GENERAL SCIENCE

No Major Changes in Nuclear Disarmament

NO SHARP DEPARTURE from current United States proposals on nuclear disarmament, other than "some refinements," can be expected before next year.

President Eisenhower made this clear in answer to a question from SCIENCE SERVICE at his news conference. The President said that the plan that the U. S. would have submitted to the Russians on the day they walked out on the 10-nation East-West Geneva disarmament conference "is now undergoing some refinements, and that's all there is to be done."

The President took an optimistic view of the discussions at Geneva by the representatives of the five nations "on our side" without the five-member communist delegation. He said that "this gives them such a fine opportunity to refine and agree upon details of the plan."

Current East-West meetings on nuclear testing, which are separate from the disarmament conference, are not expected to break down via another Soviet walkout, according to President Eisenhower. "There is not yet any indication that they intend to walk out on these particular negotiations."

The President's optimism is shared by the Department of State, whose spokesman Lincoln White said a continued refusal by the USSR to negotiate on disarmament is "inconceivable."

Neither the President nor the State Department indicated what action would be taken by the United States or her allies to resume the talks with Russia.

Although the President reaffirmed that the U. S. no longer considers itself bound to refrain from further nuclear testing, he said "we could afford to stand for a few more months without testing," if there is sufficient assurance of progress on current negotiations. In any event, he pledged that "we will not test in the atmosphere" or do anything to pollute it.

Science News Letter, July 16, 1960

PUBLIC HEALTH

Russia's Poisoned Rivers Endanger Public

RUSSIAN NEWSPAPERS reaching England show that the Russians are becoming alarmed at the pollution of the nation's 225,000 miles of rivers, which is killing fish and endangering public health.

Soviet scientists have called for action to stop industrial plants from dumping waste products and for long-term planning covering all branches of industry and public health organizations.

The dumping of waste is reported to be damaging the fishing industry to the extent of about a quarter of a billion dollars a year.

The newspaper Literature and Life says: "Fish and vegetation are perishing. The health of the people is in real danger. And all this is taking place because sanitary laws are being violated by too many administrators."

The newspaper argues that the cause of the trouble is the "so-called norms" providing for the "maximum allowable poisonous concentration" that can be thrown into the rivers. The paper says the norms concede that the dumping of waste products into the rivers is necessary and unavoidable, instead of trying to tackle the problem by neutralization, destruction and filtering.

Another newspaper to air the problem is Komsomolskaya Pravda, organ of the Young Communist League. It states that scientists recently analyzed large sections of the northern Donetz River, the "Ruhr of Russia," with its mines and fast-growing chemical and steel industries.

The scientists found that dirty water, including poisonous substances, is being poured into the river at the rate of more than 36,000,000 cubic feet a day by sugar, chemical and steel plants.

"Dead rivers," which have been officially written off as unable to support fish and vegetation as a result of too much dumping, are feeding water into the upper Donetz.

Science News Letter, July 16, 1960

METALLURGY

High-Purity Beryllium Refined From Scrap

HIGH-PURITY BERYLLIUM that contains less than one-half a percent of undesirable materials, to meet space age requirements, can be obtained by electrically refining beryllium scrap metal, the Department of Interior's Bureau of Mines reported in Washington, D. C. Beryllium's important uses are in nuclear reactors and in temperature-resistant materials for missiles and satellites.

The new method, developed by three scientists at the Bureau's Metallurgical Research Laboratory in Boulder City, Nev., uses what is known as the fused-salt process. Use of the technique for refining other metals is under investigation.

Beads of beryllium are used as an anode in the bottom of a special air-free electrorefining cell of the type developed by the Bureau to refine titanium. Molten salts of potassium, lithium and beryllium serve as the electrolyte. Crystals of the near-pure beryllium form on the cathode much as rock candy builds up on a string.

The investigations on beryllium refinements were made by M. M. Wong, F. R. Cattoir and D. H. Baker Jr.

Science News Letter, July 16, 1960

ENGINEERING

Scientists, Technicians To Study Blast Site

SCIENTISTS AND TECHNICIANS this summer will study an Alaskan area surrounding the mouth of the Ogotoruk Creek that flows into the Chukchi Sea to determine whether it will be safe to blast a ship harbor there with nuclear devices. Tentatively planned by the Atomic Energy Commission for 1962, the excavation project would employ five underwater nuclear explosives.

Science News Letter, July 16, 1960

IN SCIEN

GENERAL SCIENCE

Many American Leaders See No Nuclear War Soon

NUCLEAR WAR could break out within 20 years but it is not probable in the near future. This is the opinion of American leaders in many fields, expressed in a poll conducted by the National Planning Association, Washington, D. C.

The poll was completed before the U-2 incident and the collapse of the summit conference.

The Association sent questionnaires to 944 members of its board of trustees, national council and standing committees. The 396 who answered represented agriculture, business, labor and the professions.

Seventy-two percent said nuclear war was possible but not likely by 1980. Twenty percent said it was highly improbable. Only six percent said nuclear war was likely.

