SEIBERSDORF WORKS ON THE FRUIT FLY PROBLEM

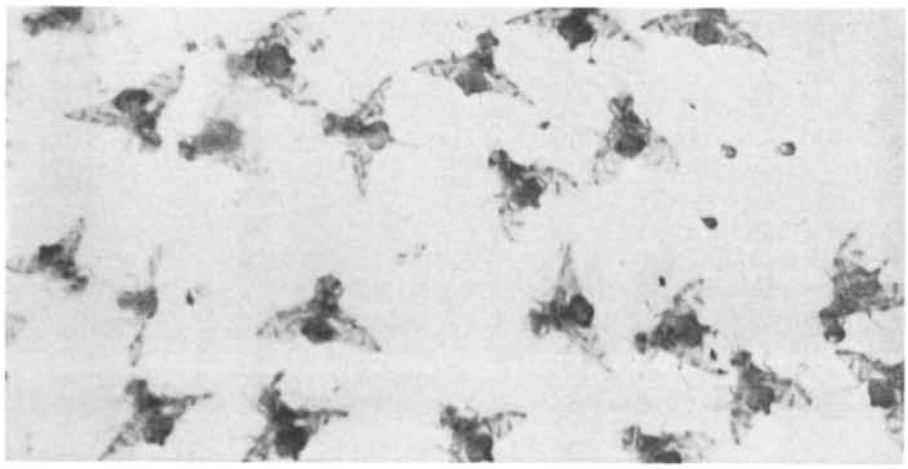
On 1 July 1965, a three-year UN Development Programme project was launched in Central America, to demonstrate over an area of 60000 acres the feasibility of eradicating fruit fly with the help of radiation.

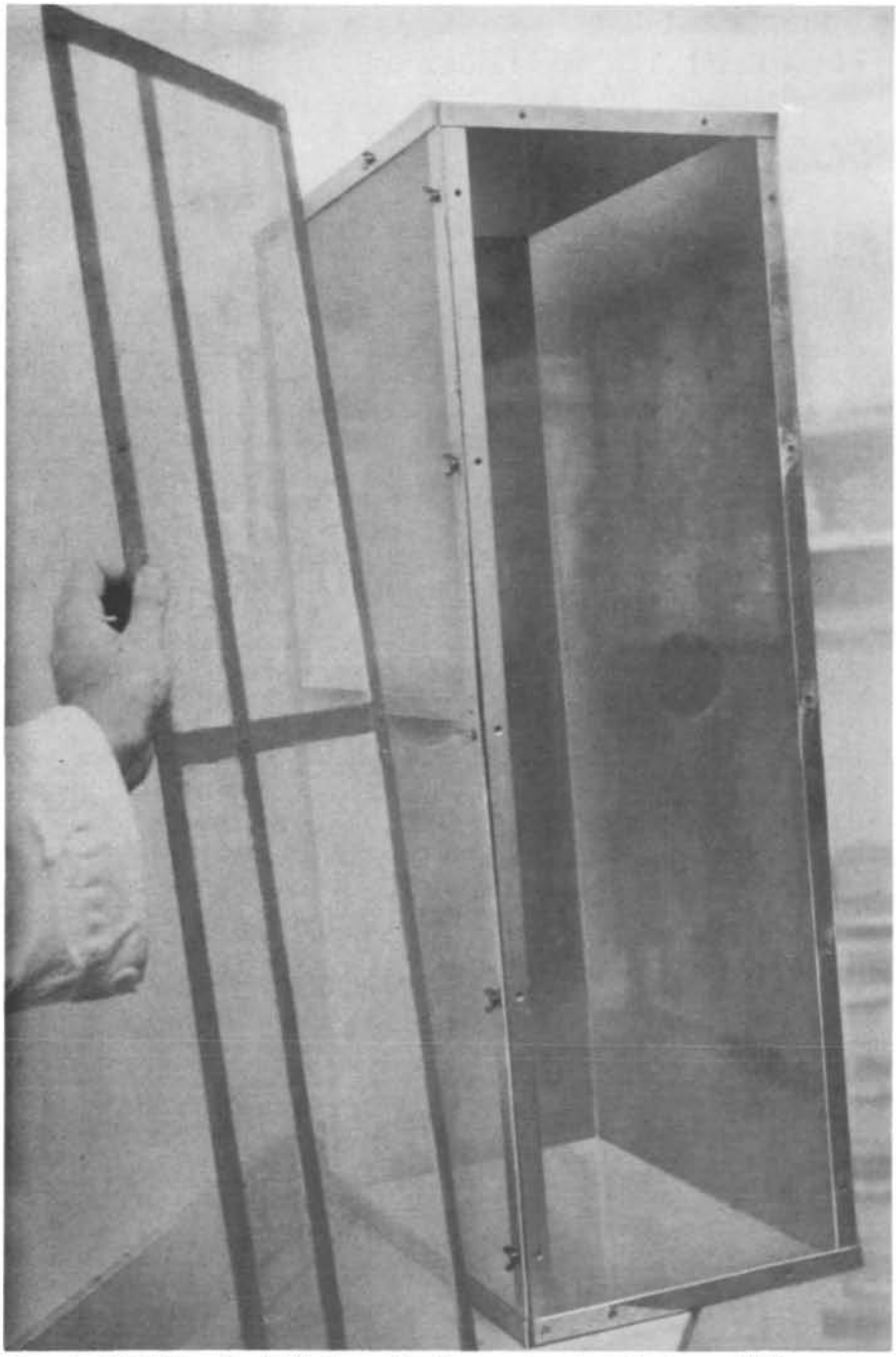
This was the result of a request from Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama. The Mediterranean fruit fly (Ceratitis Capitata) appeared in Costa Rica in 1955, and spread from there in spite of attempts to contain it. A most destructive fruit pest, it is already causing millions of dollars worth of damage each year in the area. The countries concerned fear that unless it is brought under control, the annual loss could exceed $80 million.

