the chemistry of protoplasm, and has indicated methods by which our knowledge may be extended and confirmed. To those who are especially interested in this subject the paper cannot be too highly recommended.

S. H. V.

**MONOGRAPHIAE PHANEROGAMARUM, PRODROMI
NUNC CONTINUATIO, NUNC REVISIO**, editoribus
et pro parte auctoribus Alphonso et Casimir De
Candolle. Vol. quintum, pars secunda: AMPELIDEAE,
auctore J. E. PLANCHON. Parisiis sumptibus G. MASSON. Julio,
MDCCCLXXXVII.

THIS is another of those valuable monographs supplemental to the Prodrômus which are being issued from Geneva through the munificence and under the supervision of the De Candolles, father and son. The fifteenth family which has been thus presented, it forms a goodly part of 350 pages, completing the fifth volume of the series. The Ampelideae appeared in the first volume of the Prodrômus issued by Auguste Pyrame de Candolle in 1824, and their description occupies exactly ten pages of the volume; in 1887 their treatment, even when one group is excluded, requires 313 pages. Difference in method of exposition of course accounts for some of the additional space required, and a better comparison to bring out the enormous increase in our knowledge of the group during the century is to be found in the number of species recorded in the two monographs; in the Prodrômus there are 108, in the new volume 390 are pronounced certain; and there are a number of species 'non satis notae' as well.

The monograph does not include the forms belonging to *Leea* which are usually incorporated in the Ampelideae, and M. Planchon explains: 'C'est à dessein que je laisse à part les *Leea* qui forment une section très spéciale, si non une famille à part, et qui viennent d'être étudiées monographiquement par M. J.-B. Clarke, dans le Journal of Botany, new series, vol. x. (1881).' In dealing with the other forms the author differs considerably from preceding writers in his method of generic grouping. Bentham and Hooker (*Genera Plantarum*, i. 387) have been content to place the 230 odd species known to them in two genera, *Vitis* and *Pterisanthes*, the former including the other well-known genera *Cissus* and *Ampelopsis*, and being almost co-extensive

with the family. Most recent botanical writers have followed them in this, and the form of the leaves has been generally taken as a useful character by which species may for convenience of reference be grouped. Against this system M. Planchon utters a protest. His complaint is that single characters such as the calyptroid corolla and its pentamery and tetramery have had assigned to them too much importance, and that in consequence the apparent simplification by reduction of genera has led to confusion, and that the grouping of the species by leaf-characters violates to a great extent natural affinity. He has therefore sought for a key to the alliance of species and a natural grouping in a combination of characters taken from such features as the constitution of the disk, the form and length of the style, the relation and surface of the testa and raphe, the presence or absence of a tendril upon the rachis of the inflorescence, the form of the inflorescence itself, and the state of sexuality in the flower. Of less importance are the calyptroid form of corolla and its tetramery or pentamery, and of still less value is the form of leaf. No one of these characters is of itself sufficient to diagnose a group, but together in various combinations they mark out aggregates which he thinks may be regarded as ten natural groups. The prime value of the groups based upon these trifling characters is, he admits, open to discussion. He himself calls them genera, but others will regard them as no more than sub-genera or sections.

The scope of his genera may be best understood by examination of their conspectus :—

‘CONSPECTUS GENERUM.

Flores polygamo-dioici. Petala 5 in calyptram cohærentia. Stylus conicus v. saltem brevis basique incrassatus. Stigma punctiforme v. vix dilatatum. Bacca bilocularis 2-4-sperma; semina sæpius pyriformia, foveolis ventralibus brevibus.

Frutices hemisphæræ borealis, plerisque e regionibus temperatis, fere omnes scandentes, cirrhosi. Folia simplicia, varie lobata (rarissime digitata). Thyrsi e cirrhosi v. cirrhiferi. I. VITIS Tournef. L. (pro parte).

