nervures and anastomosing reticulations of a dark green colour, and is half an inch in diameter; the inclosed berry, when ripe, is 3 lines in diameter, 2-celled, with bifurcate placentæ bearing a number of minute rugose seeds; it is quite devoid of pulp; the pericarp is membranaceous, indehiscent, and its apex is marked

with a callous discoid process, resulting from the hardening of its epigynous gland.

2. Cacabus Nolanoides (n. sp.);—herbaceus, molliter villosus, caule striato, dichotome ramoso; foliis geminis, altero multo minori, ovatis, crassiusculis, undulato- vix sinuato-angulosis, margine ciliatis, basi inæqualibus, utrinque glabris, inferne nervis pilosulis, petiolo late dilatato, ciliato, folii longitudine; floribus solitariis, lateraliter extra-axillaribus, pedunculo florifero erecto, fructifero reflexo, corolla cærulea: calyce inflato, membranaceo, 10-nervi, reticulatim picto.—Peruvia, v. s. in herb. variis (Mathews, no. 839, sub nomine Nolanæ spathulatæ).

The leaves of this species are nearly oval, 4 inches long, $2\frac{1}{4}$ inches broad, upon a fleshy dilated petiole, with winged ciliate margins, $2\frac{1}{4}$ inches long and nearly 2 lines broad, subamplexicaul at base. The peduncle in flower is $1\frac{1}{4}$ inch long, the cally is 6 lines long and 4 lines broad, the corolla is $1\frac{1}{4}$ inch long, and $1\frac{1}{4}$ inch across its somewhat expanded and nearly entire border. The peduncle in fruit is reflexed, $1\frac{1}{a}$ inch long; the enlarged calyx is 8 lines long and 7 lines broad, the inclosed berry measuring 3 lines in diameter. This plant, which so greatly resembles the figure of Nolana spathulata in the 'Flora Peruviana,' differs from it in the size of its leaves, the length of the petiole, the shape of the calyx, the size of its corolla, its more entire, not deeply-lobed border, the shape of its stigma, its vesicular calyx, not fleshy and subsequently bipartite, and finally by the very different structure of its fruit. It agrees in many respects however with the description of the text*.

3. Cacabus? inflatus. Nolana inflata, R. & P. Flor. Peruv. ii. p. 7. tab. 112. fig. a;—herbaceus, pedalis, prostratus, annuus, foliis radicalibus confertis, oblongis, in petiolum longum imo decurrentibus, caulinis geminatis, ovatis, subobtusis, basi inæqualibus, breviter petiolatis, petiolo dilatato; floribus geminis, ex axillis lateraliter ortis, corolla speciosissima, albo-violacea; fructu calyce striato, ventricoso, incluso.—Peruvia (in arenosis Prov. Arequipæ).

From its inflated calyx, there is every reason to conclude that this plant belongs to this genus, rather than to Nolana. It was not seen by Ruiz and Pavon, being only known to them from the sketch sent them by their draughtsman Tafalla; the fruit is not described as consisting of distinct carpels, but as "semina 4-locularia," which may have been construed from "fructus 4-locularis," which the fruit of Cacabus almost appears to be, from its projecting placentæ. It has a prostrate habit, is about a foot long, its

^{*} A drawing of this species, with generic details, will be given in plate 49 of the 'Illust. South Amer. Plants.'

radical leaves are 4 inches in length, 2 inches broad, upon a petiole $1\frac{3}{4}$ to 2 inches: the cauline leaves are $1\frac{1}{2}$ inch long, 1 inch broad, on a petiole of 3 lines; the peduncles are $1\frac{1}{2}$ inch, the calyx 8 lines long, swollen in the middle, 4 lines in diameter, and 10 nerved: the corolla is nearly 2 inches long, $1\frac{3}{4}$ inch diameter across the mouth, which is obsoletely 5-lobed. In all the other species of Nolana mentioned in the work above referred to, the calyx is described as being deeply 5-cleft, with the divisions sagittate or cordate at the base, as in our well-known garden species Sorema prostrata; but in the plant under consideration the calyx is said to be distinctly ventricose and striated, which agrees with the character of Cacabus.

XXIX.—On the extinct and existing Bovine Animals of Scandinavia. By Prof. NILSSON of Lund*.

Of the Ox kind (Bos, Linn.).

Head oblong with broad muzzle; in which the nostrils project forward, open; no lachrymal fossæ; the ears pretty long, oval. Horns for the most part round, near the roots annular according to their growth; otherwise smooth; with roots pointing outwards and curved in different directions, according to the various races.

Body heavily built; loins angular, not round; stout, short, not high-boned, and broad. The female is provided with four teats.

Tail long, pendent; at the end it is furnished with a tuft of long hairs.

Teeth, the grinders with the internal and external borders parallel. Skull: no opening between the facial bones above or in front of the orbits over the eyes, as in the Deer tribe. The lachrymal bones flatter, not hollowed out. The spinal process of the anterior vertebræ particularly strongly developed, to serve as attachment for the strong neck-muscles and ligamentum nuchæ which support the heavy head.

The animals belonging to this class, with few exceptions, are the largest and strongest built of ruminating horned cattle. In a wild state they always live in herds under the guidance of some strong pugnacious bulls; wandering from one track to another; at one time seeking the forests, at another the plains; at another, mountains and table lands; and at other times low and marshy places. They seek grassy spots, for their chief food consists

t Whence the age of the animal is determined.

^{*} Translated from his 'Skandin's Däggdjur.' 8vo, 1848, pp. 536-574 † The naked part where the nose ends is so called; it comprises the upper lip and that portion between the nostrils.



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