biogenesis of the leaf pigments, in place of their normal precursors.

The precise environmental conditions necessary to produce tainting and the effect of such tainting on the metabolism of the tobacco plant are, as yet, unknown. The problem is receiving further attention and the work will be published in more detail elsewhere.

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A Growth Interaction between β-Indolylacetic Acid and Thiourea (Thiocarbamide)

In experiments designed to explain the activities of 3-indolylacetonitrile recently isolated by Jones, Henbest, Smith and Bentley[1] from brussels sprouts, Osborne[2] has shown evidence for synergism between this compound and heteroauxin (β-indolylacetic acid). The experiments were carried out on pea tissue, and the degree of curvature of split pea cotyledons measured in accordance with the standard Went pea curvature test[3].

Experiments carried out in this department show that thiourea also can interact synergistically with β-indolylacetic acid when both are applied simultaneously in aqueous solutions to germinating *Avena sativa* seedlings. The effects are shown in root-growth following a 48-hr. treatment and during subsequent shoot-growth following defoliation (100 plants per treatment).

The concentration of thiourea was of the same order as that tested by Amlong[4], namely, 2,000 mgm./litre, and that for β-indolylacetic acid of the order of 50 mgm./litre. Table 1 shows the effect on root-length following the 2-day treatment.

Table 1. Length of Longest Root (Mean Length (cm.))

Distilled water	2·6
Thiourea	2·1
β-Indolylacetic acid	0·8
Thiourea and β-indolylacetic acid	0·5

The inhibitory effects are greater in the case of treatment with β-indolylacetic acid than those with thiourea ; but both treatments when compared with the controls treated with distilled water are statistically very significant. When both treatments are applied simultaneously the inhibition is greater than when the treatments are applied independently. This interaction proved to be highly significant, its variance ratio (F) having a probability less than 0·001.

Following this initial treatment, the seedlings were transferred to sand watered with a complete nutrient solution. Nine days after planting, the seedlings were defoliated, the region of defoliation being approximately 1 cm. above the growing-point. Table 2 shows the effect on shoot-height for the first month of the regeneration period.

Table 2. Mean Shoot Height per Treatment (cm.)

	Oct. 16	Oct. 23	Oct. 30	Nov. 6
Distilled water	1·6	2·6	4·6	5·4
Thiourea	1·6	3·9	4·6	6·3
β-Indolylacetic acid	1·5	2·9	4·6	5·5
Thiourea and β-indolylacetic acid	1·9	4·7	5·2	7·1

The interaction effects are statistically significant on October 16 and October 30, while on October 23 and November 6 both thiourea and β-indolylacetic acid, acting independently, produce differences which are also statistically significant. The increased rates of regeneration from both treatments are reflected in the dry-weight estimations of the shoots and leaves shown in Table 3, although the interaction effect fails to reach significance.

Table 3. Mean Dry-weight per Plant (gm.)

Distilled water	0·59
Thiourea	0·71
β-Indolylacetic acid	0·66
Thiourea and β-indolylacetic acid	0·80

Both thiourea and β-indolylacetic acid, acting independently, produce dry-weight increases which are significant.

Work of a fundamental nature similar to that carried out with auxins has not been attempted on a large scale with thiourea. It appears, however, from the work of Denny[5] that in the potato this substance stimulates a greater number of buds to develop from a single eye, and prevents the apical buds from inhibiting the growth of the basal buds. If it is assumed that this apical dominance is caused by auxin, then it appears that thiourea can destroy its action, or even prevent its formation. The above experiment, however, indicates that thiourea can react in a way different from this. When applied simultaneously with β-indolylacetic acid to germinating *Avena* seedlings, a greater inhibition of early root-growth, and a greater regeneration of shoot-growth after defoliation, is produced than that which is obtained when both substances act independently of each other. Thus, there is some evidence for synergism between these compounds in their effects on early growth of *Avena* seedlings.

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Determination of Urinary Corticosteroids

A major difficulty in the estimation of urinary corticosteroids arises from their destruction under conditions necessary for the complete hydrolysis of steroid conjugates. Extraction of corticosteroids from non-hydrolysed or partly hydrolysed urine yields only a small fraction of the amount released by enzymatic hydrolysis with β-glucuronidase[1]. The existing procedures have been authoritatively discussed and their inadequacy pointed out by Marrian[2].

As reported elsewhere[3], 17-hydroxylated corticosteroids of types I, II and III (see table) yield 17-ketosteroids on oxidation with sodium bismuthate. The application of this finding to the oxidation *in situ* of urinary corticosteroids has now been studied with the object of converting steroids bearing any of the three side-chains I–III into a group of sub-