Flores polygamo-monoici, partim pseudo-hermaphroditi. Petala 5 (rarius 4) sub anthesi patentia. Stylus brevis conicus, sæpe 10-striatus. Stigma foveiforme, vix dilatatum. Discus annuliformis erectus, sæpe 10-striatus. Bacca sæpius bilocularis, 2-4-sperma. Semina cymbiformia v. trigona, facie late bisulca. Thyrsi cirrhiferi.

Frutices scandentes, cirrhosi, utriusque orbis, plerique regionum calidarum incolæ. Folia simplicia v. palmata v. palmato-seu pedato composita.

II. AMPELOCISSUS Planch.

Flores polygamo-monoici. Petala 4-5 sub anthesi patentia. Stylus brevis. Stigma minutum. Discus annuliformis, ovarii basin cingens. Bacca bilocularis, 2-4-sperma. Semina trigono-ovata, ventre bifoveolata.

Inflorescentiæ axis in laminam lobatam dilatata, floribus in laminæ foveolis utrinque immersis, masculis marginalibus interdum pedicellatis.

Frutices Malayani. Folia indivisa vel pedato-aut palmatisecta.

III. PTERISANTHES Blume.

Flores polygamo-monoici. Petala 5, libera, expansa. Discus cupularis. Stylus longiusculus, subulatus. Bacca subexsucca, 2-locularis, 2-4-sperma. Semina ovato-trigona, ventre late bifoveolata.

Frutex Australiæ occidentalis, decumbens, cirrhosus. Cymæ pedunculatæ, basi cirriferæ. IV. CLEMATICISSUS Planch.

Flores polygamo-dioici. Petala 4, sæpius sub apice mucronato-corniculata, expansa. Discus hypogynus ovarii basin cingens. Stylus brevissimus v. brevis. Stigma dilatatum, 4-lobum vel 4-partitum. Bacca 2-4-sperma. Semina ovato-globosa, facie 1-3-sulca, sæpius transverse striata.

Frutices Asiæ calidæ et temperatæ, scandentes, cirrhosi. Folia sæpius pedata. Cymæ corymbiformes. V. TETRASTIGMA Miq.

Flores polygamo-monoici. Petala 5 expansa. Discus alte 5-lobus, lobi ovarii basi adnatis. Stylus brevis, crassus, cylindræus, Stigma disciforme.

Frutex Asiæ tropicæ. Folia 3 foliolata. Cymæ corymbiformes.

VI. LANDUKIA Planch.

Flores hermaphroditi (revera nonnullis pseudo-hermaphroditis). Petala 5, sub anthesi patentia (rarius hinc inde apicibus calyptrato-subcohærentia). Discus obsoletus ovarii basi plane adnatus et tantum colore proprio subdistinctus. Stylus subulatus, crassiusculus. Bacca sæpius 1-2-sperma.

Frutices Asiæ temperatæ et Americæ boreali-orientalis, scandentes, cirrhosi, cirrhorum ramis sæpius in discum cupuliformem prehensorium dilatati. Folia digitata v. palmatilobata. Cymæ cirrhosæ. VII. PARTHENOCISSUS Planch.

Flores hermaphroditi (revera nonnullis pseudo-hermaphrod., physiologice masculis, hermaphrod. intermixtis). Petala 5, rarissima 4, sub anthesi expansa. Discus cupularis 5-rarius 4-lobus, ovarii basi inferne adnatus, sub fructu in anulum basilem leviter accretus. Bacca 1-2-locularis, 1-4-sperma, sæpe nitore fere metallico splendente.

Frutices dumosi, cirrhosi, scandentes, non radicales, cirrhos apice non dilatatis.

VIII. AMPELOPSIS Michx. (pro parte).

Flores hermaphroditi v. pseudo-hermaphroditi. Petala 5-7 crassa, sub anthesi patentia, post anthesim involuta, plus minus marcescentia. Discus annularis ovarii basi adnatus, sub fructu in anulum obsoletum irregulariter repandum persistens.

Frutices capenses v. Africæ tropicæ et subtropicæ, dumosi, scandentes, sæpius facie Rhois. Folia trifoliolata (foliolis externis inæquilateris) v. unifoliolata v. integra v. palmatiloba. Cymæ sæpius cirriferæ foliolata. IX. RHOICISSUS Planch.

