

VIROLOGY

Viruses May Cause Cancer

► FRAGMENTS of genetic material, riding piggy-back on viruses into normal cells, may be responsible for most human cancer.

This possibility has been raised at a Conference on Genetic Concept for the Origin of Cancer at the New York Academy of Sciences by Dr. Wendell M. Stanley, Nobel Laureate and director of the University of California Virus Laboratory.

Dr. Stanley acknowledged that no definitive proof has been found for the existence of human cancer viruses. Yet he maintains that "most, if not all, cancer, including cancer in man," is caused by viruses.

He pointed out that scientists have been able to produce certain types of cancer in animals for many years. The lack of known cancer viruses in man may only mean they have not been found, Dr. Stanley said, adding that during the last year or so dozens of new viruses have been discovered.

Finally, Dr. Stanley proposed a mechanism observed in studies of non-cancerous viruses, that might explain how a virus could cause cancer. The mechanism is called transduction.

What happens is that a piece of chromosome, a heredity-bearing chemical, hitches a ride on a virus. Both virus and chromo-

some fragment are similar chemically. When the virus enters a cell, the fragment becomes incorporated into the cell's genetic apparatus.

The fragment has the ability to change the cell radically. The cell may put out new kinds of enzymes, antigens and other chemicals. It may produce offspring cells that are different from the original—and possibly cancerous.

Dr. Stanley said this transduction mechanism would be expected to happen rarely. So rare an occurrence would it be that it could not be considered to be an infectious mechanism in the usual sense, and defenses probably could not be set up against it.

The existence of such a mechanism could explain why scientists so far have been unable definitely to link cancer with viruses in humans. He emphasized that the transduction idea is so far theoretical only.

Dr. Stanley indicated he believes that if more scientists assume viruses cause cancer, proof will be forthcoming. A virus explanation for cancer, he asserted, "represents by far the most intellectually satisfying working hypothesis which is consistent with all presently known facts."

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GEOPHYSICS

Dog Aboard Sputnik II

► THE MOST important aspect of the second Russian earth satellite—Muttnik or Sputnik II—launched Nov. 3—is not that it is carrying a dog but that it seems to be of such large size, approximately half a ton. This probably is the combined weight of the last stage of the rocket and the satellite, which in the second Sputnik seem to have been combined.

This may or may not mean that there was used a more powerful rocket for the second than for the first satellite. In any event, the rocket, probably a modification of a military one, is adequate.

The satellites are steps toward a space platform, an artificial moon of the earth that could be used to view the earth by television, if not carry men. Not all the problems for such a venture are solved, by any means, because very accurate guiding of rockets will be necessary to put into orbits the various satellites that would be brought together to form one big one. This accurate guidance has not yet been achieved, in all probability.

A rocket to the moon becomes more plausible and imminent, although there are many who have been predicting a moon rocket, non-man carrying of course, ever since the first Russian satellite. Perhaps the moon rocket will be tried soon.

The dog passenger aboard Muttnik will give the antivivisectionists something to worry about. Some fanatical lovers of dogs would rather see a man or a child take such a journey than a dog. How the dog

will be rescued from the satellite, if that is the Russian plan, will be watched with keen scientific interest. The coded telemetered information from Muttnik, on 20 and 40 megacycles, reporting what is happening to the dog, can give science some important information about space travel. The signals can be picked up on amateur radio receivers.

The Russians have not revealed to other world scientists of the International Geophysical Year the information necessary to decipher the radio signals which report to earth what conditions are inside and outside of the new satellite. Until they do this they are not really playing the IGY game as we would wish they would.

The weight of the second satellite was announced by Moscow as 508.3 kilograms (1120.29 pounds) but this may not be comparable to the 184 pounds of the first satellite because it probably includes part of the rocket. Speed is announced as 17,840 miles per hour compared with 18,000 miles per hour for the first satellite, while the altitude of the orbit was said to be 932 miles compared with 560 miles. The comparative times of circling the earth are 103.7 minutes for the second satellite and 96.2 minutes for the first. The angle to the equator for the second satellite is 65 degrees, no direction given, compared with 65 degrees north to south. The size and shape of the second satellite were not announced by Moscow.

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AGRICULTURE

Test Kit Aids Research On All-Round Milk

► A LACTOMETER, or "milk measurer," developed by U. S. Department of Agriculture scientists, will soon provide researchers and farmers with a field instrument to measure the non-fat solids in milk.

Protein, lactose, casein, albumin, sugar and several minerals are the milk solids receiving increased consumer interest. The portable lactometer devised by USDA dairy chemist Paul D. Watson, with accessories designed by Fred M. Grant, may become the basis for breeding strains of dairy animals that produce milk with the greatest all-round food value.

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