RESEARCH BY THE U. S. ARMY CORPS OF ENGINEERS ON INSECT AND RODENT CONTROL OPERATIONAL METHODS AND EQUIPMENT

AUSTIN W. MORRILL, JR. AND GEORGE J. BURTON

Eng. Res. and Dev. Labs., Ft. Belvoir, Va.

Since the revolution in insecticidal application methods which commenced with the advent of DDT, a great deal of research and field experimentation have been done by many civilian and governmental agencies in the attempt to develop new equipment for the new needs. It may, therefore, seem somewhat supererogatory for the military to set up additional research to study the matter. Military requirements, however, while concerned with the same end result, which is to say destruction of insects, are quite different from the civilian needs for this purpose. To be militarily useful, equipment must be far more than a good tool with which to kill the insects.

Ruggedness of the equipment is a primary military characteristic, because the most efficient machine in the world, if it is not able to withstand severe abuse, will fail in its military mission. After completion of engineering tests, field test models are procured and shipped to selected using organizations for service testing. Deficiencies in the equipment reported from service tests are evaluated, and necessary corrections are made in the final specifications and drawings. A final report, together with specifications and drawings, is then transmitted by the Engineer Research and Development Laboratories to higher Headquarters, recommending adoption, when applicable, of the equipment for troop use.

In October 1951, the Engineer Research and Development Laboratories at Ft. Belvoir, Va., established an Insect and Rodent Control Section, with the responsibility of doing research on insect and rodent control operational methods and equipment. Under outlines suggested by the Army Committee for Insect and Rodent Control, projects were initiated and approved by the Research and Development Board which included a 2-gallon, cylindrical, compression, pack-type sprayer, a fog generator, a mist blower, a hydraulic sprayer, and general research on existing operational methods and equipment, or means of modifying these, which might be of use to the Armed Forces.

In formulating our ideas as to the specific forms each piece of equipment should take, an extensive canvass is made of persons engaged in similar projects elsewhere in universities and in state and federal laboratories and field projects. The consensus is then analyzed and compared with the opinions which have been expressed, often with some vigor, by armed forces units in combat areas, in Communications Zones and other overseas areas, and in Preventive Medicine survey and control units in the United States. From these various opinions, pilot models are prepared and given use tests at Ft. Belvoir and in certain field areas such as Ft. Churchill, Canada, Orlando, Florida, etc. The tests are designed to ascertain volume and rate of output, particle size range, ease of operation, and suitability to military use. Tests of extremes of heat, cold, shock, and exposure to corrosive materials, are made at this time.

Following these engineering tests, field test models are prepared and sent out to Preventive Medicine units of all the armed services for use in routine operations. During these operations, equipment is subjected to all the usual hazards of military use, but is not given abnormally abusive treatment. The opinions of the test operators are solicited by questionnaire, and the answers are tabulated and the matter also discussed at length by letter, or, wherever

possible, in person. A final report is then written, drawings prepared of the improved and final model, and military specifications are drawn up for use in future procurement.

This somewhat complex process is designed to assure the maximum in proper design and in adaptation to the needs of the ultimate user. There has not been time, as yet, to make radical innovations or modifications of types of equipment in ordinary use. However, final drawings and military specifications have been prepared within the past year for a new 2-gallon, compression, pack-type sprayer.

This sprayer is cylindrical and weighs eleven pounds. The tank is fabricated of stainless steel because both plastic and ceramic coatings were found to separate from the steel under certain not-unusual conditions, and zinc-coated steel corrodes badly during shipment overseas even with only the condensate from the atmosphere within the tank. Many parts of the new model are formed of hardened aluminum to reduce weight. The filler opening is 2⅞ inches in diameter, making it easy to fill and empty the tank, and the screw-on type cap used in previous Army models has been retained to avoid use of an O-ring type of gasket which loses its effectiveness if any swelling occurs. A capillary tube within the wand, a small ball-spring valve in the nozzle strainer, and an improved and more positive-action cut-off in the trigger release provide virtual elimination of after-drip. A complete set of spare parts, which includes all gaskets, nozzles, and strainers, is sent with each sprayer.

Prior to acceptance by the government, an inspection of sample units selected at random is made to ascertain that each sprayer when sent out is airtight to a pressure of 120 lbs., and that all parts function and all gaskets are properly resistant to insecticides. Sturdy construction combined with careful inspection, training of users in care and maintenance of the sprayer and supplying them with spare units of the most critical or most fragile parts, has enabled the Armed Forces to use the present models of this sprayer for from 3 to 5 years in remote overseas areas.

The cost of the finished sprayer is not much greater than that of stirrup pumps and lightweight commercial models. For this reason, it is felt that sturdy construction is the most economical in the long run. Further research is expected to extend the usefulness of the units so that their cost will be even less than the approximate $6.00 now figured as the annual pro ratum of the purchase price over a period of 3 years.

In the same way, experimentation now being conducted is expected to supply simple, compact, rugged, effective (though perhaps not showy) equipment at a substantially reduced cost, for field use by the Armed Forces at home and overseas.

IT IS NOT TOO SOON TO BEGIN PLANNING FOR THE MEETINGS IN ATLANTIC CITY, NEW JERSEY, ON MARCH 8, 9, 10, 11, 12, 1954. An AMCA meeting with the New Jersey group is always an outstanding event for anyone concerned with mosquitoes. Secretary Ted Raley has already alerted the members to provide for budgeting expenses for the meetings. The Editor of *Mosquito News* would add: Keep your eyes open and your notebooks handy for items, short or long, worthy of reporting at the meetings.

Mosquito News sometimes runs preponderantly to technical articles, and the Editor here takes occasion to point out again that this is because that type of article predominates among those received for publication.

The taxonomists, chemists, physiologists, and toxicologists need no urging to report their work because its very nature implies the recording and interpreting of data in writing. Laboratory workers who realize that their photomicrographic or histological

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