Flores hermaphroditi (vel potius physiologice polygamo-monoici, floribus pluribus pseudo-hermaphroditis muscularum vicem gerentes). Petala 4, sub anthesi patentia v. interdum in calyptram plus minus cohærentia. Stylus subulatus tenuis; stigma minutum. Discus cupularis basi imâ tantum ovarii basi adhærens, margine 4-lobus. Bacca 1-2-3-4-sperma.

Frutices scandentes, repentes v. erecti, cirrhosi v. ecirrhosi, habitu et facie valde variis. Folia integra v. lobata v. varie composita (palmato v. pedato-decomposita). Cymæ oppositifoliæ v. terminales v. pseudo-axillares, raro cirriferæ.

X. CISSUS L. (pro parte).'

What we have here is practically this: The old genera *Vitis*, *Ampelopsis*, and *Cissus* are re-established in modified form, and from each off-shoots have been removed as new generic types. Thus *Ampelocissus* and *Clematocissus* include members lopped from *Vitis*,—the former taking monœciously polygamous forms which have non-calyptroid corollas; the latter, monotypic, having the character of *Ampelocissus*, but with a smooth long style and almost dry fruit,—and *Tetrastigma*, an old section of *Vitis* on account of its stigma, is separated as a distinct genus. *Ampelopsis* is restored in the restricted sense instituted by Rafinesque for the forms of which Michaux's *A. cordata* is the type, whilst those which are the true Virginian Creepers, and with which since the work of Torrey and Gray the genus has been so widely associated, are now separated from it as *Parthenocissus*, their obsolete disk being a chief differential character. *Cissus* has given off to *Rhoicissus* its pentamerous forms with marcescent corolla and annular disk: and lastly, *Landukia* is founded upon a single Eastern species, which has been variously referred by authors to *Vitis*, *Ampelopsis*, and *Cissus*. The larger of the genera thus created, *Vitis*, *Ampelocissus*, and *Cissus*, are divided by M. Planchon into sections.

In defence and explanation of this view of affinities in the family, M. Planchon refers in his Introduction to the relative value of the characters in which he has sought diagnostic marks and aids to generic grouping, and points out that the leaves in a family which has so many heterophyllous forms are naturally of quite secondary importance. The same may be said, though with less force, of the pentamery and tetramery of the corolla, for *Ampelocissus* has both forms in the same inflorescence. Whilst the calyptroid corolla is a general and normal feature in *Vitis*, it is present also exceptionally in *Cissus*. The constitution of the disk furnishes very important characters. Always adnate to the base of the ovary, it is erect with a distinct brim in *Vitis*, *Ampelocissus*, and *Tetrastigma*; a cup with nectariferous marginal depressions in *Cissus*; an undulate ring persisting at the base of the fruit in *Ampelopsis*; whilst it is reduced to the adnate portion without trace of brim in *Parthenocissus*. The form and length of the style are also of importance. It is conical and smooth in *Vitis*, conical and often grooved in *Ampelocissus*, and it is always short in these genera and in *Pterisanthes*. *Cissus* has a long style. *Clematocissus* is a transition form with a style almost as long as that in *Cissus*, and *Ampelopsis* has a style with the stoutness of

that in *Vitis*, only much longer. The exceptional dilatation of the stigma in *Tetrastigma* gives its essential character. The number of seeds, 1-4, in the bilocular baccate fruit serves to distinguish sections of *Cissus*, but is of less importance than the form. The structure of the seed is uniform, but the absence or presence and the length of the beak at the base of the seed, the position of the raphe on a ridge or on a flat surface, the termination of the raphe in a rounded or linear projection at a certain point on the back of the seed, together with the smooth, rough, or other character of the surface of the testa, afford characters of distinction. The presence or absence of tendrils is not a feature of much value, but the presence of a tendril upon the rachis of inflorescence is a constant feature in *Ampelocissus*, more rare in *Vitis*, frequent in South African *Rhoicissi*, and found in one Australian *Cissus*. The tendril is wanting in the inflorescence of most species of *Cissus*, *Parthenocissus*, and *Ampelopsis*. As to the inflorescence, it varies from a thyrsus in *Vitis* to a false umbel or spike or other form of cymose branching in other genera, and its kind must be taken into account as one in the assemblage of characters. The sexual states of the flower too are to be noted. *Vitis* has male flowers separate from the female ones, which latter are apparently hermaphrodite, but owing to imperfection of many flowers polygamy arises, and the genus is dioeciously polygamous; so also are some forms of *Tetrastigma*. *Cissus* has on the other hand monœcious polygamy (with appearance of hermaphroditism), and may thus be distinguished from *Vitis*.

