GENERAL SCIENCE

Science Forecast for 1959

An anti-cancer drug would be the greatest 1959 achievement but missile-men still eye moon and planets as targets for man's geographical aggression.

By WATSON DAVIS

➤ FOR HUMAN beings on earth, the top science achievement of 1959 may be the development of a chemotherapeutic drug that will check some forms of cancer.

For the future men in space, rocket probes carrying instruments, not men, may in 1959 reach beyond the moon, possibly even to the vicinities of Mars and Venus. (See p. 6.)

Such diverse potential achievements, forecast for the coming year, emphasize the vast sweep of scientific and technological advance and the onward rush of progress.

Control of cancer, along with prevention of heart and circulatory disorders that cause such high death rates, are prime medical targets. The achievement of substantial progress may not come in the next few months, but there is always the possibility of a breakthrough, translatable in the near future to actual application to human sufferers.

Screening tests for malignancies, comparable to the tests for other diseases like tuberculosis, may be the first step, possibly to be taken in 1959, toward more cancer control. Such screening would be necessary in picking those who should receive an anti-cancer drug.

Antibiotics to Come

Medically, there may be development of new antibiotics effective against some of the resistant disease organisms that have arisen to check the control of various infectious diseases that seemingly had been conquered. The staphylococcus infections that have been endemic in hospitals, killing many newborn, are "bad actor" germs in this regard and the intensive developmental antibiotic rush in drug house laboratories now in progress may pay off.

The drug plasmin, already successfully used, will undoubtedly be applied to a wider variety of vascular diseases.

Medical advances promise more good to humanity (provided rockets and missiles are not let loose to cause world-wide destruction) than continued space exploration. However, rockets both into space and between continents may continue to receive more public attention and headlines.

The moon, or its vicinity, will still be a prime missile target for the sake of knowing what is to be encountered in outer space.

The idea of actually hitting the moon is being played down, both because of the difficulty of guidance required and the fear that dirty objects from earth would contaminate this natural satellite of the earth. There is even fear that a direct lunar hit would set off a chemical explosion on the moon due to electronically unfulfilled atoms in its make-up.

The next step in satellite development, joining two space vehicles in orbits as space platforms, may be attempted, but it may take some years before this can be done. There may also be more urgent jobs to be done in space near the earth, such as sending up television relay satellites or orbiting space craft that will observe what is happening on parts of the earth unobservable directly.

The space probes toward Mars and Venus may not be successful in 1959 although they may be attempted. But every kind of rocket or missile experiment, such as are undertaken to hurl potential hydrogen bombs to distant corners of the earth, is progress toward the conquest of space.

Engineers and medical experts will continue to work toward the colonization of space and other bodies of the solar system, but it is far too much to expect this to happen within a few decades, much less a year. The problems are much greater than visualized by the science fiction writers.

Certainly there will be more intercontinental ballistic missiles fired successfully in the race with the USSR to dominate the earth with threat of atomic retaliation.

The radiation belt around the earth discovered as the result of information from satellites of 1958 will be investigated intensively because of its bearing on future space travel and because we want to know about this unsuspected phenomenon. The nature and origin of the particles in the belt will be probed. Are they partly protons, and, if so, at what energies? Theories as to their origin will probably be clarified. There is also indefiniteness about the extent of the radiation belt. This will require more satellites, which will be launched, crammed with beeping instruments.

