the normal manner of insects, in view of the extreme shortness of the male aedeagus which is relatively a minute, latent, oval tube; the entire absence of secondary copulator mechanisms or "grappling hooks," and the long, closely-knit bases of the dorsal and ventral valvulae of the female ovipositor, between which it would seem impossible for such a short aedeagus to penetrate.

A COMPARISON OF POTATO TUBER DAMAGE BY TWO FLEA BEETLES, EPITRIX TUBERIS GENT. AND EPITRIX SUBCRINITA (LEC.) (COLEOPTERA: CHRYSOMELIDAE)

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In the course of a recent investigation into control of flea beetles on potato, at Kamloops, B. C., the question arose as to whether the western potato flea beetle, *Epitrix subcrinita* (Lec.), caused the same type of damage to potato tubers as its close and more numerous relative, the tuber flea beetle, *E. tuberis* Gent. A small experiment was set up at the Dominion Laboratory of Plant Pathology, University of British Columbia, to make a comparative study of the damage caused by the two species.

Collections of the two species by C. L. Neilson and D. G. Finlayson, Dominion Field Crop Insect Laboratory, Kamloops, B. C., from potato fields near Kamloops were sent to Vancouver. A group of 12 individuals of each species was placed on a potato plant in each of three cages. The external sexual characteristics being difficult to see in living specimens, the ratio of males to females was not known. Each group was a random sample.

The cages were developed from a type in use at the University of California. They were cylindrical, 30 inches high, the ends being 15 inches in diameter and made of 5-ply wood, with a 5½-inch hole in each. The ends were joined by four uprights and between two of these was a 9-inch pane of glass. The remaining three side panels were covered with organdy. The potted, caged plant grew up through the hole in the bottom. Cotton batting made an insect-tight filler at the rim where the cage rested on the pot. The host plants were White Rose potatoes from a single parent plant, growing in 10-inch pots. At the start of the experiment they were about 2 feet high. The soil moisture was maintained from water poured into saucers in which the pots were set. The cages were kept in a greenhouse and inspected daily. The beetles were introduced into the cages on July 29, and taken out on October 6. Emergence of second-generation adults started during the last week in September but was not complete by October 6.

When the soil was washed from the root systems, it was found that both species severely damaged the root, rhizome, and tuber. Tunnels up to four per inch were found in the rhizomes. In one cage containing a heavy population of *E. tuberis* some of the rhizomes were completely cut off. In all the cages many of the fibrous roots appeared to be cut and shortened. A thin peeling was taken off the tuber before damage marks were counted and for each species 50 tunnels in the tubers were chosen at random and measured at a depth of approximately 1 mm. The average length of tunnel in each instance was 2.5 mm. The range was from 1.0 mm. to 5.0 mm., with 40 per cent 2.0 mm. long and the frequency distributions were almost exactly the same for the two species. There were few surface tracks.

Under the conditions of the experiment, *Epitrix subcrinita* produced a substantial amount of tuber injury, practically identical in nature with that produced by *E. tuberis*. Both species also damaged roots and rhizomes severely. It does not follow, however, that the same results would be secured in experiments conducted in the field, or in field cages.