

## GENERAL SCIENCE

# Scientists Face Dilemma

Three major speeches at meeting of AAAS present problem of scientists called upon to devote most of their energy to military research and to work in secrecy.

► **THREE** major speeches given at the Christmas meeting of the American Association for the Advancement of Science in Cleveland, Ohio, posed the dilemma of modern science in a world torn by international strife.

One, by the retiring president of the Association, Dr. E. C. Stakman, was a defense of science against the notion that it has produced such terrible weapons that it is time to have a moratorium on science until man learns to control those weapons.

Dr. Stakman presented his defense of science in terms of the "humanistic" contributions science makes to civilization. He pointed to increasingly efficient uses of land and water to feed the ever-growing population of the world. He declared that the scientific search for truth sets an ethical example for other groups in the world.

However, Dr. Eric A. Walker, executive secretary of the Defense Department's Research and Development Board, pointed out that military research is already taking up two-thirds of all the money being spent on research in this country and that this total will be greatly expanded in 1951 and 1952. Shortly, almost half of the total national supply of persons qualified to do research and development, said Dr. Walker, will be engaged in military research.

Dr. Walker made his bow to the "humanistic" aspects of science, pointing to the

byproducts of military research. He mentioned the medical aspects of atomic energy, and research in biological and chemical warfare which has produced by-products of benefit to agriculture and medicine.

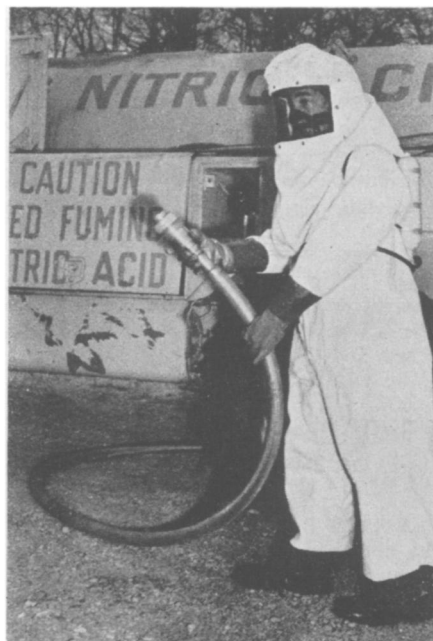
But even as some scientists are defending science as being of benefit to mankind, other scientists are being forced by the world situation to retire with their research behind the iron curtain of military secrecy and to work on the technological development of new weapons.

One of the consequences of this course of events was pointed up by Dean Louis N. Ridenour of the Graduate College, University of Illinois, in an address on Science and International Understanding.

Secrecy, he said, does not necessarily mean that there will be no development of scientific thought and technological products. Referring to Nazi Germany and Communist Russia, he pointed out that even dictatorship need not necessarily slow down scientific development.

It is quite possible, he said, that with science developing in two different worlds sealed off from each other, it might go, in each of those worlds, in two different directions. Thus, he said, our scientists may have little idea of the direction which Soviet science is taking or the distance it has travelled in that direction.

Science News Letter, January 6, 1951



**PROTECTION**—This odd outfit is designed to make safe the handling of liquid rocket propellants. An outer garment of white mercerized cotton that resembles terry cloth fits over a coverall and hood of vinyl-impregnated fiberglass. The outer garment can be saturated with water to prevent overheating. An airbreathing apparatus is attached.

## AERONAUTICS

## Rocket Fuel Handlers Protected by Clothing

► **HAZARDS** to handlers feeding nitric acid and other dangerous fuels to rockets is greatly decreased with the use of new protective clothing developed at the Wright-Patterson Air Force Base. Rocket power is widely used in guided missiles and in airplanes to assist in take-off.

Special clothing for these workers is important because a number of the liquid propellants used in rockets are dangerous to handle, sometimes being deadly to persons who absorb them through the skin or inhale their fumes.

One such propellant, widely used because of its effectiveness, contains red fuming nitric acid and aniline. Fuming nitric acid is less stable and more active chemically than ordinary concentrated nitric acid, and it gives off fumes when exposed to the air. Aniline is highly toxic and readily absorbed by the skin. If enough gets into the blood, it causes death.

The clothing developed covers the entire body and head, with a transparent plastic visor over the face. Butyl rubber boots and vinyl-coated cotton gloves are worn with

## ASTRONOMY

# Mirror Betters Telescopes

► **THE COLOR** performance of even the largest refracting or lens-type telescopes may be improved because of a change which Dr. James G. Baker, Harvard Observatory's optical expert, described to members of the American Astronomical Society meeting at Haverford, Pa.

Astronomers working with such famous instruments as the Yerkes Observatory's 40-inch refractor (largest of its kind), the 26-inch instrument at the Naval Observatory, and Princeton's 23-inch, have all been troubled with rings or haloes of unfocused color around the image. This new arrangement would completely eliminate this undesirable feature of present-day refractors.

Dr. Baker suggested that a special-type lens-mirror be added to the system. This would be a negative achromatic lens with its rear surface aluminized or silvered to return light to a focus. A small field lens

near the original focal plane is recommended.

In reality this compound lens-mirror, which is the reverse of the achromatic or convex-concave lens used with some refractors, could be quite small. It need be no more than one-fifth the diameter of the main lens. Thus an eight-inch lens could do the job for the 40-inch refractor at Yerkes.

With this refractor-corrector, light over the whole visible spectrum would be brought to the same focal point, Dr. Baker calculates. The loss of light with this arrangement is only about 15%. This loss is very small when compared with the loss of light for refractors in their present form caused by the fact that light of different wavelengths is not brought sharply to a single focal point.