The seven countries took joint action to prevent the spread of the fly but found that more radical measured were needed, and they began to experiment with the sterile male method. They are now providing some $425000 towards the UN project and the Development Programme itself is providing about $824000. The UN Development Programme designated IAEA as the executing agency for the project, which is under the technical direction of the IAEA/FAO Joint Division of Atomic Energy in Agriculture. The laboratory of the Organismo Internacional Regional de Sanidad Agropecuaria in Costa Rica is serving as headquarters for the project, and the Inter-American Institute of Agricultural Sciences is also assisting.

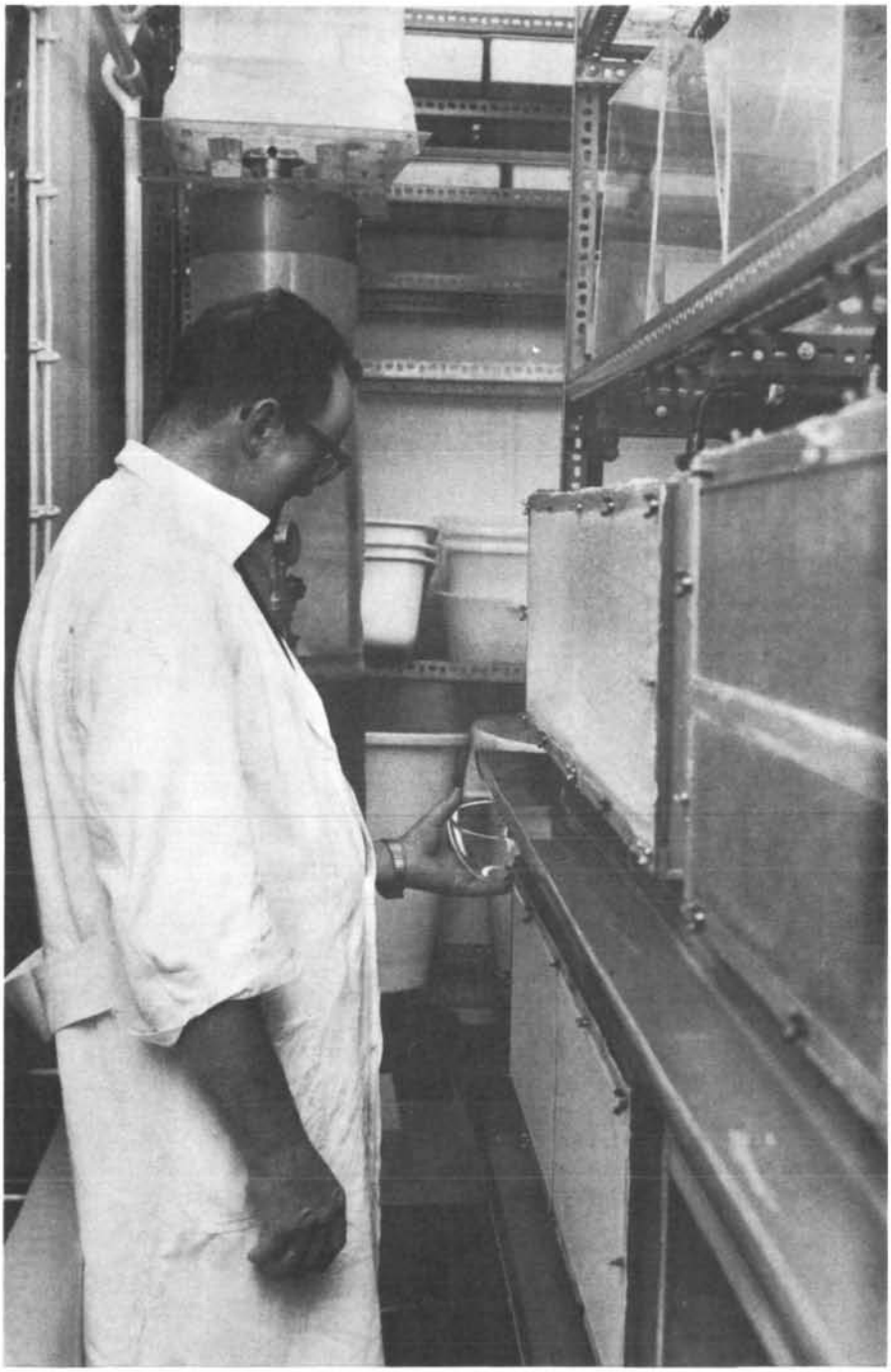
Under the sterile male method, great numbers of insects are reared, sterilized and released. Sterile males then compete with untreated ones in the breeding grounds, and since their matings produce no offspring, the species dies out. The method, however, calls for careful preliminary study of the life habits and nature of the insect, and development of simple and economical methods of rearing, feeding, sterilizing and distributing many millions of insects. The photographs show the IAEA laboratories at Seibersdorf, near Vienna, at work on the problems.

