As the broccoli crop is of great economic importance to Cornwall, the significance of the following experiments warrants mention here. Two experiments (Centres *A* and *B*) carried out during 1949–50 in Cornwall with broccoli (var. Roscoff 2) included four treatments laid out in the form of a Latin square : (*a*) control, (*b*) sodium molybdate at 2 lb. per acre, and (*c*) 4 lb. per acre, and (*d*) ground limestone at 3 tons per acre. The soils at both centres were derived from Devonian shale, and the *p*H values of the soil with treatments (*a*), (*b*) and (*c*) were in the region of 5·0–5·5, and of (*d*) 6·0–6·5. It is considered unlikely that the amount of molybdenum in the lime would complicate the effects of this treatment, since a water-soluble analysis of the limestone gave a molybdenum content of 0·2 p.p.m. At the rate of limestone application, this would supply 0·4 gm. per acre. The minimum requirement of a crop of broccoli is about 5·0 gm.

A count of marketable heads, rejects and 'whiptails' was made previous to harvesting, and the results are shown in Table 1.

Table 1. NUMBER OF 'WHIPTAILS' PRIOR TO HARVESTING

Centres	Treatment											
	Control			Sodium molybdate, 2 lb./acre			Sodium molybdate, 4 lb./acre			Ground limestone		
	M (per cent)	*R*	*W*	*M* (per cent)	*R*	*W*	*M* (per cent)	*R*	*W*	*M* (per cent)	*R*	*W*
A	51	10	39	81	11	8	89	9	2	85	10	5
B	64	5	31	89	6	5	95	5	0	88	5	7

M, Marketable heads ; *R*, rejects ; *W*, 'whiptail'

It can be seen that at both centres the sodium molybdate treatments reduced the incidence of 'whiptail' from 30–40 per cent on the controls to 0–8 per cent. Ground limestone gave similar results to sodium molybdate at 2 lb. per acre.

The chemical data from leaf material collected from the plants prior to 'curding' gave the following molybdenum and manganese contents (Table 2).

Table. 2. MOLYBDENUM AND MANGANESE CONTENTS OF BROCCOLI LEAVES AT CENTRE *A*

Treatment	Molybdenum (p.p.m.) in dry matter	Manganese (p.p.m.) in dry matter
(*a*) Control ('whiptail' plants)	0·08	410
(*b*) Sodium molybdate, 2 lb./acre	0·32	150
(*c*) Sodium molybdate, 4 lb./acre	0·39	215
(*d*) Ground limestone	0·35	40

The molybdenum content of the 'whiptail' leaves (0·08 p.p.m.) is of the same magnitude as found by Hewitt[4], who has recorded that 'whiptail' cauliflowers, produced experimentally, contained 0·02 p.p.m. molybdenum. It is interesting to note that the value of molybdenum in the leaves from limestone treatment (*d*) is approximately the same as in (*b*), where 450 gm. of molybdenum was applied.

The values of manganese are included since 'whiptail' is associated with an excess of manganese on acid soils. In these experiments no symptoms of manganese toxicity were recorded, nor are the amounts in the 'whiptail' leaves (400 p.p.m.) considered sufficient for this to happen. The lower values for manganese where the molybdenum contents have been raised are of interest in connexion with problems of crop failures on acid soils.

It appears from these experiments—and numerous observations would seem to support the finding—that molybdenum is of low availability in certain acid soils, and that the level can be substantially raised by liming. Thus in terms of practical husbandry, liming, if soil tests show the necessity, is the correct procedure when cauliflower or broccoli are to be grown.

The occurrence of 'whiptail' on soils with a neutral reaction would indicate that molybdenum was in short supply and that an addition of this element to the soil would be required.

The results of these investigations will be reported more fully at a later date. The work has been carried out under special grants made by the Agricultural Research Council, to which grateful acknowledgment is made.

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Qualifications in Applied Physics

IT is obvious from recent articles in *Nature* and elsewhere that important decisions must inevitably be come to with regard to the precise province of the university and the technological institute with respect to technical education. However, the time has also come when it should be generally recognized that there exists to-day a missing link in the present classification of the categories of scientific qualification appropriate to modern requirements. I refer to the absence of a university degree in applied physics.

It is a strange fact that, in Britain, whereas B.Sc. degrees in applied chemistry (and chemical engineering) have been awarded for more than thirty-five years, no corresponding degree in applied physics has been instituted. It is interesting to learn that the need for such a degree is now recognized in the United States[1]. Moreover, in a recent report[2] by the Physicists' Sub-Committee of the Technical Personnel Committee under the chairmanship of Lord Hankey, it is stressed that there is a larger demand in industry for physicist-engineers than for pure physicists.

A four years associateship course in applied physics has been instituted at the Royal Technical College, Glasgow, but a wider recognition of the need for a degree in applied physics is long overdue. The introduction of such a degree would not only make for clearer thinking in the efficient planning of technical education, but would also lead to reducing the time-lag in the application of science to industry as stressed by Sir Henry Tizard in his presidential address, "The Passing World", to the British Association in 1948.

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