10 per cent. the total number affected does not reach 20.

We may cite another hypothetical case, of four treatments with 3 replications each percentage based on 100 (Table 2).

TABLE 2
PERCENTAGE OF FRUITS ATTACKED

Replication	Treatment			
	A	B	C	D
1	6	2	1	4
2	59	55	46	60
3	66	48	36	54

This would fulfil in part the standards suggested, but the low values in one replication would make it seem desirable to employ Bliss's transformation. While the use of the transformation will not modify conclusions greatly, the results with the transformed data are somewhat more trustworthy, where very extreme percentages are mixed with intermediate ones.

In conclusion, it may be stated that the standard methods discussed have some limitations in application to enumeration data of the percentage count type. However, where percentages are based on adequate and similar numbers, where they are between 10 and 90 per cent, and where individuals succeeding and failing each total 20 or more in a treatment, these methods may be used. With more extreme percentages a transformation may be of help, and larger total numbers may be needed.

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THE GERMINATION OF DORMANT LETTUCE SEED

IN improvement work with lettuce dormancy in freshly harvested seed often causes delays and loss of valuable seed. Workers have reported that light, high oxygen and high carbon dioxide concentrations aid in breaking dormancy. Thompson and Kosar[1] found that two ml of 0.5 per cent. thiourea in water markedly stimulated the germination of most of the lots of lettuce seed (*Lactuca sativa* L.) which they germinated on filter paper in 95-mm Petri dishes in darkness at 24° to 26° C.

In a preliminary attempt to germinate freshly harvested dormant seed of *L. serriola* L. two lots of seed were treated in thiourea as done by Thompson and Kosar,[1] and similar lots were handled in exactly the same manner except that they were kept in diffused light of about 150 foot candles. After 72 hours 98 per cent. of the seed in the light had germinated as compared with less than 1 per cent. of those in the dark.

In an attempt to evaluate the benefit derived from thiourea and from light three lots of strains of *L. sativa,* closely related to 456 and seven lots of *L. serriola* seed were treated with thiourea and with water both in darkness and in light. All seed had been harvested the previous day, but much of the *L. sativa* seed had been mature for a considerable time and had not been harvested because the plants were grown in a greenhouse and were protected from winds. The *L. serriola* seed were gathered in abandoned fields near Ithaca two days after a period of considerable wind that would have blown off seed that had matured before that time. Temperatures ranged between 21° and 28° C. Counts were made after 72 hours. Results are given in Table I.

TABLE I

Lot number	Thiourea		Water	
	Light	Darkness	Light	Darkness
Lactuca sativa				
1	100	96	10	16
2	100	76	0	4
3	100	96	4	6
Lactuca serriola				
1	96	4	6	0
2	94	44	4	0
3	78	10	16	0
4	64	0	2	0
5	56	0	4	0
6	72	0	8	0
7	72	20	10	0

As pointed out by Thompson and Kosar[1] thiourea markedly retards the growth of the seedlings. This retarding effect of thiourea can be largely eliminated without loss of stimulation of germination if the seed is treated with thiourea for 24 hours and then washed. This can be done conveniently by transferring the filter paper with the wet seed clinging to it to a Büchner funnel, washing well with distilled water and returning it to the rinsed Petri dish. Six lots of freshly harvested *L. serriola* seed treated in that manner varied in germination from 100 per cent. to 88 per cent. with an average of 94 per cent., while but one seed of the 300 of the 6 comparable lots moistened with water and left in the dark germinated.

In using this method for the growing of plants the treatment is started in the late afternoon so that the seed may have a maximum period of light following the night period when absorption of the thiourea solution may take place. Late the following afternoon the seed is washed with distilled water and returned to the Petri dish for planting the next morning in sand wet with dilute nutrient solution.

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[1] Ross C. Thompson and William F. Kosar, *Plant Physiology,* 14: 567–573, 1939.