Table 1. GOSSYPOL CONTENT OF EXCISED COTTON ROOTS GROWN IN NUTRIENT SOLUTIONS*

No.	Description	No. of cultures	Mean gossypol content (per cent)
	Glanded strain (1)		
1 *a*	Tips at time of transfer		0·080
1 *b*	New growth in nutrient solution	2	2·300
1 *c*	Incubated tips, new growth removed	2	6·320
	Glandless strains (2)		
2 *a*	Tips at time of transfer	2	0·051
2 *b*	New growth in nutrient solution	2	2·018
2 *c*	Incubated tips, new growth removed	2	1·361

* Values are expressed on an air-dried basis

The results of the analyses which are expressed on an air-dried basis are presented in Table 1. The concentration of the gossypol in the root tips (1*a* and 2*a*) at the time of transfer into the nutrient solution was low, although the level in the glanded strains was somewhat higher than that in the glandless strain. During incubation, however, the gossypol content of the original tips (1*c*, 2*c*) increased very markedly. This change was more apparent for the glanded strain, a 78-fold increase, than for the glandless strain. Moreover, the concentration of gossypol in the new root growth (1*b*, 2*b*) was many times higher than that observed in the original root tips at the time of transfer into the nutrient solution.

Thus these results clearly indicate that gossypol was synthesized by the excised root tissue. Furthermore a sample of root tips from the glandless strain that made no growth when incubated in the nutrient solution contained 2·315 per cent gossypol. This observation indicates that the root tips of the cotton plant have the enzyme systems for the production of gossypol even when they make no growth.

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Juvenile Stage in Cultivated Forms of *Brassica oleracea*

Stokes and Verkerk[1] showed that while chilling induces flowering in Brussels sprouts, there was a juvenile stage during which chilling was ineffective. This is reflected in the horticultural practice of overwintering small seedlings derived from an August sowing of Brussels sprouts, which then grow vegetatively for a whole season without flowering. A similar procedure is successfully followed in the cultivation of spring and some autumn and cattle cabbage, suggesting the existence of a juvenile stage in these also, as if the plants, as a result of a too early sowing, are too large (that is, beyond the juvenile stage); winter chilling induces premature flowering (bolting) in the following spring[2,3]. I have, from August sowings, successfully overwintered outside, seedlings of autumn and winter cabbage (3 cultivars), kale (cottagers, hearting, marrow stem and thousand-headed), kohl rabi (4 cultivars), sprouting broccoli (2 white and 2 purple cultivars) and heading winter cauliflower or broccoli (9 cultivars), as well as those of spring cabbage. With all these cultivated forms a high proportion have, when transplanted to permanent quarters either in the October or April following sowing, continued to grow vegetatively, whereas plants from a July sowing all flowered in the spring following. This experience suggests that in all these cultivated types a juvenile stage exists during which chilling in ineffective in inducing flowering.

This feature was even more marked in plants raised from seed of a wild, although perhaps not indigenous, cabbage collected from the Yorkshire cliffs. Plants of this, from a sowing made on July 7, did not flower in the following spring, whereas all the plants from a corresponding sowing of the cultivated forms enumerated above did flower.

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Kinetin-induced Meiotic-Prophase Acceleration and Stasis in *Tradescantia* Anthers cultured on Media Deficient in Sugar

THE ability of kinetin to accelerate mitotic division has been demonstrated for *Paramecium*[1], and an apparent effect of accelerating prophase has been inferred from onion root-tip work[2]. That the acceleration may be a direct consequence of a hormonal acceleration of discrete phases of cellular metabolism has been suggested[3,4]. The former workers found that synthesis of deoxyribonucleic acid (DNA) could be induced in tobacco pith tissue by kinetin; the latter found that it increased the activity of deoxyribonuclease and ribonuclease from bean hypocotyls. It is known that indole-3-acetic acid is also required for stimulation of division by kinetin and it has been shown that it is also required for the effect on nucleic acid metabolism[1-4]. In contrast with the stimulation of nuclear and cellular division, most workers have found that in higher concentrations kinetin causes abnormalities of division and eventually mitotic activity ceases.

We planned to determine whether acceleration could be detected in the prophase of meiosis in anthers of *Tradescantia paludosa*, in which the prophase stages investigated (from pachytene and diplotene onwards) are of sufficient duration to do so. The anthers were cultured on a modification of the basic medium used by Taylor[5] in which 4 per cent lactose was substituted for the equivalent of sucrose, to which kinetin at a concentration of 0·25 p.p.m. and/or different sugars were added. This medium provides semi-starvation conditions, in spite of which approximately two-thirds of the meiocytes in an anther proceed through both stages of the meiotic division with regular nuclear products when cultured at 27° C.

It was found that, among a group of fifteen anthers, excised at pachytene or very early diplotene, seven anthers treated with kinetin had advanced to diakinesis or beyond in 24 hr., and one was at late diplotene; six of the untreated anthers from the same buds were at early or mid-diplotene and one at diakinesis. In addition, in a test involving comparisons between the two lobes of an anther, one treated with kinetin, the other not, five of the treated lobes markedly outstripped the control, and only one