superior, while the ovules are wholly exposed owing to the disappearance of the protecting ovary-wall. This specimen was discovered among a batch of normally flowering plants in the Conservatory of the Royal Gardens, Kew, and proved to be the only example despite a careful search. The two petals had the colour and form usually associated with those of staminate flowers, the stamens numbering thirteen and being in every point a replica of normal ones, except that several of their connectives were subacute at their apices instead of truncate. Like the stamens, the styles originated from the base of the superior, exposed, ovuliferous lamellae, which latter appeared twisted and folded among themselves, and thickly studded with normally anatropous ovules of a dingy translucent grey. Three of the styles were perfectly normal, the remaining two exhibiting fusion with stamens. An instance of a somewhat similar nature¹ has been recorded and figured by Professor P. Magnus, but here the flower was undoubtedly of a more pistillate character, the gynaecium varying between a superior and an inferior condition, and the normal stamens being exceedingly few in number.

R. A. DÜMMER.

Kew.

THE MEDULLARY RAYS OF FAGACEAE.—Professor J. W. Moll has kindly directed my attention to a valuable paper that I overlooked in my recent work, namely, 'Die Gestalt der Markstrahlen im sekundären Holze,' written by K. Zijlstra ('Recueil des Travaux botaniques Néerlandais,' vol. v, 1908), who traced individual rays of *Fagus* and *Quercus* through numerous successive annual rings and was thus able to give a complete record of their change of shape and height. He confirmed L. Jost's observation that the tall primary rays of *Fagus sylvatica* undergo dissection in an outward direction. He also showed that when the secondary rays of this species are traced outwards they are seen to increase in height, to be joined by others which after linking become fused with them, and finally to fray out into more or less separate smaller rays. Zijlstra also demonstrated similar increase in height and outward fraying of the secondary rays of *Quercus Robur*. He thus proved that in Fagaceae the linking up of separate rays from within is not confined either to the annual rings of the seedling stem or even to primary medullary rays, and that both primary and secondary rays can fray outwardly into separate smaller ones.

A correction as regards fact is required in connexion with J. W. Bailey's paper occupying pp. 647–61 of this volume. Bailey refers to a specimen of wood that I described as belonging to '*Quercus (Pasania) fenestrata (Q. spicata)*' (*sic*), and goes on to write that he 'recently examined material of *Q. spicata* . . . and is unable to agree with Professor Groom in stating that vessels are absent from the depressed segments between the approximated pairs of foliar rays'.

Bailey's attachment of the name *Q. spicata* to my material, and his statement as above quoted, imply that we both examined the same species of *Quercus*, and that the rays which I discussed were necessarily primary. Neither of these two implications

¹ Sitzungsab. Bot. Ver. Brandenburg, xxvi (1884), 72, f. 2.

is justified. As fully explained in my paper, the identity of my specimen (sent to me in log form direct from the forest) is dubious, and the evidence inclines against its belonging to *Q. spicata*. Hence the indication *prima facie* is that my specimen and Bailey's (obtained from Dehra Dun Research Institute) come from two different species. But the evidence is obviously incomplete, and the difference in structure of the two specimens does not necessarily imply that they come from two species, as in other species of *Quercus* transitional stages in the disintegration or integration of multiseriate rays demonstrate that vessels may occur in a region corresponding to one which is devoid of them in annual rings farther inwards or outwards.

PERCY GROOM.

NOTE ON THE ANATOMY OF STRIGA LUTEA, LOUR.¹—A brief description of the general habit of this semi-parasite has been given in the present number of the 'Annals of Botany', in a study of its haustorium,² in connexion with which its anatomical structure has now been investigated. The plant in its mature (flowering) state shows in its aerial stem the general features—the dense, closed woody cylinder, the narrow lumina of the vessels, the absence of medullary rays, &c.—which characterize the majority of the Order Scrophulariaceae.³ Its structure is almost identical with that of *Melampyrum pratense*, as described and figured by Hovelacque,⁴ almost the only difference between the two being the presence of hairs in *Striga*, and the absence of the scattered 'trachées initiales' which are figured as occurring outside the protoxylem in *Melampyrum*. As in the latter, no cork or collenchyma is formed—a fact which may be correlated with its herbaceous habit. The hairy covering consists of both simple and glandular hairs. The former are large stiff glandular hairs, consisting of a single cell with thickened cuticularized wall, mounted on a base of several epidermal cells, and generally sharply recurved towards the apex of the stem. Among these are scattered the smaller glandular hairs, which consist of a short one- or two-celled stalk and a peltate head of three or four cells; similar hairs occur in a number of genera of the same order.⁵ The transition from the aerial to the subterranean stem presents the usual features.⁶ The stem becomes rounded instead of square in outline, the bast fibres disappear, and the width of the cortex increases, while that of the pith diminishes. The closed vascular ring breaks up into separate bundles, four main bundles and two leaf-trace bundles from the node immediately above.

¹ This investigation has been assisted by a grant from the Union Government.

² Stephens, Edith L.: The Structure and Development of the Haustorium of *Striga lutea*. Ann. Bot., vol. xxvi, p. 1067, 1912.

³ Solereder, H.: Systematic Anatomy of the Dicotyledons, vol. i (English Translation). Oxford, 1908, pp. 583-9.

⁴ Hovelacque, M.: Recherches sur l'appareil végétatif des Bigoniacées, Rhinanthacées, Orobanchacées et Utriculariées. Paris, 1888, pp. 384-90.

⁵ Solereder, loc. cit., pp. 584-6.

⁶ Costantin, J.: Tiges aériennes et souterraines. Ann. Sci. Nat., Bot., sér. 6, vol. xvi, 1883, p. 164.

Groom, Percy. 1912. "The medullary rays of Fagaceae." *Annals of botany* 26, 1124–1125. <https://doi.org/10.1093/oxfordjournals.aob.a089436>.

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