LETTERS TO THE EDITORS

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IN THE PRESENT CIRCUMSTANCES, PROOFS OF "LETTERS" WILL NOT BE SUBMITTED TO CORRESPONDENTS OUTSIDE GREAT BRITAIN.

NOTES ON POINTS IN SOME OF THIS WEEK'S LETTERS APPEAR ON P. 32. CORRESPONDENTS ARE INVITED TO ATTACH SIMILAR SUMMARIES TO THEIR COMMUNICATIONS.

A Factor influencing Nitrogen Excretion from Leguminous Root Nodules

THE excretion of nitrogen compounds from leguminous root nodules which has been demonstrated in this laboratory with a sterile culture system and, from the practical point of view, investigated with ordinary pot cultures, has not been shown in the pot cultures of all investigators[1,2]. With a sterile culture system Wilson has accomplished the excretion almost regularly[3].

It is difficult for us to explain the negative results appearing in the literature since, during 1928–38, we have regularly obtained excretion, and often a very powerful one, in hundreds of experiments also with pot cultures. In 1938 and 1939, however, excretion occurred only in a part of the experiments. Of parallel cultures under the same conditions, some showed powerful excretion while little or no excretion occurred in others. Light intensity could therefore not be the cause of conflicting results, as the plants were growing under identical conditions. There was also no difference in the quality of the quartz sand used in them.

In trying to discover the cause of these variations we finally paid attention to the quality of the containers. We have always used unglazed pots of burned clay. When we examined the pots used in the summers of 1938 and 1939 we noted great variations in their porosity. The pots in which oats grew fairly well in association with inoculated peas proved to be more porous than those where the growth of the oats was poor. The porosity of the pots was measured by allowing them to soak in water and determining the time which was required to make the inside of the pot moist. The accompanying table illustrates some of our results.

Unglazed burned clay pots, diam. 9 in., 7·75 kgm. quartz sand 4 peas (inoculated with bacterial strain *H X*) and 6 oats (Guldregn II, in each pot. Control: 6 oats alone. N-free nutrient solution. Period of growth: 20 July–25 Sept. 1939. 3 parallel experiments.

Variety of pea	N in peas, mgm.	N in oats, mgm.	Excreted N taken up by oat, mgm.	Soaking time of the pot, min.
Adoptive	172·2	69·6	55·2	33
	100·8	40·9	26·1	31
	187·6	24·1	9·3	105
Concordia	204·3	48·2	33·4	20
	439·9	13·4	− 1·4	80
	247·6	32·5	17·7	25
Marmor. Glænö	167·8	74·2	59·4	45
	546·1	17·9	3·1	165
	616·9	13·4	− 1·4	160
Control		15·4, 14·8, 14·3 } 14·8		

Our results show that the growth of oats in associated culture with pea depends evidently on the porosity of the culture pot, and thus on the aeration of the media. As the experimental conditions—sand and nutrient solution—have been identical in all experiments, only the difference in the quality of the pots can explain the decided variations in the excretion of the parallel cultures. The experimental data also illustrate the fact noted earlier that when the excretion is high the growth of the pea is often, though not always, impaired.

When the excretion of nitrogen from the leguminous root nodules is investigated in associated cultures with ordinary pot cultures, containers should be clay pots, which are very porous. Large pots generally give better results than small ones.

ARTTURI I. VIRTANEN.
MAILA TORNIAINEN.

Biochemical Institute,
Helsinki.
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[1] Bond, NATURE, **140**, 683 (1937).
[2] Wilson, NATURE, **140**, 154 (1937).
[3] Wilson, *J. Agric. Sci.*, **27**, 307 (1938).

Effects of Concentrated Aqueous and certain Non-aqueous Solutions of Alkali upon Wool

CHEMISTS are well aware that wool is readily attacked by alkaline reagents. These disrupt the disulphide groups of the cystine contained in the polypeptide chains, thus weakening the fibre structure. The woollen manufacturer also recognizes that wool is susceptible to attack by alkali, as the term 'alkali damage' indicates. This damage frequently results from inefficient scouring which afterwards causes the wool to dye unevenly.

The surprising fact that the fibre is not seriously damaged by cold, concentrated, aqueous solutions of sodium hydroxide was investigated by Buntrock[1], Matthews[2], and Speakman[3]. The two earlier workers showed that yarns, treated with 52 per cent aqueous sodium hydroxide solutions, became stronger. Matthews reported that the sulphur content was greatly lowered by the treatment, that the surface