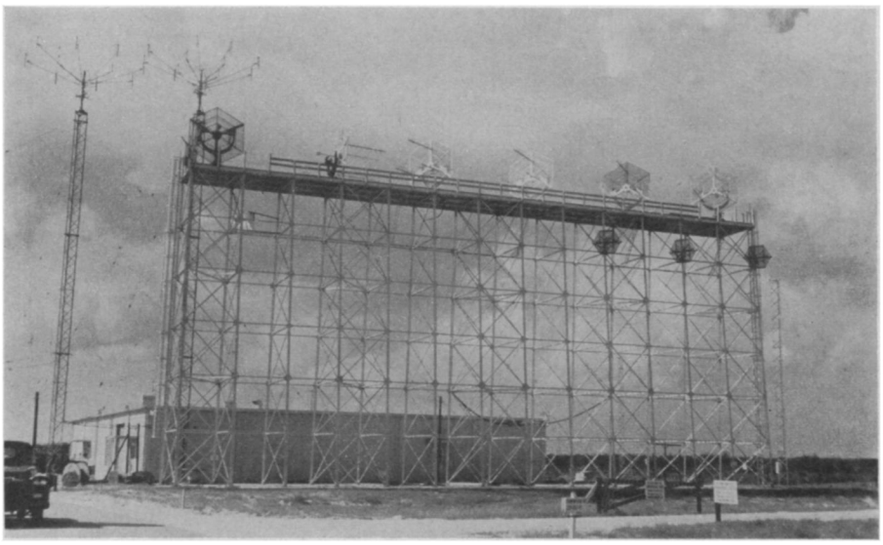
Very high altitude balloon flights will also observe the space above the earth, for a variety of purposes. There is a puzzle as to whether light chemical elements, such as lithium, beryllium and boron, are a part of the primary cosmic radiation from outer space. Instruments aboard balloons may give a solution.

It is suspected that high energy neutrons arrive from the sun at the top of the atmosphere and attempts will be made to detect them.

In addition to astronomical observations from balloons and satellites, major advances in improving the effectiveness of land-based telescopes are imminent. A practical electronic image tube is expected to be in operation on the Lick Observatory 120-inch reflector by late 1959 or early 1960. This will increase the effectiveness of the telescope for some purposes by a factor of from ten to 100.

New Radio Telescope

Observations of the heavens by the radio waves received from outer space will be increased with the inauguration of observations by the National Radio Astronomy Observatory 85-foot radio telescope. With a traveling wave tube receiver of novel design most of the planets in our solar system will be measured for reliable planetary temperatures. The Naval Research Laboratory radio telescope will conduct a careful search for



MOON PROBE TRACKERS—Telemetry tracking units at Cape Canaveral, Fla., used for following the path taken by U. S. Air Force artificial satellites in man's scientific probes of space, form a delicate pattern against the sky.

hydrogen atoms in intergalactic space.

Because there has been increasing evidence that the stellar material of the universe is less uniform than hitherto believed, there will be search to determine whether stars differ from galaxy to galaxy.

Mars will be attacked by radar, bouncing radio echoes from that planet as has been done previously with the moon. The ruddy planet will also be observed by spectrograph and photometer.

Just as a whole new universe was opened a decade or so ago by observations of radio waves from the far reaches of space, so new outlines of the universe are likely to be shown by a new experimental field, gamma ray astronomy, consisting of observations of natural, very short radiations from space.

The world-wide exploration of the earth and the space around it, accelerated in the International Geophysical Year just ended, will continue into 1959. One of the results will be the determination of the structure of the land mass under the Antarctic continental ice.

Jet Planes Flying

In the field of aviation, there will be a score or more jet planes in operation, both across the continent and across oceans. The first steps toward still faster planes, condensing space and time still further, will be taken in flight research of the X-15 plane that will be test flown almost at the top of the atmosphere.

Atomic-powered planes will come closer to reality, if the Soviets have not already flown one, but the next great step in flight propulsion will probably be the use of chemical fuels in jets.

In understanding of the constitution of living matter, and incidentally of disease-causing entities, the exploration of constituents of protein will continue, bringing us closer to the chemical mystery of life itself.

How man arose on the earth may be better understood through discovery in 1959 of skeletal remains in the Near East or Mediterranean regions that will illuminate the relationship between the heavy-browed Neanderthalers and true Homo Sapiens, or modern man. Italian archaeologists will pick out of coal the recently-found complete skeleton of Oreopithecus and determine whether this early creature was related to man or the great apes.

Scientific Hopes

While interested in the past of primate life, man will continue to be apprehensive of the future, despite the vast advances in science and technology and the implementation of scientific education, research and development that will be accelerated in 1959. Federal programs born of the fear of Russia's sputnik will come to financial fruition in 1959 while the accelerating interest and understanding of science for youth, in and out of schools, will blossom even more than in the past.

Science News Letter, January 3, 1959

Powerful, growth-promoting substances, found in sunflowers, sweet clover and other vegetation, can make *plants* grow faster and taller.