Adult fruit flies

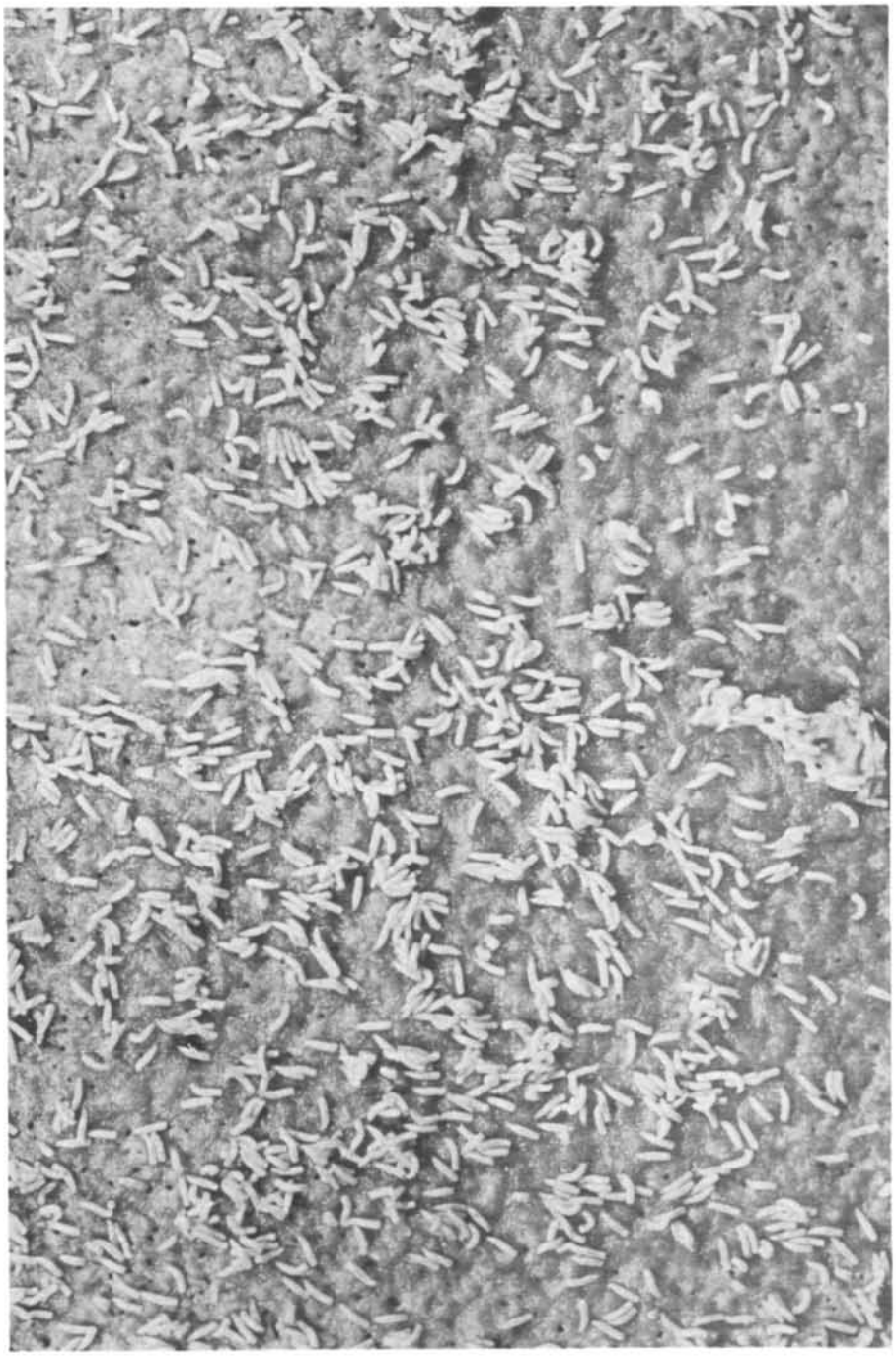




Cage for 30 000 flies. The lid (held open) is of gauze, through which the eggs laid.

