ENTOMOLOGY

NATURE RAMBLINGS by Frank Thone

Domesticated Flies

➤ FOR CENTURIES, the honeybee was the only insect that could be counted among man's domestic animals. To be sure, the bee was somewhat less domestic even than the goat: it would consent to live in quarters provided by man, and would yield up part of its product to him under rather drastic persuasion. But the fly remained wholly wild and free, living in man's houses as a tolerated pest, as rats and mice do.

Only when the fly finally became recognized as a disease-carrying pest that could no longer be tolerated did man take the trouble to domesticate it. Nowadays, in a considerable number of places, flies are solicitously reared on selected food in large, sanitary cages. Special care is given to insure maximum reproduction and growth to healthy maturity of the insects that emerge after pupation.

This procedure, which a couple of generations ago would have been regarded as sheer lunacy, is carried out in order to secure adequate stocks of flies on which to test the potency of insecticide sprays. When a new batch of spray is ready, a counted number of flies are released into a windowed test chamber. The spray is released under uniform pressure through standardized nozzles.

By tens and fifties the victims fall, while the entomologists coolly watch the slaughter through the window. After a stated time period they count the survivors. If these number more than a certain maximum percent, the batch of spray is rejected as too weak. If the "knockdown" number is high enough, and the eventual kill is also high, the spray receives the official OK.

This business of wholesale production of flies for the insecticide testing laboratories has been going on not quite a quarter-century. When the first domestic fly sprays were produced, back in the early '20's, the winged guinea pigs, needed to assay their deadliness, had to be captured in the wild—usually in the rear of livery stables that still survived at that time.

Soon, however, this haphazard source proved insufficient. It was inadequate qualitatively as well as quantitatively, for comparative tests showed that "wild" flies from the dungheap were not as strong and tough as those hand-raised on more carefully selected foods, and hence not as good test animals. Oddly enough, it was found that the best fly food is milk. Milk-fed flies are quite the opposite of tender; in Flydom, "milksop" means "toughie."

Science News Letter, March 30, 1946

CHEMISTRY

Vacuum Drying Produces Superior Foods

➤ VACUUM-DRYING of frozen fruits and vegetables may solve the problem of food preservation by the dehydration method and give products superior to those resulting from the ordinary hot-air dehydration used extensively during the war, which, it is claimed, do not retain satisfactorily full flavor, appearance and nutritive value. The "freeze-drying" process, still in an experimental stage, is similar to the successful method of preparing blood plasma, penicillin, vaccines and bacteriological cultures for preservation and shipment.

In this freeze-drying method the material to be dried is first frozen and then exposed to a high vacuum. Because the ice in the frozen material vaporizes without melting, the process is sometimes spoken of as drying by sublimation. It is not a new method. As far back as 1909, L. F. Shackell of the University of Missouri experimented with the preservation of perishable sera by drying under a vacuum. Its use in dehydrating fruits and vegetables, however, is new.

A preliminary report on the freeze-drying method of the dehydration of fruits and vegetables has been made by James C. Moyer and Elmer Stotz of the New York State Agricultural Experiment Station. They are careful to state that the procedure is still in an experimental stage.

"In the comparison of vegetables or fruits dried by sublimation and those dehydrated in the usual manner in a stream of warm air," they state, "the light, porous nature of the vacuum-dried material provides a contrast to the shrunken and glassy or case-hardened outer surfaces of the heat-dried products. The open, porous texture of the vacuum-dried fruits or vegetables is responsible for their extremely rapid reconstitution when placed in only cold water."

Reconstituted vegetables, dehydrated by the freeze-drying process, are not tough, and have lost little flavor. The loss of ascorbic acid, or vitamin C, is only 2% to 10%, while in the warm-air process it is from 20% to 30%. Much research remains to be done, the two experimenters say, before fruits or vegetables can be readily preserved by this sublimation method, but the process will some day be commercially possible.

Science News Letter, March 30, 1946

Sumac is a valuable shrub to protect soil from erosion because it grows in rough places with poor soil; at the same time it can be a valuable cash crop because it yields a tanning material needed in leather-making.