

bath demonstrated to be foolproof.

The automatic system using dichlorvos insecticide was devised by Public Health Service scientists and has been adopted by the World Health Organization Assembly for standard use on all aircraft starting Jan. 1, 1971.

Because the odorless dichlorvos is circulated within all compartments of the plane for 30 minutes, it can be used in very low concentrations, with the passengers aboard. Dichlorvos chemically is 2,2-dichlorovinyl dimethyl phosphate. It has no odor in its pure form.

The chemical is related to such insecticides used in orchards as malathion and parathion. However, it is a much more volatile, lighter molecule and not as poisonous to humans. Dichlorvos kills insects when inhaled, not by contact, as malathion and parathion.

It is broken down into components non-toxic to humans by water vapor. Therein lies both its safety factor and



Agriculture

### *Getting the bugs out.*

its failure to leave residues that could be toxic.

Tests lasting some two years with Federal prisoners and other human volunteers who breathed dichlorvos at the very low concentrations used for 10 to 20 days showed no adverse symptoms. Other tests have shown, however, that even very low concentrations of the insecticide act as a poison to the nerve system of mosquitoes.

Humans can, without any noticeable effect, take a dose about 20 times that necessary to kill mosquitoes and some other insects in normal aircraft treatment.

Not all international flights are now subject to disinsection, and this has not changed.

The automatic disinsection will occur only on international flights originating in the tropical or near-tropical zones. Flights from Copenhagen to Seattle, for

instance, would not be treated, but those from Vietnam to San Francisco would be.

The World Health Organization Assembly did not approve the dichlorvos system as the only mandatory one. Countries and airlines can continue to spray DDT with an aerosol bomb, although one drawback, in addition to lost time, is that many crews do not carry through on the procedure.

"If they must bring the empty bomb to the health stations as evidence," says one public health expert in Geneva, "a chap simply lets the spray out as he walks there."

## URBAN TRANSPORTATION

### **Grasping the nettle**

For some time, transportation engineers have been saying that someone will have to gamble on a sophisticated, advance-concept mass transportation system to help unplug auto-choked city streets.

Any experimental system chosen would be expensive, and the chances are the first ones could be expensive failures (SN: 1/27, p. 89). But somebody is going to have to pick up the tab.

**Predictably**, it is the Federal Government that is grasping the nettle. Last week, a survey by the Department of Housing and Urban Development released by President Johnson picked a number of advanced transportation programs as the most promising, and proposed that the Government spend more than \$1 billion over the next 5-15 years to study and build prototypes. The survey's conclusions were presented to Congress, along with a request for \$25 million in the next year and a recommendation for a research and development program involving \$908 million over the period of the research and development effort.

The department, aided by 17 non-governmental contractors, analyzed proposed solutions to urban transportation problems and selected for presentation in the report those it thinks most likely to succeed.

Most of the solutions proposed involve vehicles that spend all or most of their journeys on exclusive rights of way separated from street traffic.

Such systems, in the form of rail rapid transit, already operate in a number of cities and are still favored by many planners. New ones have recently been built in Montreal and Toronto; Washington, D.C., is planning such a system, and New York is extending its old one. The report recommends modernization of rail transit where it can be economical.

But most American cities are spread out too thinly to provide the high den-

sity of use that makes rail routes useful. For these areas the report recommends several kinds of systems using lighter and smaller vehicles and cheaper roadbeds than rail lines.

One, a so-called personal rapid transit system, would use small cars, carrying as many passengers as an automobile, running at high speeds on special guideways. The passenger who entered at a station would get into a car and program it for the station where he wanted to get out. The car would go automatically to the desired station, bypassing all others.

A variation of this scheme involves privately owned or rented vehicles that could run on city streets but enter the guideway system and run on it when desired.

**Especially useful** in middle-sized cities, according to the report, are buses that run on the street to make pickups and drop-offs, but use an automated guideway system between boarding and unloading neighborhoods.

Pallets, flatcars that would operate on conventional rails or as hovercraft on special guideways, could be used to transport automobiles from neighborhood to neighborhood.

For high speed transportation between central cities and dense suburban centers, the report recommends automated trains of air cushion vehicles with speeds greater than 100 mph.

To get around in the central business districts pedestrians could use moving sidewalks or automated taxis on special guideways.

Moving sidewalks have been tried, but they have a tendency to knock people down. For the lame and elderly to get on safely the belts must go at speeds that can easily be beaten by pedestrians. Variable speed belts are under study.

And for sparsely populated neighborhoods there is dial-a-bus: fleets of 12-passenger buses which would operate over flexible routes. A computer would direct them to make pickups at stops where passengers had signified by telephone that they would be waiting.

**To make operating** prototypes of these systems will take up to 10 years, if funded at optimum rates the department figures, and cost nearly \$900 million in all. However, the \$900 million expenditure the department is now recommending (and which it hopes to spend in five years rather than 15) includes money for improvement of existing systems as well as research and preliminary development of the new ones.

President Johnson has committed himself to the effort to the extent of requesting the \$25 million seed money; the request is currently working its way through the Congress, where economy is being weighed against urban need.