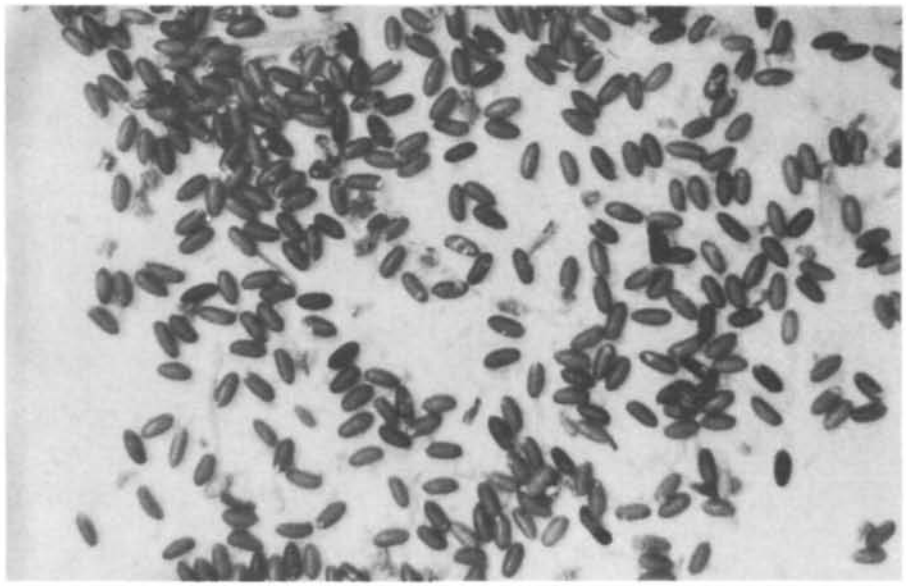


The cages are arranged in a rack with the gauze screens standing vertically above troughs of water. The eggs fall into the troughs, whence they are collected either by hand or by an automatic system of water sprays.



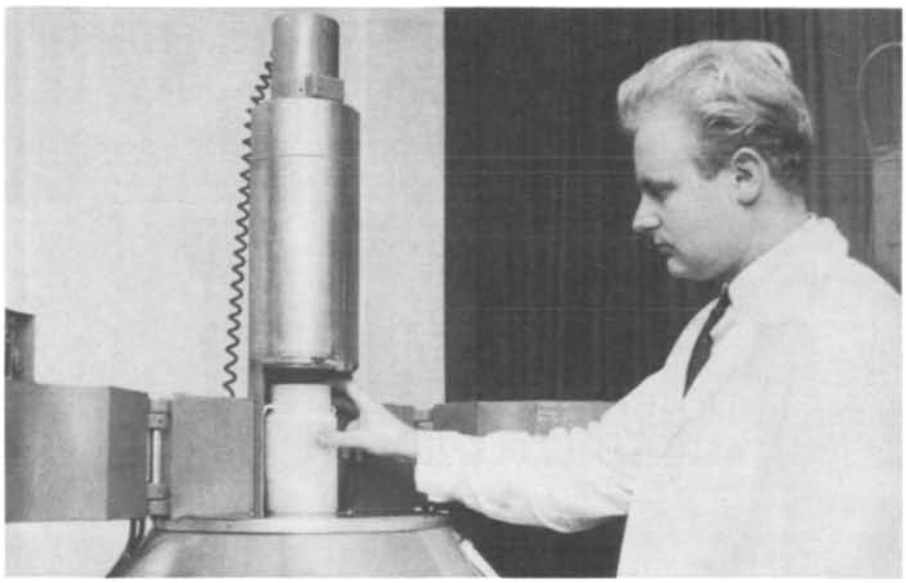
Fully-fed larvae emerging from trays of artificial food.

