NOTES.

ON THE GENUS *CORYNOCARPUS*, FORST. SUPPLEMENTARY NOTE.

—I much regret that both Dr. Fritsch and I overlooked a paper¹ by Professor P. Van Tieghem, in which he discusses the anatomy, floral structure and systematic position of *Corynocarpus*. The Author courteously sent me a copy of the paper in question, and I hasten to make some amends for the omission of all reference to it in my account of the genus² by giving here the principal results of his investigations. His description of the anatomy of the stem and leaf agrees in the main with that of Dr. Fritsch; but the latter omitted to mention the isolated crystals, which one cannot possibly overlook in a longitudinal section. His part, however, was hurriedly done just before his departure for Ceylon. I wished merely to show that there are no resin-ducts.

Van Tieghem agrees with Engler in treating *Corynocarpus* as the type of a natural order or rather 'famille autonome,' as he designates it; but his views on the immediate affinities of this genus are wholly different. He lays great stress on the structure of the ovule in classification, and ranges *Corynocarpus* 'dans l'ordre des Pernucellées bitegminées . . . qui a pour famille type les Géraniacées.' I do not underestimate the value of anatomical characters, but I do not attach so much importance to them for purposes of classification as the learned author, mainly because it leads to refinements and generic subdivision impracticable in applied or daily botany. I would none the less recommend a perusal of his interesting paper³.

Van Tieghem describes the ovule of *Corynocarpus* as having a large, persistent nucellus, surrounded by two integuments. The external integument is very thick, consisting of from twenty to thirty layers of cells; whilst the internal is thin, having only three layers of cells, of which the outer has larger cells elongated radially. At the micropyle the internal integument extends up the exostome but not above it, and the nucellus also projects into the endostome 'so that the pollen-tube comes directly upon the nucellus, without having to traverse the micropyle, as directly, indeed, as though the two integuments did not exist.'

I must confess that I do not quite understand this description, because the pollen-tube must traverse the micropyle, whether open or narrow, unless the nucellus actually projects to the very top of the combined endostome and exostome.

All the writers whom I have consulted, except Van Tieghem, describe the leaves of *Corynocarpus* as exstipulate. He says they are furnished with broad, caducous stipules. In flowering or fruiting herbarium specimens, no stipules are

¹ Sur le genre *Corynocarpe*, considéré comme type d'une famille distincte, les *Corynocarpacées*. *Journal de Botanique*, xiv (Juillet, 1900), pp. 193-7.

² *Annals of Botany*, xvii (1903), pp. 743-60, pl. 36.

³ See also his paper: L'Oeuf des Plantes considéré comme base de leur classification, *Ann. Sc. Nat.*, 8me. série, xiv (1901), pp. 213-390.

to be found, but there are lines running from the base of the petioles, partly round the branches, which might be taken for the scars of fallen stipules or the decurrent margins of the petiole.

Fortunately I have been able to examine young shoots from a plant growing at Kew, and I suspect that the organs termed stipules by Van Tieghem are really bud-scales, but I have not been able to examine them so thoroughly as to give a positive opinion, though possibly he has. They are deltoid, acute bodies 2-3 lines long, situated more or less within the axils of the leaves, but falling away as the leaves above them develop. Occasionally they lodge in the axil of a leaf long after organic connexion has ceased to exist, sometimes even until the leaf above is fully developed.

I may add here that Mr. T. F. Cheeseman, Curator of the Museum at Auckland, New Zealand, has obligingly sent to Kew several flowering specimens and a quantity of flowers in alcohol of *Corynocarpus laevigata*, in order to give me further opportunities of examining the staminodes. It may not be remembered, perhaps, that there was a doubtful point in this connexion. I explained in my former paper, p. 744 (and Fig. 7, Pl. 46), that Banks and Solander described and figured the staminodes as three-toothed at the apex, whereas all the staminodes of *C. laevigata* examined by myself and others, including Cheeseman, were irregularly and minutely toothed or fringed from about the middle upwards and around the top. I have examined a number of the flowers sent by Mr. Cheeseman and they all presented the same kind of staminode, except that the toothing or fringe in some instances extended almost to the base. But in none of these did I find a second carpel, or traces of a second, though there was a slight obliquity in the one present.

With regard to the Maori name *karaka*, I have the authority of Mr. Cheeseman¹ that it is applied to *Elaeocarpus rarotongensis*, Hemsl., by the natives of Rarotonga. What connexion there may be, I cannot even suggest, but the foliage is somewhat similar to that of *Corynocarpus* and the fruit is a drupe. As mentioned before, some writers have endeavoured to prove that the Maoris migrated from 'Hawaiki' by way of Rarotonga to New Zealand.

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THE VASCULAR SUPPLY OF STIGMARIAN ROOTLETS.—In Vol. XVI of these Annals I described the course and termination of certain vascular branches of Stigmarian rootlets, which had first been observed but wrongly interpreted by M. Renault. Instead of supplying lateral roots as Renault had supposed, the vascular branches terminate in the outer cortex in wide spirally thickened cells, resembling in appearance the transfusion-cells of leaves. These cells I figured in transverse and longitudinal sections of rootlets (Pl. XXVI, Figs. 4 and 5), and also in surface view (Fig. 2 c). But this latter figure was not very clear, as the section was somewhat oblique and slightly compressed at c, and, as I stated in my paper, 'it is difficult to ascertain what was the size and distribution of these patches

¹ *Trans. Linn. Soc.*, 2nd series, Bot. vi, p. 275, t. 31.

Hemsley, W. Botting. 1904. "On the genus *Corynocarpus*, Forst, supplementary note." *Annals of botany* 18, 179–180.
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