In Belgium, isotopes were used to investigate the life history of aphids which carry viruses. Some moths which have eggs laid in them at their larval stage by parasitic wasps were irradiated in India, and it was found that afterwards more parasitic males than females were hatched. In Sweden, weevils which cause considerable losses to European conifer plantations were marked with radioactivity to ascertain their invasion and distribution habits. The experiment showed that to be effective, control methods should be concentrated especially in outer parts of a plantation, although overall protection is needed.

Insecticides will continue to be useful parts of control programmes, and radioactive labels have been helpful in determining the mechanism of their action. In the USA it had been found that with certain insecticides destruction of mosquitoes decreased in proportion as numbers increased; with other chemicals the destructive effects increased proportionally as the numbers rose. Sterilization can be induced with some chemical compounds and in some instances, it was considered, this method could be more practical than the use of radiation, provided that the chemosterilant was not mutagenic to other components of the biota. The dynamics of insecticides in the bodies of mosquitoes and desert locusts had been investigated in the Federal Republic of Germany and in India.

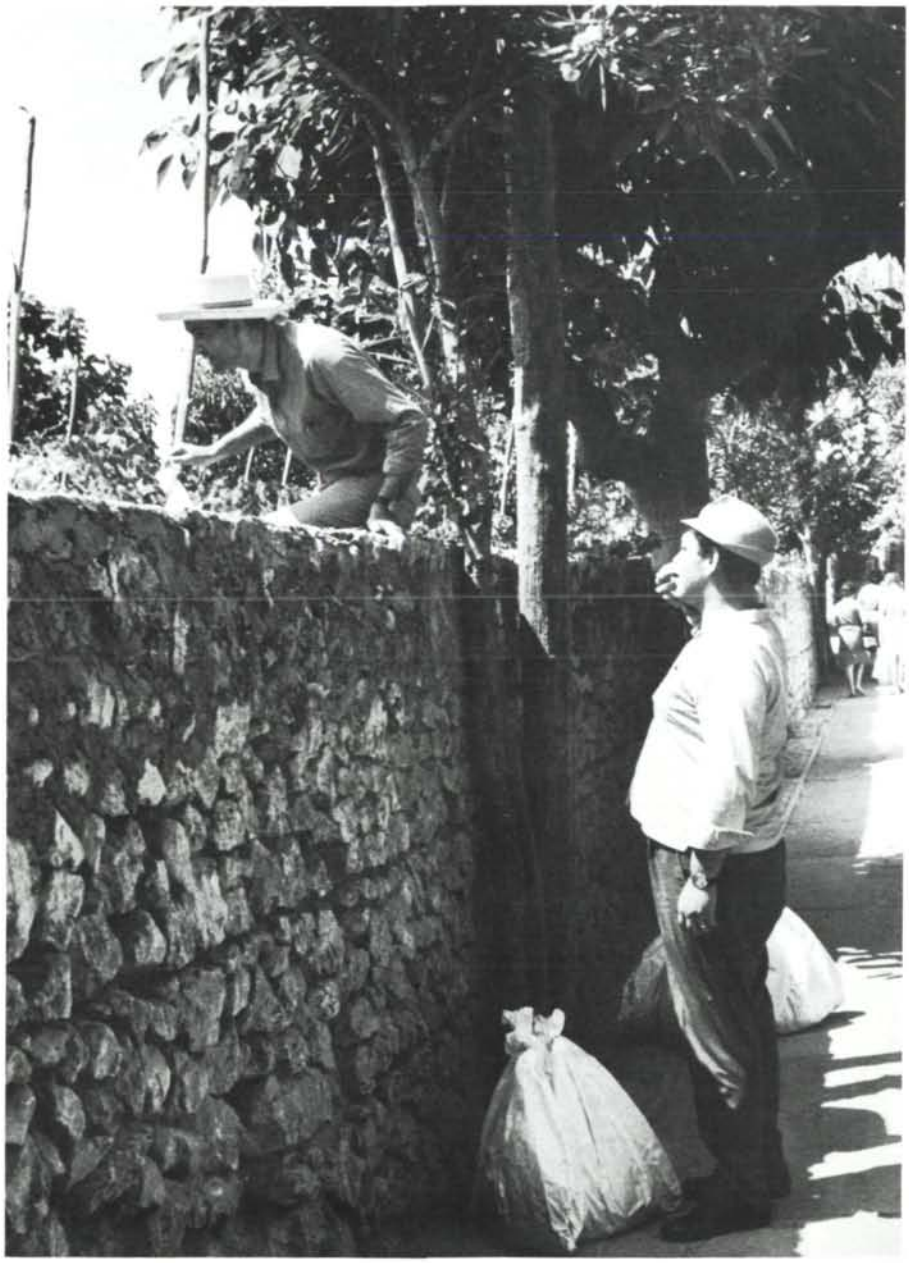
Some insects have become space travellers. An experiment in the USA sent wasps into orbit in a satellite to find the effects of radiation in these special conditions, and although the details are still being worked out considerable interest was shown in the way the operation had been conducted.

