

## MEDICINE

# From Now On: Viruses

Colds and influenza may succumb to science in the future. Synthetic viruses may afford devastating weapons of ruthless warfare.

By WATSON DAVIS

*Sixteenth in a series of glances forward in science.*

► THE causes of influenza, infantile paralysis, the common cold and a number of other common and uncommon human diseases are viruses. These organisms, tiniest of the disease troublemakers, are the least conquered as a general group.

It used to be said that the viruses were invisible and that they could be recognized only by their evil deeds and their ability to pass through small space that would stop a bacterium. That is no longer true, for the electron microscope has allowed us to "see" a variety of shapes and forms that are evidently organisms that cause these diseases.

While some of the newer disease-treating drugs, such as aureomycin, seem to be effective against some of the virus-caused ills, such as virus pneumonia and parrot fever, the viruses that cause flu, polio and colds, to pick the most prominent, have not yet been conquered chemically.

Much research is being done on the viruses, but the blind alleys are many and the difficulties are complex. Much of the exploratory work has been done on plant diseases, many of which are virus-caused. But there is no assurance that many things learned through use of sick tomato plants will do more than furnish good leads.

There has been the intriguing possibility that cancer—or at least some forms of it—may turn out to be a virus disease. Some cancer-like diseases in animals certainly are. Smallpox is caused by a virus, but since it is prevented by vaccination there is less incentive to work on it. Among other virus diseases are mumps in humans and Newcastle disease of fowls.

A virus is, of course, a parasite, just as are bigger germs. It has to multiply in the cells of the body it invades, it must travel from one sick person to another and it must be able to persist in its invasion of the host.

Epidemic influenza is perhaps the most dangerous of the viruses, although the common cold would surpass it in the lost time and human misery that it causes.

The great pandemic of influenza of 1918-19 has not been repeated, but this may happen in the future. Dr. C. H. Andrewes, the British virus authority, observes that influenza seems to be a megalomaniac virus that likes to operate on a world-wide scale. He suggests that civilization, with its air travel that mixes up all peoples and their

viruses, may keep our immunity to influenza so high that another world epidemic will be avoided.

In the virus situation, the cold war between the East and the West would not seem too important. Yet Dr. Andrewes suggests that if political troubles cause a further division of the world into two separate camps, different strains of influenza might become dominant in each half. In that case, the Soviet and the Western viruses having no political preferences, might each seize the opportunity to conduct a natural biological warfare.

As to the viruses in our future, we may expect:

A. The possible development of new chemicals that will treat or prevent some of the unconquered virus diseases, even influenza and the common cold. A new antibiotic or other chemical may be found to tackle successfully several viruses, or specific chemicals may be produced for each disease.

B. New kinds of synthetic viruses may be devised once scientists know enough chemically about the natural ones, and these might create dangerous disease weapons in ruthless warfare, which would be slower but perhaps more devastating than atomic bombs.

C. Understanding the viruses, that are

often considered to be on the borderline between the living organisms and non-living chemicals, may throw light upon the nature of life itself.

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## ENGINEERING

## Pumps Supply Fuels to Forward Combat Areas

► LIQUID fuels for military operations in forward combat areas will be more certain with two improved portable pumps developed in Fort Belvoir, Va., by the Army Engineer Research and Development Laboratories. They are usable also for a water supply system.

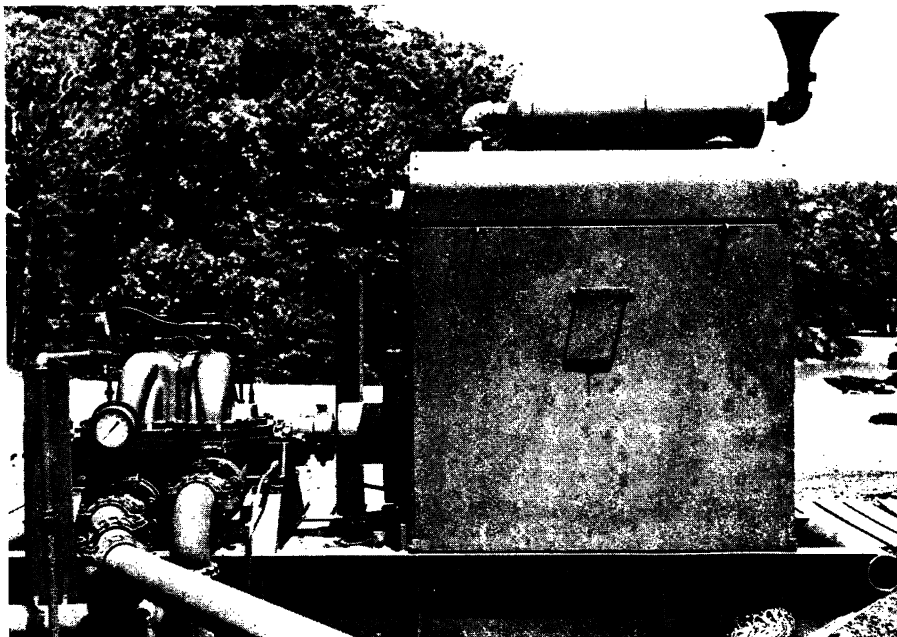
They are said to be dependable pumps and capable of continuous duty. Both are centrifugal affairs, one a two-stage and the other a four-stage pump, that can be used singly or in series up to three units.

The capacity range is from 10 to 2,800 gallons per minute at pressures up to 200 pounds per square inch. When operated in series, a pressure of 600 pounds per square inch can be obtained. This range meets all bulk petroleum handling requirements.

The higher capacity two-stage pump weighs 4,700 pounds. Continuous duty on six- and eight-inch Army pipelines was the primary requisite in its design. When operated on overland pipelines, capacities are 500 to 900 gallons per minute, with 20-mile station spacing over level ground.

Threadless shafts and horizontally split casings give increased dependability and simplification of maintenance.

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**FUEL FOR FRONT LINES**—Centrifugal pumps, for army pipelines, gasoline engine driven, will provide forward combat areas with liquid fuel.