

GENERAL SCIENCE

# Science Forecast for 1954

**Atomic submarine afloat during coming year. Guided missiles take up guard in Europe and Arctic. Conquest of polio may be proved.**

By WATSON DAVIS

► IN THE months ahead in 1954, the world's first atomic submarine will be afloat, ushering in a new marine era, first for war and later for peace.

Guided missiles, some of them capable of carrying atomic bombs, will take up their positions in defense of the western world. They will both protect our great centers of population and stand guard in Europe and the Arctic.

A decade of secret research and production will come to fruition, as the radar-controlled pilotless craft will be constantly upon the alert to perform the interception of an attacking plane that would elude even our fastest piloted supersonic jets.

There will be more thermonuclear explosions, in the Pacific, to warn the world that it has within its own hands the mechanism for civilization's destruction. From behind the Iron Curtain, radioactive particles in the air would bring news of answering gigantic hydrogen bomb explosions. This will warn us that if there is to be real security for the world, two different ideologies must start talking to each other in earnest and work out ways to live upon the same globe.

We shall not know of many things that will strengthen our military defense in the months ahead, for much of our progress in fashioning new and novel weapons are kept military secrets.

## Polio Vaccine Test

In the fields of science and research where progress can be more freely reported, it seems likely that a major medical conquest can be achieved. There is great hope that, through vaccinating a million children and comparing their polio rate with a similar untreated group, there will be demonstrated in 1954 the effectiveness of the polio vaccine against all types of this virus disease.

Following the interesting theories developed in 1953, we may come closer to the secret of life that is contained in the chemical molecules within the dividing cell. More theory and some experimentation on suggested mechanism of cell duplication may even give medical scientists new ideas of developing treatments for disease.

The inquiries into the number one cause of death, the diseases of the heart and circulatory system, will continue. There is always the chance that out of the chemical

research and work with actual patients some useful methods of prevention and treatment will arise. These may be based upon a better understanding of the constituents of the blood.

Cancer will be under continual attack. Most important will be the wide-flung attempts to understand the nature of this disease which takes many forms and probably has many specific causes. Treatment of the victims of the disease will be bettered, particularly by the use of larger amounts of radioactive cobalt 60. Amounts equivalent to hundred-pound lots of radium and more than 25 times as radioactive as radium will be used in cancer treatment centers. This is a medical by-product of atomic energy.

## Steroid Hormone Metabolism

Other developments that are foreseen by some of the experts consulted by SCIENCE SERVICE as to what is likely to happen during 1954 include:

There will be marked advances in the knowledge of steroid hormone metabolism. This will allow tests for steroids to tell what the adrenal gland has produced before the hormones undergo metabolism in the tissues.

Something new about copper metabolism in patients with Wilson's disease, a degenerative disorder of the brain and liver, may be developed during the coming months.

The startling rise in early juvenile delinquency will lead to intensification of research into the normal behavior development of the pre-adolescent and early adolescent years.

General and pediatric medicine will give increased attention to the mental health of the family and its younger children.

## Influence of Heredity

There will be inquiry into the influence of hereditary and constitutional factors in determining the potentials of normal and delinquent behavior.

A demonstration is probable that problem-solving by groups is not likely to be superior to that of individuals in the area of human relations.

Exploding atoms will continue to give new knowledge. Radiation detection devices in the form of scintillation counters will greatly extend the use of radioactive tracer atoms for many types of laboratory

research, medical diagnosis and industrial applications.

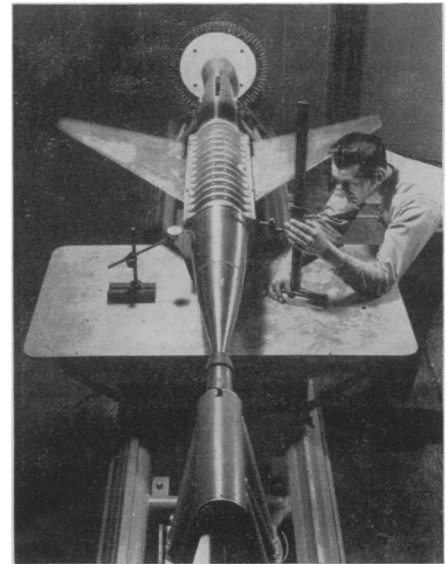
Radioactive dating based upon the long life of carbon 14 will continue to give us new surprises about the past history of civilization.

Because radiation from outer space of all sorts has a great influence upon not only our knowledge of the universe and our philosophies, but also upon the actual physical conditions here on earth, studies on cosmic rays, the upper atmosphere and radiation from outside the earth will be intensified.

Still more accurate weather predictions will be possible through further refinements of mathematical models of the atmosphere. Numerical weather forecasting will become operational and will be issued on a routine basis. Rough mathematical models designed for long-range weather forecasting will be tried out.

The exploration of the universe by means of radio waves that are emitted from various regions of the sky will be continued. It is expected that the Andromeda galaxy will be shown to be much larger when measured by the 21-centimeter radio waves that it emits than by light, just as last year radio observations showed the Magellanic clouds to be much larger.

Cathode-ray screens will replace the photographic plate in recording with electronic



**FUTURE AIRPLANE MODEL**—To determine its flight characteristics, this model is being readied for wind tunnel tests at a field station of the National Advisory Committee for Aeronautics.