Science News Letter, January 6, 1951

it. The clothing itself is made of vinyl-impregnated glass fiber.

Wearers of the clothing would suffer from heat if no cooling system was available. Two have been perfected. In one air is forced into the interior of the suit and distributed through plastic tubing. The circulating air within the hood prevents

toxic fumes from getting inside, thus eliminating the need for a respirator.

In the other air-cooling system, a cotton outer shell of the clothing is saturated with water. Evaporation does the cooling. With this system the wearer must use air breathing apparatus. The air supply is carried on the back, suspended by straps.

Science News Letter, January 6, 1951

#### RESOURCES

## Each Raindrop a Bikini

**Proper use of water resources would bring benefits equal to those of peaceful application of atomic energy. But, on bare ground, each drop is a bomb.**

► A BABY Bikini, this is the promise—and the threat—held out for every drop of water in our land by the seven members of the President's Water Resources Policy Commission in their report just made public.

Proper use of our water resources will bring us benefits at least equal to those from the peaceful application of atomic energy. On the other hand, improper use may bring about the decline and eventual fall of our civilization. Which of these two paths we follow will depend on our policy toward each potentially-explosive raindrop, the Commission concludes.

Soft as rain may sound, each drop can be a tiny bomb, smashing into bare ground. A violent rainstorm may splash into the air more than 100 tons of soil per acre. Best protection against splash erosion is shielding the soil with growing crops or with mulches. These are two of the many actions recommended to save our water from being rushed to the sea.

The Commission believes that water control is best attacked along nature's divisions, on a river-basin, multi-purpose basis. Each watershed has similar problems of flood control, recreation facilities, power supply, land management, stream pollution, irrigation, etc.

Major policy changes in planning, in evaluating and in financing are required to give us full benefits from our water.

The Commission assumes that ours is an expanding economy, that our growing population will reach 190 million in about 25 years. Merely to keep our present standard of living in the coming years will require careful control of water to irrigate fields and for power purposes. Wise conservation of this key resource, however, is needed for any expansion and economic progress, on which rests the main hope of achieving world peace.

Two possibilities are mentioned as now unexploited sources of water: the sea and the clouds. A boost in the money going into research on rainmaking is strongly urged. At the same time a national policy to control forcing rain from the clouds is needed.

Although admitting that the rainmakers had not yet proved many of their claims, the Commission nevertheless implied that the method showed sufficient promise to justify "substantial funds" for further research.

The possibilities of making rain were first announced after the war by Drs. Vincent J. Schaefer and Irving Langmuir of General Electric Co. They succeeded, first in the laboratory and then in clouds, in seeding air masses containing water vapor to make them produce more precipitation than would naturally occur. Dry ice was later replaced by silver iodide as the seeding material.

Another possible water-supply source that needs further research is sea water, the Commissioners conclude. Although it can now be converted into fresh water for ships at sea and for military occupation of islands with insufficient water supply, the methods are all very expensive. Some inexpensive way is needed to make sea water fit for use. The energy that pours down on us from the sun is suggested as a possible source to be harnessed for this job. Using the difference in temperature between water at great depths in the sea and that near the surface may also be a fruitful method to give us usable sea water, they suggest.

Seriously concerned over the water supply problem, vital to peacetime expansion as well as to wartime preparations, President Truman last January appointed the seven-member Commission to make recommendations concerning the proper use and conservation of our water.

The members are Chairman Morris L. Cooke, vice-chairman Gilbert F. White, Paul S. Burgess, Lewis Webster Jones, Samuel B. Morris, Leland Olds and Roland R. Renne.

This report will be followed by a second volume containing details of the study made of ten river basins and a third volume summarizing the laws applying to water resources. Changes that are required in the present laws to back up the recommendations as well as new legislation will also be submitted later.

Science News Letter, January 6, 1951

#### EDUCATION

## Colleges on Accelerated Basis by Next Fall

► UP TO 85% of the 800 to 900 substantial, degree-granting colleges and universities in the country will be on a three-year speed-up basis by next September. This move will affect more than 1,500,000 students.

Defense Department officials and the U. S. Office of Education already are making plans to educate college presidents to the need of this step in the interests of national defense. Officials of most technical and engineering schools don't need this education. At least one top engineering college has already definitely decided, although not publicly, to institute acceleration next June.

The Defense Department will shortly announce formation of a committee on educational planning, headed by Navy Capt. J. J. O'Donnell, whose regular job is chief of Information and Education for the department. Its function will be to plan the tasks of the nation's colleges in training for defense. The first job it will tackle will be that of selling the idea of the need for acceleration.

U. S. Commissioner of Education Earl J. McGrath is considering calling a conference of outstanding college presidents to discuss the need for acceleration.

It is the thinking in the Office of Education that it will take the month of January to bring home to those colleges not yet planning acceleration that the manpower programs of the Armed Forces will require such a step. About Feb. 1, therefore, planning for acceleration will become general.

Most state universities are on a sort of accelerated program right now. A student, by attending summer school, can receive his degree in three years instead of four. It is some of the private colleges and universities, especially the liberal arts institutions, who will be slowest in installing an acceleration program.

Science News Letter, January 6, 1951

#### MEDICINE

## Alcoholic Is Made By What He Eats

► IT IS what you eat, not primarily what you drink, that determines whether you become an alcoholic. Prof. Roger J. Williams, University of Texas biochemist, in receiving this year's Southwest award of the American Chemical Society, declared that is probably the case for humans, although his detailed experiments were upon rats.

The differences between drunkard rats, moderate drinking rats and teetotaler rats have a genetic basis but also a nutritional basis. Rats, he found, can be made to drink or be abstainers, depending upon their diet.

Science News Letter, January 6, 1951