

to the nitrogen reduced breakdown incidence by half. In another experiment these effects of nitrogen and potash were again in evidence. None of the treatments had any effect on storage-pit. Storage troubles were accentuated by the fact that the trees were in their off-year of bearing.

(b) *Dunn's Favourite*.—The increase in breakdown susceptibility induced by the use of 2 lb. or 4 lb. ammonium sulphate per tree is now less than it was initially, although still evident.

(c) *Jonathan*.—The use of 2 lb. and 4 lb. ammonium sulphate, additional to normal phosphate and potash, continues to give marked and proportionate increases in susceptibility to breakdown and to fungous diseases. Jonathan-spot, however, has been unaffected by the nitrogen treatments. Potash has reduced breakdown and fungous incidence, but, on the other hand, has markedly increased Jonathan-spot and has also induced a slight amount of deep scald.

(d) *Sturmer*.—Nitrogen by itself has given a relatively high percentage of breakdown and fungous disease with this variety. The use of phosphate additional to nitrogen has reduced this adverse effect, and the use of phosphate plus potash has eliminated it altogether. In another experiment in which potash was used at varying rates it was found that it effected a reduction in breakdown and fungous trouble. Storage-pit was unaffected by treatments.

CO₂ GAS-STORED APPLES.

Separate experiments on Washington and on Ballarat seedling varieties of apples were undertaken in the 1937 season, and are also in hand for similar fruit at the present time (1938 season).

In the former trials the fruit was held at temperatures of 36°, 40°, and 44° F., with the respective atmospheres containing 6, 9, and 12 per cent. carbon dioxide and 15, 12, and 9 per cent. of oxygen, or, in other words, each variety was stored at three different temperatures and three different concentrations of CO₂ gas.

Unfortunately, both lots of fruit were initially "advanced" for maximum keeping-quality in cool storage, and this forward condition was reflected to some extent in the results.

The Washingtons after twelve weeks' storage were in all cases affected by brown heart, but to the least degree at the 6-per-cent. concentration of CO₂ at 40° and 44° F.

The Ballarats were held for sixteen weeks, at which time all lots showed brown heart, and again the damage was slight at 6 per cent. CO₂ and at temperatures of 40° or 44° F.

At the latter temperature only 4 per cent. of the Ballarats were affected by brown heart, but, on the other hand, internal breakdown was serious, while at 40° F. internal breakdown was only slight and 15 per cent. of this group of Ballarat apples were slightly affected by brown heart.

On the whole, the gas-stored sound fruit was (1) firmer, (2) less mature, (3) more juicy, and (4) of better flavour than the corresponding lots of control apples in air.

COOL STORAGE OF ASPARAGUS.

Small experimental shipments of New-Zealand-grown asparagus in the 1935 and 1936 seasons proved that this vegetable could be delivered in London in a reasonably good condition, and this partial success was followed up by a series of experiments in the Department's cool-store during the time it was not required for apples.

The main conclusions regarding this trial are :—

- (1) Good-quality asparagus may be kept at 33° F. and at a fairly high relative humidity, for about six weeks.
- (2) Quality and weight are maintained best by wrapping each bundle in cellophane and standing it upon damp sphagnum moss.
- (3) The interval of time between cutting the stalks and their cool storage should be the shortest possible.
- (4) Only tight-headed, firm, and otherwise well-grown sticks should be stored.
- (5) The asparagus which was stored in an atmosphere of 5 per cent. CO₂ and 16 per cent. oxygen was better than that kept in air storage, but it is not yet clear whether this improved condition was due to the carbon dioxide or to the higher relative humidity.

These conclusions, however, require to be confirmed by further research, as the asparagus used was not of first-class quality.

STORAGE OF GREEN PEAS.

During January and February of this year (1938) some experiments on the cool storage of green peas of mixed varieties and of fair average quality and purchased in the local market were carried out at 34° F. and 37° F., and the following information was obtained from those stored in their pods :—

- (1) The storage temperature of 34° F. gave the better results.
- (2) Containers of tin and also of wood were used, and the latter were the better. The higher relative humidity of the peas held in the tins encouraged sprouting and fungal growth.
- (3) The control of relative humidity is important, but in these experiments was not wholly effected : if too high, sprouting and fungal damage occur, while if too low the pods dry out and wilt considerably.
- (4) The peas should be picked when of a fresh green colour, and should be stored as soon as possible thereafter. In such circumstances they will keep in cool storage for at least four weeks.
- (5) Storage in an atmosphere of 10 per cent. CO₂ was beneficial ; it checked mould-growth and retarded the loss of flavour.

Shelled peas did not keep well for more than two weeks under the conditions tried in these experiments, which were similar to those outlined for peas in the pods.