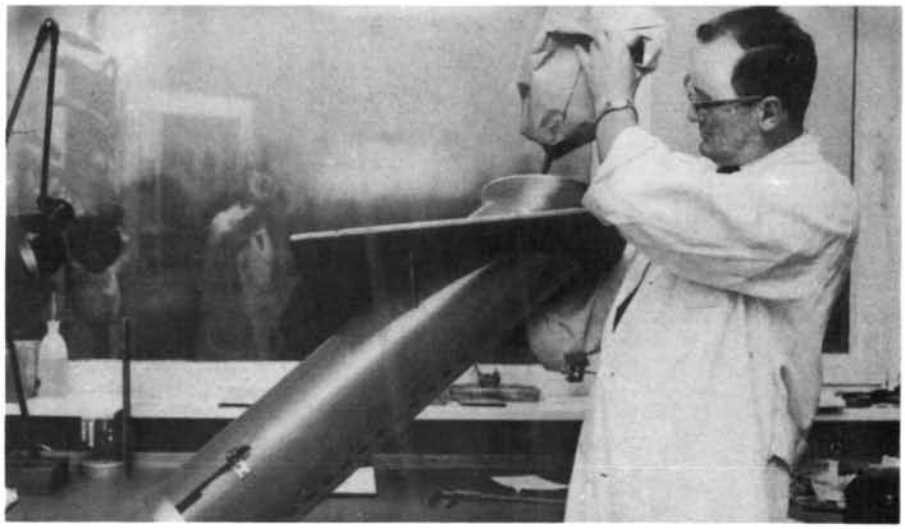
Trays for rearing larvae (on the shelves), and a large bin in which the next stage of the life cycle – pupation – takes place.



Pupae, from which the adult flies will emerge.

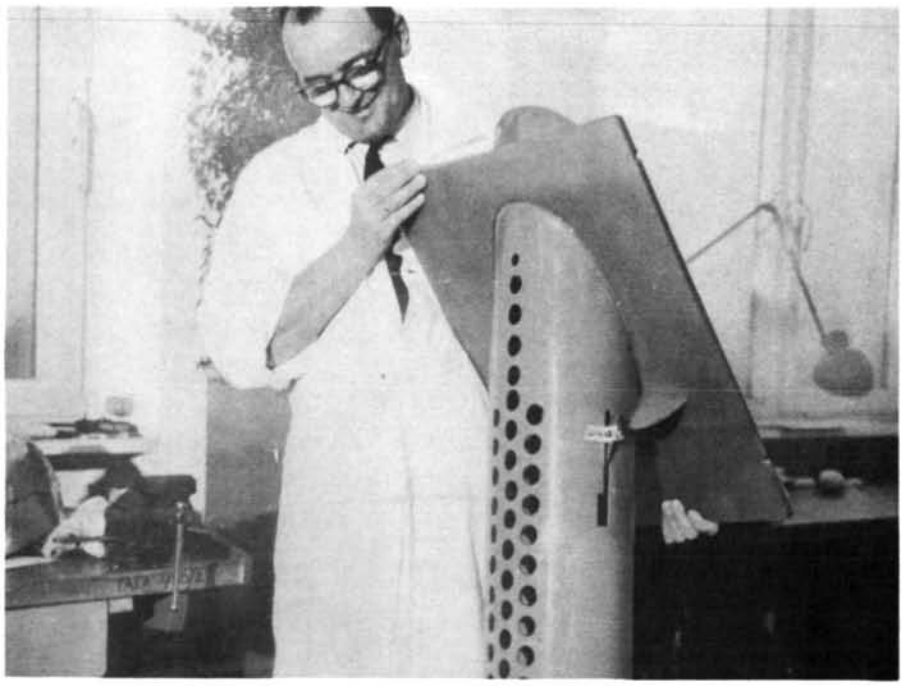
A plastic container of fruit fly pupae is lowered into a gamma cell, where it is exposed to radiation from a cobalt-60 source. The gamma radiation is sufficient to sterilize the flies without greatly reducing their activity.