The Ampelideae inhabit all regions of the globe save the Arctic and Antarctic¹, and M. Planchon appeals to distribution as giving support to his grouping in an interesting sketch in his Introductory chapter. The thirty-three species of *Vitis* certainly determined are confined to the Northern Hemisphere, *V. vinifera* being the only European form. Asia, which also possesses *V. vinifera*, has besides eight other species in its temperate regions (Himalaya, China, Japan). America has fifteen species, all different from those of Asia, though many are representative; for example, *V. Labrusca* of the United States and *V. Coignetiae* of Japan, *V. caribaea*, and the Indian *V. lanata*.

¹ Ventenat, indeed, named an Australian species, *Cissus antarctica*. This does not occur outside Australia, hence the name is inapt. It is not, however, without surprise that we find in this book the law of priority sacrificed before the altar of fitness, and *Cissus Baudiniana* replacing the older name of Ventenat.

Ampelocissus has sixty-two species entirely tropical, mostly African and Asian; only two are American, and one is West Indian. The eleven species of *Pterisanthes* are natives of the East Indies. *Clematocissus* is founded on von Müller's West Australian *Vitis angustissima*. *Tetrastigma*, with thirty-eight species, is entirely tropical Asian, extending westwards from India, and reaching in one species Australia. *Landukia* includes only Hasskarl's *Cissus Landuk* of Java and Tunkin. *Parthenocissus* has seven species; amongst them the well-known *Ampelopsis hederacea* and *A. tricuspidata*, which inhabit the mountainous and temperate regions of the Northern Hemisphere. To *Ampelopsis* is assigned fourteen species, false Virginian Creepers, which spread through Asia Minor, China, and Japan, and then turn up again in the Eastern State of North America. *Rhoicissus* includes the false Virginian Creepers of Africa, which, nine species in number, inhabit chiefly South Africa, but are represented throughout tropical and sub-tropical Africa by *R. erythroides*, and in Somali Land have another representative. Of *Cissus* itself, the largest genus of the family having 214 species, the section *Cyphostemma* has its maximum in tropical and sub-tropical Africa, with a few in India and Arabia; *Cayratia* is spread in the warmer parts of Africa, Asia, and Australia; whilst the *Eucissi* are mundane in the tropics and warmer regions, but all New World species are distinct from those of the Old World.

Whilst it may be doubted whether the groups which M. Planchon has established as genera in this monograph will be accepted as such by botanists generally,—certainly those who adopt the standard laid down by Bentham and Hooker will be unable to do so,—it is impossible to estimate their value, either as a natural grouping or as a practically convenient method for identification of forms, without putting them to a practical test. The forms in the family are admittedly so variable and difficult that any scheme which provides a ready key to the species will be a boon to botanists, and it may be hoped that M. Planchon's work may supply this. Apart however from its practical usefulness in this way, the monograph, which is a worthy member of the series to which it belongs, must be regarded as a valuable contribution to our knowledge of plant-forms, for it gives the result of M. Planchon's prolonged study of living plants of the group and of his examination of dried specimens in the chief herbaria of Europe, although in regard to this latter point, it may perhaps be

matter for regret that the extensive collection at Kew and at the British Museum could only be rapidly glanced at, and that the types of Professor Lawson's monograph of the Indian forms in Hooker's Flora of British India were not examined.

I. B. B.

BOOKS AND PAMPHLETS RECEIVED.

