by rapid cooling to avoid decomposition of the gliotoxin. The degree of growth of a range of mycorrhizal and pseudomycorrhizal fungi on these media, after fourteen days incubation at 25° C., is recorded in Table 2.

TABLE 2.

Gliotoxin μgm./ml.	*Boletus bovinus*	*Boletus elegans*	*Myc. radicis nigro-strigosum*	*Myc. radicis atrovirens*	*Rhizoctonia* sp.	*Phoma radicis callunæ*
0	++	++	++	++	++	++
5	−	+	+	+	+	++
10	−	+	−	−	−	++
20	−	−	−	−	−	+
40	−	−	−	−	−	−

++ normal growth ; + reduced growth ; − no growth.

Newman and Norman[6] have presented strong evidence that the low level of microbiological activity in sub-surface soils is due to the accumulation of antibiotic metabolic products of certain soil organisms. It appears plausible to suppose the toxicity of Wareham soil to mycorrhizal fungi, and its generally low microbiological activity, to be due to accumulation of gliotoxin and other antibiotic substances produced by the *Penicillium* spp. dominating its mould flora. It is realized that further investigation will be necessary before final proof of this hypothesis can be offered.

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Influence of *p*H and Salts on the Solubility of Calcium Oxalate

IT has been observed that ingestion of soluble oxalates aggravates the condition of oxaluria. Barrett[1] has shown that oxalate absorption is reduced or even inhibited when milk or a soluble calcium salt is taken simultaneously. He explains this as an immobilization of the oxalate as calcium oxalate, which is almost insoluble at the *p*H obtaining in the intestine. Whether intestinal absorption of calcium oxalate is influenced by other ions has been little investigated. Fiske and Logan[2] have noted the effect of magnesium, phosphate and sulphate on the solubility of calcium oxalate but have not presented quantitative data. We have investigated quantitatively the effects of acetate, borate and phosphate ions at various *p*H values on the solubility of calcium oxalate.

*p*H	ml. $KMnO_4$
2·72	5·40
4·03	2·80
4·44	2·60
5·27	2·90
7·26	2·90

TABLE 2. *M*/5 ACETIC ACID ; *M*/5 SODIUM HYDROXIDE.

*p*H	ml. $KMnO_4$
8·40	2·35
8·85	2·70
9·75	3·70
10·56	4·20

TABLE 3. *M*/5 BORI ACID ; *M*/5 SODIUM HYDROXIDE

The general principle adopted was the addition of various amounts of *M*/5 sodium hydroxide to a fixed amount of *M*/5 acid and dilution with water to a fixed volume. For example, to 50 ml. *M*/5 phosphoric acid 5, 10, 15, etc., ml. *M*/5 sodium hydroxide were added and the total volume made up to 200 ml. in all cases. Excess powdered calcium oxalate was added and the mixture kept at 38° C. After determining the *p*H with a glass electrode potentiometer, the mixtures were filtered and the filtrates titrated with potassium permanganate. The titration values given in the accompanying tables are in ml. *N*/100 potassium permanganate per 100 ml. filtrate.

From our results it appears that the solubility of calcium oxalate is little affected by acetate ions between *p*H values 2·72–7·26, and borate ions between *p*H values 8·40–10·56. In the presence of phosphate, however, the solubility decreases between *p*H 1·56 and *p*H 6·16, then increases gradually up to *p*H 8·2 and thereafter very steeply. Moreover, the minimum solubility of calcium oxalate has a higher value in the presence of phosphate than of acetates.

In the *p*H range 6·5–8·0 reported to be found normally in the intestine, the solubility of calcium oxalate and therefore absorption of oxalate ions arising from calcium oxalate is small even in the presence of phosphates of the food. Should conditions arise leading to a greater alkalinity than *p*H 8·0, say, 8·0–8·4, in the intestine, we infer from our results that absorption of oxalates arising from calcium oxalate should be considerable in the presence of phosphates. That this increase in solubility is due to replacement of oxalate by phosphate is borne out by phosphate estimations on filtrates corresponding to *p*H 7·58 and *p*H 10·40 (Table 1). Although the initial concentration of phosphate in the two buffers was identical, the final values were in the ratio, phosphate (*p*H 7·58) : phosphate (*p*H 10·40) = 80 : 1.

TABLE 1. *M*/5 PHOSPHORIC ACID ; *M*/5 SODIUM HYDROXIDE.

*p*H	1·56	1·65	1·76	2.00	2·26	2·45	2·74	3·20	5·37
ml. $KMnO_4$	30·00	27·05	24·55	17·80	15·60	13·40	10·90	8·00	3·70
*p*H	6·16	6·56	6·77	6·94	7·13	7·24	7·58	7·78	8·14
ml. $KMnO_4$	3·50	4·55	4·80	5·00	5·25	6·10	6·40	7·20	20·00
*p*H	8·42	8·80	9·06	9·42	9·70	9·90	10·20	10·40	
ml. $KMnO_4$	188	284	388	508	624	736	848	1084	

A similar displacement was observed on the surface of a specimen of urinary oxalate stone when it was placed for a day in a Sorensen buffer of *p*H 8·0.

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