

Research Chipping Away at Secrets of the Virus

By ALTON L. BLAKESLEE
Of The Associated Press

BERKELEY, Calif. (AP) — The virus is king in a laboratory here where scientists seek answers to its tantalizing secrets.

"Viruses cause a host of diseases — human, animal and plant. This winter, as in many others, one variety has put hundreds of children and adults to bed for from 24 hours to several weeks, suffering from what once was just called flu. To humans, viruses also bring polio, the common cold, measles, smallpox, other diseases. The virus causing one disease differs from that causing another."

- Was a virus the beginning of life?
- Is a virus the cause of cancer?
- How does a virus carry out its fantastic sabotage of living cells, making the cell manufacture hundreds of new viruses?
- Can viruses be created artificially by science?
- Can they be tamed, altered to make them harmless, free of their old sting of disease?
- And can viruses be produced — intentionally — which would do many good things for you, even perhaps protect you from radiation dangers of A-bomb or H-bomb fallout?

These are the kinds of questions being asked and possibilities being considered in the research of the virus laboratory at the University of California. The laboratory is directed by Dr. Wendell M. Stanley, winner of a Nobel Prize for brilliant work on the nature of viruses.

TARGET CELLS

A virus works by invading a particular kind of cell—the polio virus for example strikes nerve cells. Viruses cannot reproduce or duplicate themselves except inside their favorite target type of cell. But once inside, they commandeer the machinery of the cell, forcing it to produce many new viruses. The damage they do inside the cell brings the symptoms of sickness.

But viruses, all far tinier than bacteria, are not all bad. Some are useful. One, known as bacteriophage, destroys a type of bacteria found in the intestines. In the virus laboratory, "our emphasis is on the virus itself, not the diseases viruses cause, nor treatments of those diseases," Dr. Stanley explains.

UNLIMITED VISTAS

Protection against radiation damage or sickness could be one prospect.

Right now some scientists are worried that increased exposure to radiation, as from atomic fallout, is doing definite harm to the genes of human beings, changing heredity so there inevitably will be more humans born as freaks or with inherent weaknesses.

Some scientists see no chance of ever preventing such damage, or protecting against it.

With this philosophy, Dr. Stanley disagrees.

"There is almost no limit to what science can do. Most of the things which are commonplace today seemed impossible at one time. They were impossible at one time, simply because we did not know enough."

"The only limitation is our ignorance. If we keep learning, there is no limit to the vistas ahead of us."

what all the different parts are. This opens the possibility of ultimately synthesizing viruses, making them artificially.

VIRUS CULTURES

Viruses are grown and harvested by the billions, by culturing them on living tissues. From tissue cultures come viruses of polio, hog cholera, fowl pox, flu, many plant viruses for use in research.

And by new techniques, scientists now can study what happens between one single virus particle and one single living cell. They hope to trace exactly what happens to the intricate machinery of the cell when a virus takes control. Is a virus akin to or is it a gene, the chemical unit of heredity? In some ways, they act like genes.

There is reason to suspect that viruses were the first living organisms on earth, coming from some spontaneous organization of protein material which was capable of reproducing itself. At times viruses behave like living things. But they also can be crystallized like salt without losing their ability to spring to life and reproduce.

TAKES TEAMWORK

Some viruses are known to cause certain types of cancers in mice, chickens and rabbits. Are human cancers due to some yet unrecognized virus?

Time will tell. Time and the

skills of scientists working on projects such as those here. The assault on virus problems takes teamwork of physicists, chemists, bacteriologists, plant pathologists, physiologists, botanists.

There is no doubt that viruses exert profound influences on living cells. To Dr. Stanley, that raises the intriguing possibility of developing viruses which would do helpful, healthful things to living things, from human to plant.

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Theists, Atheists Debate Existence of 'Heaven'

By J. HUGH PRUETT
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The response from readers of the recent article on Heaven prompts me to consider a somewhat related subject. When we realize the immensity of the starry expanse around us and the seemingly perfect order existing in it, we at times irresistibly cry, "What is it all about. Is this a result of blind chance? Could there be purposeful intelligence behind it all?"

Some are completely satisfied that the grandeur of the heavens was provided solely for the pleasure of the dwellers on our tiny globe. The less we know of the "great spaces," the easier it is to accept this thought. The agnostic claims we do not know whether there is purpose and that we can never find out. The atheist says there is none; the theist, that there is.

ATHEISTIC'S GOD

The editor of a magazine published by the Free Thinkers once wrote me that he saw no purposeful intelligence in the universe in general. "If we designate by the term 'atheist' a person who does not believe that any individual personality designed and created the universe, takes an interest in mankind and demands worship, then I am an atheist." He believed that "even the rudimentary knowledge of various sciences negatives such a god. The atheist makes mankind his god and service to mankind his religion."

A different view is given by the noted astronomer, the late Dr. Edwin B. Frost, who was connected with the Yerkes observa-

tory of the University of Chicago for a quarter of a century. In "An Astronomer's Life" he wrote:

"Everything that we learn from the observational point of view of astronomy seems to me to point precisely and always toward a purposeful operation of nature. When you accept this, it seems to me to be inconsistent with physical sciences not to believe in a mind behind the universe. I cannot imagine the planets getting together and deciding under what law they would operate. The order that we see does not appear to have been produced as the chance outcome of random motions coerced into some measure of uniformity . . ."

SPIRITUAL BEING

"Thus in a purposeful creation I find it not at all inconsistent to believe that there must be mind behind it, developing the purpose. I make the premise that it is a spiritual being . . . distance from matter, and that it is not subject to sense perception . . ."

"I find it justified in my own mind by the effects which this view has had on inspired men through the ages . . . If the universe is purposeful, then it is plain to me that man . . . must himself be distinctly a result of purpose rather than of accident . . ."

"One thing illustrative of this spiritual attitude is that man has his curiosities, his wonder, his awe and his reverence for the material universe . . . which may indicate to him a divine power behind it."

DIFFERENCES SOUGHT

Scientists want to learn what the changes are, how they are produced. The knowledge could show the way to taming some lethal viruses.

The same kind of virus can occur in different strains or types. With precision techniques, research teams are determining the chemical differences between strains. It appears that the difference can be in just one amino acid or protein brick out of which viruses are made. Dr. Stanley said.

Laboratory researchers are chipping away at viruses, taking them apart bit by bit to learn

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