THE FLIES OF CAPRI

Capri's nuclear campaign, suspended for the winter, may be resumed and possibly extended to other islands in the spring. It lasted from April until October 1967, since when the results have been carefully examined. It was a campaign against destructive flies and achieved not only its first limited objectives but indicated real prospects of success for a new beneficial technique.

The campaign in Capri was directed against a fly known as Ceratitis capitata to entomologists, to the layman as the Mediterranean fruit fly or Medfly. This insect causes immense losses in the middle latitudes of the world by attacking citrus fruit such as oranges and grapefruit, as well as peaches; in some

These men are not committing a crime. They are taking part in distribution of paper bags containing Mediterranean fruit flies sterilized by radiation. The photo was taken by FAO during the Capri experiment.



places it breeds in the coffee berry. The damage is due to the fact that the female of the species lays its eggs in growing fruit, and the resulting larvae eat their way out before themselves turning into flies. Often a big percentage of a crop is ruined in this way. Medfly has been able to spread far beyond the Mediterranean and in recent years it has established itself in some countries of Central America, where the losses, it has been estimated, can amount to $80 000 000 a year.

Nuclear techniques have now provided a promising way of helping to control the pest. The Food and Agriculture Organization and the Agency, who operate a joint division of atomic energy in food and agriculture, have for some years been initiating and encouraging research, and have undertaken a programme in Central America designed to show the possibilities of the "sterile male" technique. They are carrying it out on behalf of the United Nations Development Programme in co-operation with the International Regional Organization for Plant and Animal Protection and seven governments.

The method being used is the rearing of many millions of the flies in laboratories, their irradiation at the appropriate stage to render them sterile but still sexually active, and their release to outnumber wild flies and thus reduce the fly population.

In Capri, a small-scale experiment used about fifty million such irradiated flies over seven months. The main intention was to show that these flies were capable of normal life outside their "nursery", and although the early weeks were abnormally cold, it became more and more evident as the weather improved that they adapted themselves to the new environment. This was the more interesting because the laboratory flies, according to records maintained since artificial breeding started in Israel in 1958, had not been exposed to natural conditions for more than a hundred generations. In mankind this would cover a period of 2 000 years or more, and it was thus of primary importance to discover whether natural instincts had been inhibited.

WHERE DID THE WILD FLIES GO?

In such circumstances, even though the survival capacity was proved, it would scarcely have been surprising if the wild flies had been able to resist the intruders in competing for the favours of their own females. But the indications are that even here the "tame" flies were successful and that by their progeny-free matings they caused a drastic reduction of the fly population. When the time came to make the first general fruit examination it was found that wild flies had, to all intents and purposes, disappeared - except in one small area. Here the distribution of laboratory flies was faulty because of difficult access, and it was here that wild flies were found still flourishing.

To obtain still further information, the later part of the experiment used the natural formation of the island to obtain a comparison of effects. Distribution of the artificially bred flies was restricted to the higher part, Anacapri. The port of Capri and its surrounding area was ignored. Again the findings

were significant. Infested fruit was later found in the lower area but none on Anacapri.

Encouraging as are these results, there are still more scientific questions to be answered through experiments. It has to be established beyond doubt, for example, that the observations relating to wild flies were not affected by factors unconnected with the experiment.

The Capri experiment was carried out by the Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture with the approval of the Italian Government and the assistance of the Israeli and Italian Atomic Energy Commissions and the Italian Ministry of Agriculture. The Israeli Atomic Energy Commission supplied a large proportion of the flies, and some were sent from the Agency laboratories at Seibersdorf.

TRIESTE WILL CONTINUE

Trieste will continue to be the home of the International Centre for Theoretical Physics for the foreseeable future. An agreement signed in Vienna during December between the Italian Government and the Agency brought this assurance.

The Centre started operating in 1964, having evolved as a result of decisions first taken by the Agency's General Conference in 1960. An agreement signed in Rome at the end of 1963 established Trieste as the headquarters for a period of four years and also marked the beginning of generous financial support from the Italian Government exceeding a quarter of a million dollars a year.

As a result of these arrangements Trieste has provided a meeting place where theoretical physicists exchange ideas on current developments and research, and where those from developing countries are able to stay from time to time in order to keep abreast of world knowledge. It has been a source of stimulation in this branch of science, and it has also helped to stem the "brain drain" from developing countries. In view of its success, and an offer by the Italian Government to continue its financial help, the Agency decided to enter into negotiations to keep the Centre in existence. UNESCO has co-operated in providing fellowships tenable at the Centre, and a grant of $200 000 spread over three years has been made by the Ford Foundation.

For the Agency Dr John A. Hall signed the new agreement as Acting Director General. He said it provided a basis for successful continuation of