ALFORD-NICHOLLS, H. A.: The cultivation of the Lime (Antigua Churchman, 1887). — ASCHERSON, P., and SCHWEINFURTH, G.: Illustration de la Flore d'Égypte. Le Caire, 1887. — BARY, A. de: Lectures on Bacteria, 2nd improved edition. Translated by H. E. F. Gamsey. Revised by Isaac Bayley Balfour. Oxford, Clarendon Press, 1887. — BIGELOW, R. P.: On the Structure of the frond in *Champia parvula*, Harv. (Proc. Amer. Acad. Arts and Sciences. Vol. XXIII, 1887). — BOWER, F. O.: Note on a Morphological peculiarity of *Cordyline australis* (Proc. Phil. Soc. Glasgow. Vol. XVIII, 1886-87). — Id.: On *Humboldtia laurifolia*, Vahl, as a Myrmecophilous plant (*ibid.*). — BOWER, F. O., and VINES, S. H.: A course of practical instruction in Botany, Part II. London, Macmillan, 1887. — CANTLEY, N.: Annual report on the Botanic Gardens, Singapore, for the year 1886. Singapore, 1887. — Id.: Report on the Forest Department, Straits Settlements, for the year 1886. Singapore, 1887. — CORREVON: Liste des plantes de montagnes élevées au Jardin d'Acclimatation de Genève. — DEFLERS, A.: Herborisations dans les montagnes volcaniques d'Aden (Bull. Soc. Bot. de France, Tom. XXXII). — DRUMMOND, A. T.: The distribution and physical and past geological relations of British North American plants (Canadian Record of Science. Vol. II. Nos. 7 and 8. 1887). — FARLOW, W. G.: The Task of American Botanists (The Popular Science Monthly, July 1887). — Id.: Vegetable parasites and evolution. The Presidential address before the Section of Biology, American Assoc. for Advancement of Science, August 1887. Proc. Vol. XXXIII. — Id.: *Aecidium* on *Juniperus virginiana* (Botan. Gazette, Vol. XII, No. 9). — FERGUSON, WM.: A Bazaar drug called Gunta Barnigi, Bhooi Jamb, Siritekku, etc., identified as *Premna herbacea* Roxb., and other notes. Colombo, 1887. — FREAM, W.: Preventible losses in Agriculture (Read before the Economic Section of Brit. Assoc., 1887). — GEDDES, P.: A restatement of the cell-theory (Proc. Roy. Soc. Edin. Vol. XII (1883-84). — Id.: Theory of Growth, Reproduction, Sex and Heredity (Proc. Roy. Soc. Edin. 1885-86). — Id.: A Synthetic Outline of the History of Biology (Proc. Roy. Soc. Edin. 1885-86). — Id.: Syllabus of course of twelve lectures on the outlines of Modern Botany. — GRAY, ASA: Lessons in Botany. Iveson Blakeman and Co., New York, 1887. — GREENE, E. L.: Pittonia; a series of botanical papers. Vol. I, Parts 1 and 2. Berkeley, California, 1887. — Id.: Studies in the Botany of California and parts adjacent, VI (Bull. Californ. Acad. of Sc. II. 7, 1887). — GREEN, J. R.: On the changes in the proteids in the seed which accompany germination (Phil. Trans. Vol. 178, 1887. — HALSTED, B. D.: Bulletin of the Iowa Agricultural College, from the botanical department, Cedar Rapids, Iowa, 1887. — JOLY, CH.: Note sur l'exposition horticole de Florence. Rougier et Cie., Paris, 1887. — LAWES, SIR J. B.: Memoranda of the origin, plan, and results of the Field and other experiments conducted on the farm and in the laboratory of Sir J. B. Lawes at Rothamsted, Herts. June, 1887. — LUBBOCK, SIR JOHN; Phytobiological observations on the

1887. "Monographiae Phanerogameram, Prodrumi Nunc Continuatio, Nunc Revisio by Alphonso et Casimir De Candolle [Review]." *Annals of botany* 1, 195–201. <https://doi.org/10.1093/oxfordjournals.aob.a089054>.

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