Table 1. FRESH WEIGHTS OF SEEDLINGS GROWN FROM FUMIGATED AND UNFUMIGATED SEED OF DIFFERENT MOISTURE CONTENTS

Fresh weight (gm.)	Number of plants			
	10 per cent moisture		12 per cent moisture	
	Control	Treated	Control	Treated
0.0-0.2	—	1	1	7
0.3-0.5	1	5	1	1
0.6-0.8	1	4	2	0
0.9-1.1	6	5	1	1
1.2-1.4	10	6	7	2
1.5-1.7	5	1	2	3
1.8-2.0	4	2	4	3
> 2.1	3	4	12	10
Total	30	28	30	27

moisture content did not appear to suffer so drastically from fumigation though their general growth was retarded.

It seems likely from work still in progress that the retardation of growth in seedlings from seeds with the lower moisture content is only temporary and will not affect the ultimate yield. However, the severe retardation observed for about a quarter of the plants grown from the moister seeds that had been fumigated is likely to be permanent, the seedlings being deformed and only slowly, if ever, reaching maturity.

The above results stress the need for measuring growth and yield as well as germination when considering the effect of fumigants on stored seed to be used for planting.

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¹ Alexander, F. E. S., and Clifford, H. T., *Nature*, **179**, 109 (1957).

An Age Effect on Seta Elongation in *Pellia epiphylla*

IN a recent communication, Asprey *et al.*¹ report that spraying with indolylacetic acid and gibberellin effects elongation of the setae of *Pellia epiphylla* in January, whereas under normal conditions this is delayed until late February or early March. We have obtained results which suggest that during the winter months a gradual change occurs, bringing setae into a condition when they are capable of rapid elongation once the temperature is raised. In view of the results of Asprey *et al.*, this internal change may well be correlated with synthesis of growth hormones.

Table 1. EFFECTS OF AGE, RISE IN TEMPERATURE AND EXTRA LIGHT ON SETA ELONGATION
Time (weeks) from collecting material until 50 per cent of the setae started to elongate

Treatment	Date collected					
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
15° C., normal light	20	14.5	8	5.5	2.5	0.5
15° C., normal light*	21	14	9	—	—	—
15° C., normal light + 10 f.c. tungsten light for 16 hr. each day	—	10	6.5	4.5	2	0.5
15° C., normal light + 10 f.c. tungsten light for 16 hr. each day*	15	9.5	7	—	—	—

* Kept 2 weeks at 1° C. immediately after collection.

Fig. 1. Effect of age on the ability of setae to elongate when transferred to 15° C. Material in the field showed no seta elongation until March 1958. Dates transferred: 1, November; 2, December; 3, January; 4, February; 5, September; 6, October.

Fresh material of *Pellia epiphylla* was collected from a site near Southampton at intervals from mid-September 1957 to February 1958 and kept in a warm greenhouse (mean temperature 15° C., minimum 10° C.). The number of setae elongating was counted at weekly intervals and the capsule contents also examined. Fig. 1 shows that rise in temperature promotes seta elongation in every case (material left in the field did not start to elongate until March 1958), but the most marked effect is that of age of the sporophyte. This is shown more clearly in Table 1, which records the lag period before 50 per cent of the setae start to elongate. Two weeks cold treatment (1° C.) given immediately after material had been collected did not affect the results, but provision of extra light shortened the lag period slightly. It is tentatively suggested that during the winter there is a slow synthesis of growth hormones (or removal of a growth inhibitor), which is stimulated to some extent by a rise in temperature and extra light. The fact that the maximum length reached by setae was considerably less in samples collected early in the season would also support this idea. It would be of particular interest to know if indolylacetic acid and gibberellin are effective in promoting seta elongation in material collected in the autumn.

Subsidiary observations were made on spore development, since it has been suggested that maturation of the spores is the stimulus for seta elongation. Under normal conditions the tetrads divide into spores at the end of November, but material collected in September and October before this change had occurred and kept at a warm temperature, had not formed spores by March 1958, when observations were discontinued. Despite immaturity of the spores seta elongation occurred (Table 1), and it is therefore highly improbable that there is a direct relationship between spore maturation and seta elongation. A similar conclusion was reached by Asprey *et al.* from their experiments. A further observation supporting this was that two weeks cold treatment was effective in stimulating tetrad division in material collected in October, but seta elongation was unaffected.

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¹ Asprey, G. F., Benson-Evans, K., and Lyon, A. G., *Nature*, **181**, 1351 (1958).