GENERAL SCIENCE

Next Year in Science

Factory duplication of the method of photosynthesis and the solution of the structure of the atom's heart are major mysteries which may be top science advances of 1950.

By WATSON DAVIS

➤ TWO major mysteries of nature may be solved in 1950, bringing new energy to the world compatible with the great spurt of atomic progress that followed the fission of uranium in 1939.

Scientists hope to discover the way in which the green leaf captures the energy of the sunshine and turns it into sugar and starch that feeds and fuels the world. If the method of photosynthesis is discovered and if it is duplicated practically for factory use, it will be a great advance. This may happen within the year. Intensive efforts are being made.

Atom's Heart Probed

How the heart of the atom is put together and what holds it together is still unknown. Because discovery of the nature of these "meson forces" is so important, cosmic rays are being studied extensively. Theoretical physics is receiving more attention than ever before. If new concepts are obtained and applied experimentally, it may lead to new kinds of atomic bombs and useful energy from materials more plentiful than uranium. Is this on the 1950 calendar?

These are long shots for 1950. Here are more sure predictions:

Following the reported 1949 successes of the steroid compounds, cortisone and ACTH, in treating rheumatic arthritis and other similar diseases, there will be great effort made to find other similar materials. Increased production of these scarce hormones will be obtained through use of more plentiful raw materials.

There is a possibility that adrenal glands from animals may be kept alive outside the body. Treated with precursor substances that can produce the adrenal cortex hormones, they may be made to produce the active steroid hormones useful in treatment.

Exploration of the effect of these hormones will probably show that they are connected not alone with arthritis and possibly cancer, but with mental disorders. It probably will be found that if a sufferer from schizophrenia responds to adrenal hormone treatment, there are possibilities of good effects from electroshock.

Mental Disease Prevention

Increasing attention will be given to the treatment and prevention of mental disease, with an accent upon the training of psychiatrists and equipping of general practitioners and hospital attendants with knowledge of psychiatry.

New antibiotics, some of them effective against diseases not yet reached by this class of disease fighters, will be found. New discoveries in biological substances in plants and animals will probably be made, some of them of use in disease treatment. In the case of viruses, it is expected that it will be possible to produce permanent changes in them so that these mutations of these substances can be used for eventual treatment of disease.

To man's control of nature on farm and in field, chemicals will give continued aid. The usefulness and limitation of such substances in insect control as DDT and 2,4-D in weed killing will be worked out further. New varieties of plants and animals, produced genetically and by breeding, will be introduced. Look for better range grasses for use in the semi-arid southwestern United States.

Early African Man

The long history of man's evolution on earth is being discovered with accelerating pace. From Africa there are due during the coming year new finds of ancient human forms. These are likely to approach more closely than any others the "missing link" that was talked about in Darwin's day.

The exact dating of ancient human remains has been difficult in the past. Investigations of radioactive materials, stimulated by atomic energy researches, promise to make the accurate determination of the age of such skeletons simple and more definite. To the dating of all geological material through the eons of the age of the earth, radioactivity will give more precision in the months to come.

The conquest of space will continue with great urgency because the world is preparing for war in the stratosphere. Rockets, jet planes and guided missiles of every possible sort will make trial flights, but most of them will be secret so far as public announcement is concerned.

Artificial Moon

Man's power may succeed in flinging into outer space an object outside the practical gravitational influence of the earth. The first of the earth's artificial moons, or satellites, may be placed in an orbit, a forerunner to such machines that can be used for science and even possibly for war. This is an extreme possibility for 1950, but some government may be at work on it with great secrecy.

For more conventional aircraft, most of the progress will be improved performance of planes now in existence and continued research and progress in aeronautical design so necessary to keep up with the rest of the world.

Giant electronic "brains" will begin to figure more in research for 1950 as they get into more extensive use. These electronic computers will be used for complex mathematical handling of information that would be hopelessly obsolete if subjected to ordinary methods of computing. For instance, special electronic computers are likely to begin to receive radar information about an incoming plane or rocket and use it in such a way as to determine and set automatically the path of a guided missile that will intercept it.

Atom Smashers

The other kind of complex machines, atom smashers of various sizes and uses, will be hard at work in 1950. Will there be found through their use the negative proton for which physics has a place due to our human belief in the balance of nature (since there is a positive electron)? Or will there be found new kinds of mesons? These are powerful but brief-lived particles that are part of the nuclei of atoms. There is still a great frontier within the atom. Perhaps the neutrino, another elusive particle required by theory, will be found, too.

There is prospect of eventual discovery of chemical elements beyond number 96, now the heaviest known. The new elements will all be artificial, highly radioactive and short-lived and the chemists may not get around to discovering and isolating them in 1950.

Star Evolution

How the stars have evolved will be better understood as the result of work at Lick Observatory in California that will be made known during the year. Relationships between the color and the candlepower of stars will be developed that will modify astronomical theories. A new telescope will go into service at Harvard's South African station that will enrich the photographs of the southern skies.

The 1950 census will give new information about the human population of not only the United States, but the whole western hemisphere because most of the other parts of the two continents will be joining in this decennial nose-counting.