

OPERATIONAL AND SCIENTIFIC NOTES

AN UNUSUAL SPRAY PUMP. Four cylinders in a radial arrangement, a capacity of ten gallons per minute at pressures up to 500 pounds per square inch, the whole unit housed in an aluminum case no larger than a dishpan (10" in diameter by 7" deep)—these are some of the features which were responsible for the decision to try out one of the new "Ranch Hand" spray pumps for mosquito control in the Kern Mosquito Abatement District.

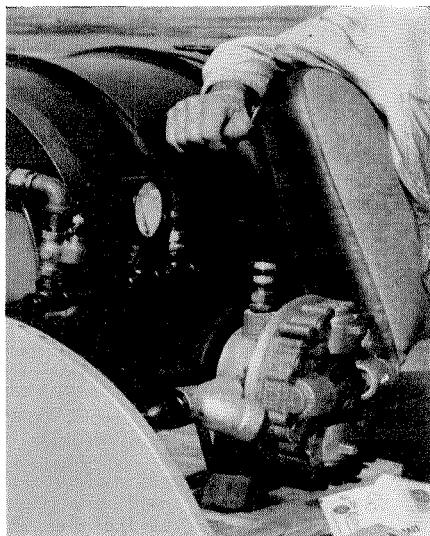
The designer has eliminated connecting rods, as well as heavy crankshaft and many moving parts by substituting for these parts two Scotch yokes through sealed-for-life ball bearings. Each Scotch yoke carries two pistons, one at either end. The stroke is short, only $\frac{3}{8}$ ", and there are four pressure strokes per revolution of the pump shaft, so that operation is very smooth, with little throbbing or vibration. The cylinders are ceramic lined, and the pistons carry double-reverse plunger cups for leak proof performance.

Water suspension sprays can be used, as well as emulsible or oil sprays, and, when the plunger cups finally do need to be replaced, the operation is easily performed by removing the cylinders, which are simply detached, one at a time, from the pump frame, by removing a half dozen machine screws. Stainless steel disc valves and seats appear likely to assure a long and troublefree life.

The small size and weight of the pump make it convenient to mount in a Jeep, alongside the driver's seat, with a chain or vee belt drive to the Jeep power take off. We have used a 50-gallon drum for a supply tank, with a quick-acting shut off located within easy reach of the operator. An overshot pressure regulator and a pressure gauge were added, together with suitable piping to return the overflow to the supply tank for agitation, while the pressure hose was connected to a spray boom and a hand gun, and the machine was ready for trials and operation.

This unit has now been at work in the field for most of the 1958 spray season, and its performance appears to justify the claims of the manufacturer, "The ability to stand up to the rigorous service that will be demanded of it in mosquito control."

The pump has performed most effectively, without problems, even with the wide range of r.p.m.'s encountered on the Jeep power take off under field operating conditions. Its size, operation, and simplicity of maintenance, plus its adapt-



ability to the Jeep power take off has resulted in this becoming the preferred power spray unit among operators of the District.

In addition to the Jeep driven pump, we have installed a similar pump on each of the two Weasels which have been used in the Kern River bottom during this 1958 season. These units are operated by 5 h.p. Wisconsin engines, using V belt drives. Both aqueous emulsions and larviciding oils are commonly handled by these pumps, and these, too, have performed very satisfactorily. The only maintenance requirement has been the replacement of plunger cups once, in each of the Weasel units, where large volumes of oil have been used for larviciding.

The pump was engineered and manufactured by the Livestock Sprayer Manufacturing Company of San Jose, California, and cost approximately \$200.00—Arthur F. Geib, Manager Kern Mosquito Abatement District, Bakersfield, Calif.