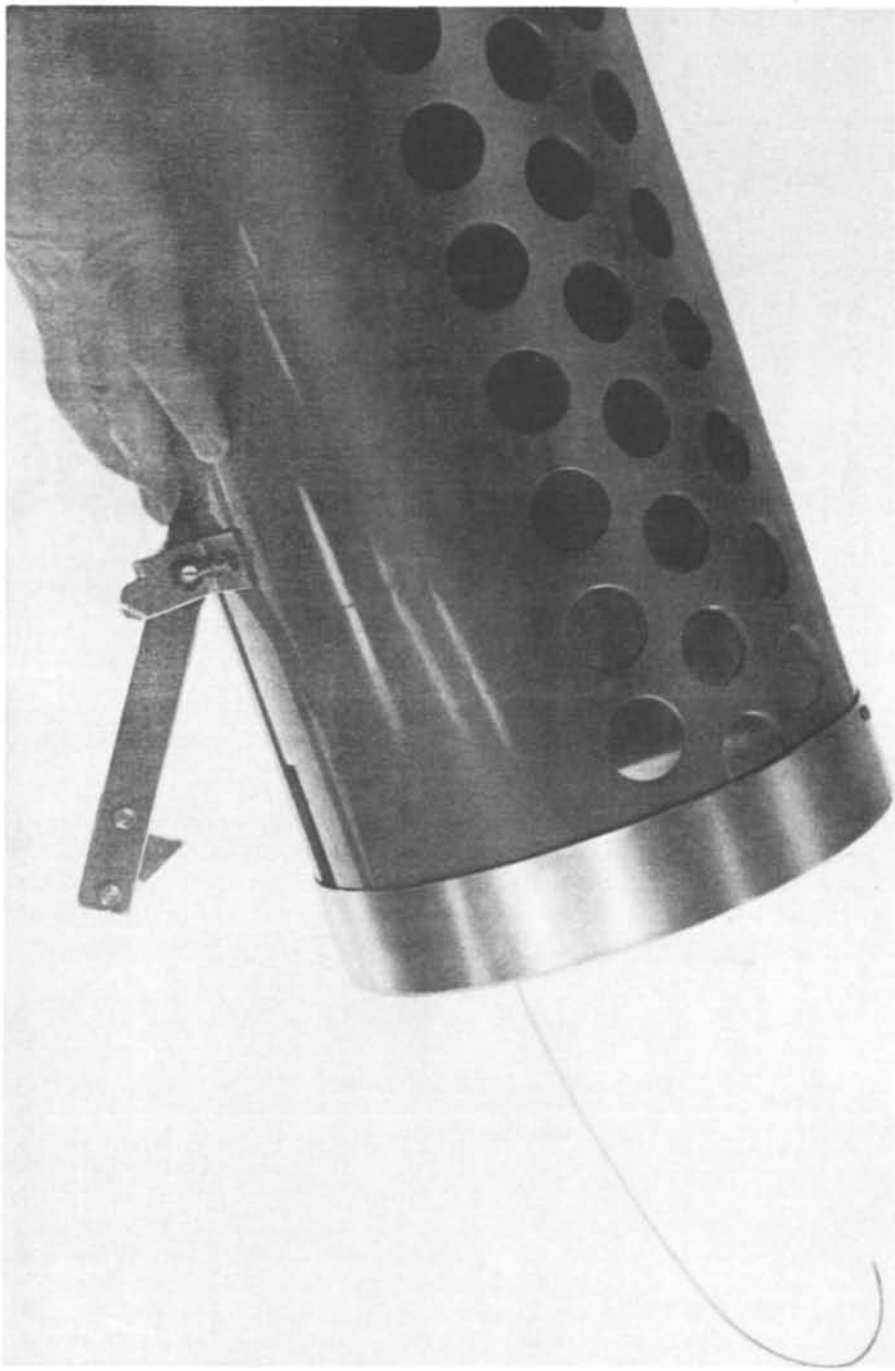




After sterilization the pupae are placed in paper bags, in which they develop into flies. On board the aircraft in flight, the bags are loaded into the dispersing tube – if necessary, at the rate of one bag every two or three seconds.

The dispersing tube, as fitted to the aircraft, can disperse millions of the sterilized flies over a wide area. Air streaming through the holes whips the bag swiftly out of the tube.





As it leaves the tube, the paper bag full of flies is slashed by a hinged knife. The bag sticks momentarily on a hook, and the flies are scattered.