

oats is sufficient to preclude development of rickets in the rat, an animal in which, even in the absence of vitamin D, rickets is shown only when the amount of available phosphorous in the diet is very low. It is concluded that the rat is unsuitable as an experimental animal for attempts to discover in green oats the factor rachitogenic to sheep.

(2) *Sheep-feeding Experiments.*—During the winter three groups of six Romney hoggets were grazed on green-feed Algerian oats, Italian rye-grass, and perennial rye-grass grown on Wallaceville Farm. Because of unfavourable growth of the green feeds, grazing did not begin until 3rd August, from which date it was continued for six weeks. Blood samples taken each week were analysed for calcium and phosphorous in serum. Calcium and phosphorous were normal in each group at the beginning of the experiment, and though in each a slight rise in both calcium and phosphorus took place during the experimental period, values were still well within the normal range at the end of the grazing period.

It is proposed to repeat feeding trials with sheep in the coming winter, when conditions may be more favourable to development of rickets.

(3) *Assay of Vitamin D in Green Oats:* Preliminary study of the vitamin D content of a petroleum-ether extract of green oats indicated a vitamin D content of at least 10 international units per 100 grammes of dry oats. Further assays were done using a chloroform extract of the oats (the fatty material extractable by chloroform being twice as much as that extracted by petroleum ether).

It was found extremely difficult to dose rats with dilutions of this extract, the material being apparently highly unpalatable. Further, calcification produced by higher doses of the extract was actually lower than that produced by low doses. It was suspected that in concentrated solution the material was not absorbed by the rat. Results obtained in repeated trials have been highly conflicting, and though in one assay using a 1:30 dilution of the extract most consistent figures were obtained, giving a calculated amount of 70 international units per 100 grammes of dry oats, a later assay has not confirmed this finding, and it is not yet possible to make a definite statement regarding the amount of vitamin D in green oats. It is now thought that attempts will have to be made to fractionate the extracted material before using it for assay on rats.

(4) *Effect of Feeding Dried Green Oats to Chicks:* As the presence in green oats of a rachitogenic factor has not been demonstrable in rats, an experiment was designed using chickens as experimental animals. The basal diet used was the AOAC ration for chick assays of vitamin D₃. This diet contains no vitamin D.

Sixty day-old chicks were housed in brooders and after twenty-one days' feeding the left tibias were removed and group ashed. Diets and results are as follows:—

Group.		Ration.	Bone Ash.	Average Weight at Killing.
			Per Cent.	Grammes.
1	..	AOAC ration	32.7	120
2	..	80 per cent. AOAC plus 20 per cent. oats	31.8	115
3	..	70 per cent. AOAC plus 30 per cent. oats	31.4	87
4	..	60 per cent. AOAC plus 40 per cent. oats	31.1	82

The steady decrease in bone ash with increasing amount of oats in the diet seems to indicate presence of a factor rachitogenic for the chick. On the other hand, it is obvious that any vitamin D present in the oats is not in a form available for the chick. In addition, the fall in weight with increase in amount of oats in the diet indicates either the presence of a growth-depressing factor in the oats or unassimilability of the oats for young chicks. Further experiments on chickens are in progress.