Letters to the Editor

An Experimental Compressed-Air Plant Sprayer

While investigating the commercial possibilities of hydroponics in Aruba, N. W. I., special circumstances made it necessary to develop better plant-spraying equipment for insect control. During the past year and a half a compressed-air spraying unit has therefore been developed. This technic is based upon the well-known, compressed-air, paint spray equipment.

Air under pressure may be supplied either by an air compressor or by cylinders of compressed air, depending upon the requirements of the garden unit. The average operating pressure used is 100 pounds per square inch, the range being between 90 and 125 pounds.

The insecticide container must be constructed with sufficient strength to operate at a maximum operating air pressure of 125 pounds per square inch. The body of the Aruba unit is an 18-inch piece of heavy steel pipe 8 inches in diameter. Heavy steel caps are welded to each end, making the entire length 26 inches, with a 5-gallon capacity. Two-inch threaded nipples are welded to the top of the cylinder to receive the brass filling plug, the brass plug containing the air, and the spray piping assembly. Rubber washers are inserted under these brass plugs to insure an airtight fit. Smaller threaded nipples are welded to the body of the container to receive the $\frac{1}{2}$-inch drain valve and the pressure gauge. Castors are attached to a suitable framework, and a handle is provided to enable the operator to move the equipment readily.

All fittings are of $\frac{1}{4}$-inch size except the drain valve, which is $\frac{1}{2}$ inch in size. All valves and external piping should be of steel construction for safety. A pressure-release valve is necessary to release the air pressure when refilling the unit which, for safety reasons, is attached to the filling plug.

The spray fluid pipe outlet contains a valve which shuts off the spray supply to the spray nozzle. A $\frac{1}{4}$-inch copper connecting tube inside the unit reaches to within $\frac{1}{4}$ inch of the bottom of the container. The spray fluid is forced through this tube from the container.

The air-line intake supplies air to both the container and the spray nozzle. A valve may be used to regulate the air pressure into the container. A copper tube extension of the air line into the container may or may not be installed. For completely dispersible contacticides no agitation of the spray is necessary in the container. Agitation should be provided when less stable sprays are used. Operating experience indicated that when an agitation tube is used it should terminate some distance (at least 6–12 inches) from the fluid outlet. At least for stable contacticides, the air pressures direct to the spray gun and into the spray container are equal.

Another valve on the air line controls the air supply to the spray nozzle. Heavy-walled rubber tubing, usually $\frac{1}{4}$-inch oxygen or paint hose, is used to convey the air from the source to the container and from the container to the spray nozzle. A similar hose also conveys the spray fluid from the container to the spray nozzle. The two hoses to the spray nozzle are taped together to facilitate handling. Special adaptor nipples are used to connect the hose couplings to the container piping.

The spray nozzle is the important feature of the type of equipment. In fact, the operating principle of the usual paint spray gun is the chief reason why this type of sprayer is superior to the usual agricultural sprayer. Any type of paint spray gun, suitable for high-pressure operation, is satisfactory. A De Vilbiss, Type MBC, paint spray gun works well. The fluid and the air adjustment valves are set to provide a finely divided spray.

A diagram of the unit is available upon request to the writer.

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Projection of Meteor Trails on the Moon

In a recent issue of *Science* (1946, **104**, 146) there appeared a letter from N. J. Giddings, of the Bureau of Plant Industry, Soils and Agricultural Engineering, Riverside, California, relative to a remarkable chance observation made by him regarding the moon on 17 June 1931. The phenomenon was also witnessed by Mrs. Giddings.

This letter is referred to in the October issue of *Sky and Telescope* in Dr. Marshall's column, "Astronomical Anecdotes," and the suggestion is made that meteorites striking the moon might produce a flash visible on the dark side which might be seen with the naked eye. It seems to me that a more probable explanation is the following:

According to Mr. Giddings' letter, the time of observation was approximately 7: 40 P.M. (P.S.T.?). Allowing for some small error in timing, it is clear that the sun could not have been below his horizon for, say, more than 25 minutes. The sky, therefore, must have been quite bright in the west, the direction in which the moon was seen, Mr. Giddings having stated that it was "new." I take it that the probable age was three or four days, since it is at this time that the dark side is most prominent. Now, suppose that at this time several meteors were entering the earth's atmosphere. Unless these were very bright, it is not likely that they would be seen against the bright twilight sky. But, should their trails cross the *dark* surface of the moon, they would be visible for just that portion of their path which had the dark side as its background. Thus, Mr. Giddings would be confirmed in his statement that the flashes were "definitely within the limits of the moon's outline." It is to be noted further that these flashes "streaked across the moon." This is how a meteor trail would appear,