Streptogyna has been referred to an independent tribe, Streptogynae, by C. E. Hubbard¹. The genus includes two closely related species which inhabit the tropics. *Streptogyna* had been traditionally treated as a member of the Centothecae or Festuceae, but the leaf structure of the genus apparently indicates a relationship with the Bambuseae². Streptogynae and Bambuseae also share some common features in external morphology; for example, in respect to the lodicules the two groups are closely related. Also the chromosomal features of *Streptogyna*, clarified for the first time by the present observation ($b = 12$ and small chromosome sizes), are similar to those of the Bambuseae.

T. TATEOKA

National Institute of Genetics,
Misima,
Sizuoka Pref., Japan.

¹ Hubbard, C. E., *Hook. Ic. Pl.*, 36, Tab. 3572 (1956).² Jacques-Felix, H., *J. Agric. Trop.*, 2, 427 (1955). Metcalfe, C. R., *Bot. Mag. Tokyo*, 69, 391 (1956).

Transformation of a Monochlamydius into a Dichlamydius Chimæra by X-ray Treatment

ACCORDING to Asseyeva¹, X-ray treatment of potatoes is "a powerful and reliable means of transforming monochlamydes into dichlamydes". No details of the treatment used are given in this paper, nor do any appear to have been published in a later paper. It is therefore of some interest to report an X-ray treatment that has given a successful transformation for the potato variety Red King, particularly as similar treatments might also work with periclinal chimæras in plants other than potatoes.

Red King arose as a 'bud sport' in the variety King Edward. It has tubers which are full pink (the pigment is in the periderm, which in potato tubers originates nearly entirely from the epidermis) except for small white patches at the heel end and beneath some of the eyes, whereas King Edward has tubers which are white with pink splashes around the eyes. The occurrence of the small white patches suggests that Red King is a periclinal chimæra in which only layer I has changed, layer II being still King Edward. This is confirmed by the fact that it gives hybrid progenies similar to those from King Edward itself (Table 2), and by the recovery of King Edward type tubers from both eye-excision and X-ray experiments (Table 1).

The results of an X-ray experiment using Red King are given in Table 1. Rose ends of tubers (about 1.5 cm. thick) with small sprouts (about 4 mm. long) were X-rayed by the Department of Radiotherapeutics, University of Cambridge, using a 200-kV. 'Maximar' X-ray machine, run at 15 m.amp. The different dosages were given by exposing them for 6, 7, 8 and 9 min. at 6.75 cm. from the aluminium filter. The highest dosage was lethal to all the sprouts

Table 2

Parents of cross	No. of plants with tubers of types		
	Full colour	White splashed colour	White
King Edward × white	0	7	12
Red King × white	0	11	19
Full pink from X-rayed Red King × white	5	0	6

on the treated rose ends. The plants grown from the rose ends receiving lower dosages produced tubers of a number of types, and they included one plant which had tubers of the Red King type but without the small white areas. This is the type to be expected where both layer I and layer II are Red King, and that this was so is confirmed by the breeding results (Table 2)—thus, in contrast to the seedlings from King Edward and normal Red King, the seedlings with coloured tubers in its progeny have full colour and not white with coloured splashes.

The other types of tubers produced by the X-rayed plants have not been studied fully. It should, however, be noted that the plants with white tubers were expected since similar tubers are found in eye-excision experiments with King Edward, Red King and even with white-splashed-colour type seedlings bred from King Edward (ref. 1 and Howard, unpublished work).

H. W. HOWARD

Plant Breeding Institute,
Cambridge. Sept. 22.

¹ Asseyeva, T., *Bull. App. Bot., Leningrad*, 27, iii, 194 (1931) (English text).

Gene Control of Specificity and Activity : Loss by Mutation and Restoration by Complementation

THE *S* gene, controlling the incompatibility reaction between pollen and styles in plants, exists in a very large number of 'alleles', each producing a characteristic antigen in the pollen and a similar antigen with the same specific activity in the style, through which the pollen tube must grow to achieve fertilization. Mutations and recombination of this gene in *Oenothera organensis*, selected out of 10⁶ genes, have been of one type only¹. The chief feature about these mutant *S* alleles is their complete loss of activity in the pollen, so that no active antigen could be detected by the sensitive pollen-style tests. The favoured² interpretation was that one part or area of the gene was determining specificity and another area determining a carrier responsible for the activity in pollen and style. The mutant change would then be some defect in the activity-determining area of the gene. With this interpretation it must be concluded that none of the mutants gave an active and changed specificity but only a loss of activity.

Table 1

X-ray dosage (r.)	No. of rose ends treated	No. of rose ends producing plants	No. of plants with tubers of types:					
			Full pink	Red King	Red King plus King Edward	Intermediate Red King-King Edward	King Edward plus white	White
4,500	4	0	—	—	—	—	—	—
4,000	4	3	0	2	0	0	1	0
3,500	4	3	1	0	1	0	0	1
3,000	4	4	0	2	0	1	1	0