

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 byproducts 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.

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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.

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