respectively. Their microscopic examination reveals no spermatozoa internally, and in the testes the tubules are almost uniform in shape but small in size. Interstitial cells are very small and few in number. Thus the male gonads seem to be dormant as far as sexual activity is concerned during this part of the year.

From about the first week of March testes begin to increase in length and diameter, the changes being very gradual and the rate of increase very slow for about 20 days. Thereafter the male gonads increase in size at a very rapid rate throughout April and the first three weeks of May attaining their maximum growth during the last week of July, the average maximum volume being 147 c.mm. which is about 37 times greater than the average minimum volume. These external macroscopic changes seem to be correlated with the internal activity of the gonads leading to the production of mature spermatozoa. The tubules grow in size but lose their uniform shape. The interstitial cells correspondingly grow enormously both in size and number.

The regressive changes, the decline in the activity of the gonads, seem to be rather abruptly heralded; and before the end of August testes have decreased in size to a remarkable extent, the average volume being 15 c.mm. Through the whole of September and the first half of October there is a slow gradual decline leading to the attainment of the minimum size with which the cycle started.

Detailed observations including the study of the chromosomes will be published shortly.

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Lint Color in Asiatic Cottons.

IN a review of all the existent literature on the mode of inheritance of lint color of cotton, Ware[1] has shown that in all inter-varietal crosses in the New World cottons, expression of lint color can be explained by monofactorial hypothesis while in the interspecific crosses, the segregation for pigmentation is not clear cut and simple. The only references with regard to the behaviour of this character in the Asiatic cottons are by Fletcher[2] and Kottur.[3] The former just mentions that color is dominant over white, while the observations made by the latter on the interspecific cross between *G. herbaceum* and *G. neglectum* have pointed out that the splitting is nearer to 1:2:1 ratio than any other. But studies made by us at the Cotton Breeding Station, Coimbatore, on the progenies of the interspecific crosses between *G. obtusifolium*, *G. indicum* and *G. herbaceum* gave the interesting ratios of 9:6:1, 9:3:4, and 9:7 in the F_2 and F_3 generations. These lead us to formulate that the lint color in these cottons is governed by three pairs of factors. This assumption fits in with all the ratios obtained so far. A basic gene X seems to be essential for color production but its presence alone does not induce any manifestation of pigmentation unless it is in conjunction with either of factors K_1 and K_2. The three broad color groupings observed in these cottons, *viz.*, brown, cream and white, thus seem to be the result of interactions between factors X, K_1 and K_2. When all the three are present, the lint is colored brown, while a genetical constitution of either XK_1 or XK_2 results in cream coloration. The absence of both the factors K_1 and K_2 or the basal factor X appears to be responsible for white color. Minute shades of differences are also noted among these phenotypes. Further work is under way to test if they are produced by modifying factors and if the results of all possible crosses will be in consonance with the above assumption.

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[1] *Journal of the American Society of Agronomy*, **24**, 553.

[2] *Journal of Agricultural Science*, **2**, 282.

[3] Imperial Department, *Agricultural Memoirs*, Botanical Series, **12**, 125.

A New Method for the Separation of the Two Components of Amylase.

IN recent years, several methods,[1-5] some very elaborate, have been proposed for the separation of the saccharogenic and the dextrinogenic components of malt amylase.

The present note relates to a simple method of separating the two components.

The new method consists in bringing about a preferential sedimentation in a centrifugal field in presence of alcohol. Malt extract was centrifuged for 20 minutes at 6,000 revolutions per minute in presence of 50 per cent. alcohol. The centrifuge tube was taken out and the centrifugate analysed for the presence of the two components. The activity of the saccharifying component was not impaired but on the other hand, the dextrinogenic component was reduced by about 47 per cent. The results of a typical experiment are given in table I.

TABLE I.

	Control Experiment		Centrifugal Sedimentation	
Time in minutes	Activity of the saccharogenic component in mg. of maltose	Activity of the dextrinogenic component by coloration with iodine	Activity of the saccharogenic component in mg. of maltose	Activity of the dextrinogenic component by coloration with iodine
10	70.2	Blue	73.4	Blue
20	..	Violet	..	Blue
30	101.4	Red	106.0	Blue
45	..	Yellow	..	Violet
60	117.0	..	118.2	Violet
85	..	..	..	Yellow

The concentration of the enzyme, the P_H of the medium and the duration of the experiment are the main factors which determine the successful operation of this method. The optimum conditions for the complete separation of the two components are being investigated.

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[1] Ohlsson, *Compt. rend. trav. Labr. Carlsberg.*, **16**, No. 7, pp. 1-68, 1926.

[2] Narayanamurti and Norris, *Jour. Indian Inst. Sci.*, **11A**, 134, 1928.

[3] Venkata Giri and Subrahmanyan, *Jour. Indian Inst. Sci.*, **15A**, 107, 1933.

[4] Hamberg, *Biochem. Zeit.*, **258**, 134, 1933.

[5] Keshava Iyengar, *et al.*, *Curr. Sci.*, **1**, 238, 1932-33.

The Homoxyleæ and the Ancestry of Angiosperms.

THE homoxylous genera of angiosperms, namely, *Drimys*, *Zygogynum*, *Trochodendron* and *Tetracentron*, belong to the primitive group Magnoliales of Hutchinson. The gymnospermic vessel-less character of the wood of these primitive dicotyledons is of considerable interest and may be of theoretical importance. A fairly large scattered literature is available on the wood anatomy of these genera, and various botanists have discussed the theoretical bearings of the facts, but a comparative study of all the four genera and an attempt to distinguish them on the wood structure alone has not yet been undertaken. This object has now been achieved to a considerable degree and the resemblances between certain related fossil woods and these primitive genera of dicotyledons have been elucidated in a fully illustrated paper which is now in the press.[1]

The author has also reviewed the more important literature extending over a period of nearly a hundred years, dealing with the anatomy of homoxylous angiosperms and some related fossils. The important observations on the wood anatomy recorded by Goeppert, Groppler, Harms, Solereder, Van Tieghem, Bailey and Sinnott and others have been confirmed in the main points; in addition, the anatomy of the genera *Tetracentron* and *Zygogynum*, about which not much was known before, has been described and illustrated on the basis of the material kindly supplied to Prof. Sahni, by Professors Harms (Berlin) and Record Yale respectively.

The modern homoxylous angiosperms can be conveniently divided into two groups which are rather sharply defined both structurally and geographically.[2]

1. The *Drimys* group, comprising the two genera *Drimys* and *Zygogynum* and having several species distributed in the Australasian and American regions. These genera are essentially similar in their wood structure: growth-rings either absent or very faintly marked; medullary rays scarcely or not at all enlarged at the junction of the growth-rings; ray cells more or less uniformly pitted on their horizontal and tangential

[1] Expected to be published in the current volume of the *Journal of the Indian Botanical Society*.

[2] See also Sahni, *Proceedings of the Indian Science Congress*, Patna, 1933.