

## VIROLOGY

# Virus Sizes Go Up in Fours

► VIRUSES PROBABLY have no knowledge of the multiplication table, but their sizes seem to go up by fours. Comparisons of virus measurements showing this have been made by Dr. Alfred Polson of the South African Council for Scientific and Industrial Research and the University of Cape Town Virus Research Unit. He reports them in *Nature* (Dec. 19, 1953).

The viruses he studied fall into three groups according to the way they settle out when spun in high speed centrifuges. In one group belong the viruses of foot and mouth disease and lumpy skin disease. In the next are Theiler's virus, the Coxsackie virus, polio virus and yellow fever virus. In the third group are viruses of horse-sickness and Rift Valley fever.

Electron microscope pictures of animal viruses show that they are apparently all spherical in shape. Thus their volumes and particle weights are proportional to the cube of their diameter. Figured on this basis, Dr. Polson finds that the volumes of the viruses are in the ratio one to four to 16.

This, Dr. Polson says, suggests that the

viruses in each group may be built from the same number of sub-units, which may differ in composition but have approximately equal volumes.

Dr. Polson has separated non-infectious sub-units from preparations of rabies virus. The diameter of these is estimated as 11 to 13 millimicrons, close to the 12 millimicron diameter estimated by another group of scientists for non-infectious sub-units of influenza virus.

The smallest virus particles, those of foot and mouth disease and lumpy skin disease, have volumes almost four times that of the sub-unit of influenza virus, Dr. Polson calculates.

"It is therefore tempting," he states, "to conclude that sub-units of this size form the basis of virus structure."

On that basis, there would be four sub-units for foot and mouth disease and lumpy skin disease virus particles, 16 for Theiler's, Coxsackie, polio and yellow fever viruses, and 64 for African horse-sickness and Rift valley fever viruses.

Science News Letter, January 2, 1954

## MEDICINE

# Possible Adenoid Virus

► ADENOIDS REMOVED from children having routine tonsil and adenoid operations have given medical scientists a new mystery, or at least a puzzle.

Because from these adenoids they have isolated an "agent" that might be a virus and might be the cause of some of the colds children get so frequently.

Then again, the "agent" might not be a virus. Even if it is a virus, it might not be disease causing.

Discovery of this mystery "agent" and the puzzling features of it were presented at a meeting of the Society of Hygiene of Johns Hopkins University in Baltimore by Drs. Robert J. Huebner and Wallace P. Rowe of the U. S. Public Health Service National Institutes of Health, Bethesda,

Md., and Dr. Thomas G. Ward of the Johns Hopkins School of Hygiene, Baltimore.

The mysterious adenoid virus was discovered by accident. The scientists had decided that adenoid tissue, coming from back of the nose and throat, might be good stuff on which to grow viruses obtained from the noses and throats of people with colds, in the continuing search for causes of common colds and similar respiratory diseases.

So the scientists sent out a call to hospital operating rooms for the adenoid tissue removed from children or adults having their tonsils and adenoids out. Before trying any suspected nose and throat disease viruses on the adenoids, the scientists first started cultures of the adenoids by themselves. To their surprise, they found that from these tissues, they got something that may be a virus, since it can pass through a filter like a virus. It can also be transmitted to other cultured tissues.

However, so far the scientists have not spun it down in a centrifuge or taken electron microscope pictures of it. So they are not entirely sure that it is a virus.

It does not cause disease in any of the laboratory animals tested so far.

Whether it exists only in children's adenoids or is also found in those of grown-ups is another of the questions still to be answered. No attempt had been made at the start of the work to separate adenoids from children and adults.

The big question: Does this "agent" or virus cause disease in humans? This is also still unanswered. Presumably it was not causing disease at the time the adenoids were removed, since doctors do not ordinarily remove adenoids from a patient with any sign of a cold or other disease.

Science News Letter, January 2, 1954

## Questions

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