The keeping quality of potatoes is an important property. This is true in particular of seed potatoes, because not only should they be sound in spring but they should germinate properly and be capable of producing a vigorous crop. The keeping quality is dependent on the variety, the kind of soil in which, and the climatological conditions under which the seed has grown, while manuring also plays a role. The handling of the tubers and their storage likewise affect keeping quality.

We have in the first place tried to devise methods to measure keeping quality and we have found two promising ones:

(a) Storage of the potatoes at 2°C (from a moment at which no germination has occurred yet), the tubers do not sprout at that temperature. At regular intervals rotten tubers are counted and removed. Initially, there is, as a rule, little or no rot. But after about two years it begins to increase considerably and large differences arise between the various lots. The difference in amount of rot is a measure of keeping quality. The marked rot occurring rather suddenly after prolonged storage (without the tubers ever having germinated) is regarded by the authors as a sign of age.

(b) Planting out the tubers side by side after prolonged storage, examining the stand of the crop after some time and expressing it in a rating.

Some experience gained with method (b) will be described below.

Experiment 1
Potatoes of the Bintje variety, dug up on July 15, 1948, were kept in a clamp. At intervals of one month, starting from August 14, 1948, samples were removed from the clamp and stored at a constant temperature of 2°C. This was continued until April 14, 1949. It may be stated that the potatoes that were first stored at 2°C have had the best storage, and those removed from the clamp last the worst.

The potatoes were planted out side by side in the spring of 1949 and further in August 1949. After some time their stand was inspected and the outcome was represented in Fig. 1. Of each object plots of 20 plants were laid out in duplicate. Curve A represents potatoes planted out pregerminated on April 21, 1949. To this end they had been removed from the cold cell about six weeks before and pregerminated at the prevailing, rather low, spring temperatures. The field was inspected on June 23, 1949, about two months after planting. A rating of 10 indicates a good stand, peculiar to the variety and to pregerminated seed.

Curve B relates to tubers also planted out on April 21, 1949, but these were not pregerminated and were kept in the cold cell until two days before planting. They were also inspected on June 23, 1949. A rating of 10 again indicates a good stand, peculiar to the variety and to the non-pregerminated seed. (The stand is not quite the same for A as for B, dependent on whether or not the seed was pregerminated).

Curve C relates to tubers planted out on August 19, 1949, after pregermination. They were removed from the cold room a few weeks before planting and then allowed to pregerminate at the prevailing summer temperatures. They were inspected on September 13, 1949 (25 days after planting). This early inspection was possible because the plants already emerged a week after planting.

Again 10 represents a good stand, peculiar to the variety, but obtained from seed handled in a very unorthodox way. Inspection has taken place

1 A visible difference in stand in June invariably gives a difference in yield, at least if the potatoes are dug early or moderately early (until August 10-15). If they are dug late, the difference in yield may no longer correlate with the stand in June, but it often does.

Stand of the crop
Stand der Pflanzen
Etat des plantes

much sooner after planting than in cases A and B. Under these conditions one cannot expect the stand of C to be identical with that of A or B.

Discussion of the results
Curves A, B and C relate to the stand of the crop resulting from seed potatoes that have been in the clamp for a shorter or longer period, corresponding with a longer or shorter period in the cold cell.

The decline of curves A, B and C indicates a decline in stand. This decline can be ascribed only to the fact that the tubers deteriorated during storage.

The course of curve A shows that up till and including the sample stored at 2°C on December 14, the potatoes did not deteriorate in the clamp. Until then they were in the same (good) state. The samples planted on January 14 and February 14, however, deteriorated somewhat in the clamp (probably some sprouts formed in the clamp, broke off during removal and transport to the cold cell).

Curve B shows that up till and including the sample put in the cold cell on October 14 the potatoes did not deteriorate. After that, however, the stand declined. This indicates that the samples transferred from the clamp to the cold cell on November 14, and especially later, did deteriorate. This decline is far more marked with curve B (non-pregerminated seed) than with curve A (pregerminated seed). This confirms the well-known fact that by pregermination of not too strong seed potatoes a good crop can be obtained, whereas the stand of this crop would have been less good if pregermination had not taken place.

Curve C, finally, demonstrates a sharp decline in the stand of the potatoes of lower keeping quality. It is seen that the samples removed from the