Seventy-five percent recommended that international inspection and control machinery be managed by the United Nations. Seventy-three percent said the United States has more to gain than lose from a fully enforced international ban on nuclear weapons testing.

Science News Letter, July 16, 1960

INVENTIONS

New Patent May Doom Baseball's Umpires

BASEBALL'S FAMILIAR BATTLES with the umpire may be doomed. An automatic umpire has been patented.

If the system is adopted, the third man at home plate will doff his heavy padding, retreat to a control room full of push buttons and television monitoring screens and forget about jeers and pop bottles.

The "automatic baseball umpire or the like," as inventor Lloyd F. Knight of Levittown, N. Y., has titled it, was granted patent No. 2,943,141 and was assigned to Servo Corporation of America, New Hyde Park, N. Y.

The "umpire" is really a system of television cameras. To watch batting action, one camera looks down on home plate and two others look in from the sides.

In the monitoring booth the umpire can tell whether the pitch is over the plate and beween the batter's knees and shoulders. An image-freezing device makes it possible to re-run the action until any dispute over the monitoring umpire's decision is settled.

Each base is watched by three cameras strategically placed around the field and similarly equipped with freezing devices.

"With my device," says inventor Knight, "arguments . . . should be reduced to an absolute minimum."

Science News Letter, July 16, 1960

CE FIELDS

ZOOLOGY

Sea Snails Anesthetized By Water-Rigor Method

PHYSIOLOGISTS in the Union of South Africa have solved a long-standing research problem—how to anesthetize a salt-water snail.

These creatures are rather resistant to anesthetics. They can be rendered insensitive to pain, but even when so heavily drugged that they do not recover, their powerful muscles will not relax. These muscle contractions make experimental surgery almost impossible.

Dr. A. C. Brown of the University of Cape Town noticed that marine snails lose their ability to crawl and cannot move at all if they come too far inland where fresh water dilutes the salty sea.

Taking this clue into the laboratory, Dr. Brown and a colleague Dr. B. J. Krijgsman, also of the University, found that muscle contractions in two snail species, *Bullia digitalis* and *Bullia laevissima,* could be completely eliminated by reducing the salinity of their watery environment. The distilled water, added gradually to the sea water, seeps into the snail's body tissues by a process known as osmosis.

With tissues swollen to the point that muscles cannot move, the stiffened snail is in a state of "water rigor," and can be operated upon successfully. Remaining in this state for several hours has no apparent ill effect and, once back in sea water, the animal recovers and behaves normally.

The physiologists, reporting in Nature, 187:69, 1960, believe the "water rigor" technique, which they used to study the nerves, might find a wider application in the field of gastropod physiology.

But one question is still unanswered: How do you anesthetize a fresh water snail?

Science News Letter, July 16, 1960

GENERAL SCIENCE

Scientists Fail To Inform Society

SCIENTISTS have failed in their responsibility to undertake "an independent informative role" in political, economic and social affairs involving science, a special committee for the American Association for the Advancement of Science states.

This failure has contributed to a crisis that "may disrupt the history of man," the AAAS warned in a major policy statement in which it urged scientists to speak out and inform the public on key issues. The report appears in Science, 132:68, 1960.

According to the statement, scientists have "a serious and immediate responsibility" to provide the public with facts on the control of nuclear energy, disarmament, population control, the role of scientific research in international military and political rivalries, the biological effects of food additives, and the social consequences of automation.

The statement resulted from "more than five years of discussion and study within the AAAS." It was drafted by the AAAS Committee on Science in the Promotion of Human Welfare. The committee recommended that on any major issue relating to science, the AAAS should:

1. Stimulate discussions within the scientific community and provide guidance for the development of a specific program.
2. Prepare reports for the scientific community on all relevant data and the consequences likely from alternative courses of action.
3. Translate the scientific report into lay language for distribution "through all available channels."
4. Develop more contact on a local community level between scientists and the public.

Science News Letter, July 16, 1960

AGRICULTURE

New Technique Lowers Corn's Evaporation Rate

A NEW TECHNIQUE promises to let farmers use less water in growing crops. Scientists in Urbana, Ill., have already grown corn with a third less water than required for corn on which the technique was not used.

The scientists from the Illinois State Water Survey and the University of Illinois Department of Botany used a fatty alcohol that forms a film a molecule thick on water surfaces and has been used previously by Water Survey engineers to reduce evaporation from water supply reservoirs.

But in the new work, the scientists introduced the chemical to the roots of the corn plants. With the chemical, the rate of water evaporation from the plants was 17% to 40% lower than for corn grown in untreated soil.

The Water Survey engineer who originated the project, W. J. Roberts, suggests the technique may eventually increase the usefulness of available water in areas where the supply is limited.

The scientists believe the chemical forms a protective film at the openings in the plant from which water evaporates. They plan to use fatty alcohol tagged with radioactive tracers to test this theory.

Science News Letter, July 16, 1960

CHEMISTRY

Poultry Disease Helped By Chemical Weapon

A CHEMICAL weapon against minute parasites that get into the digestive systems of poultry is reported in the Journal of the American Chemical Society, 82:2974, 1960. The chemical is amprolium. It can be put into the feed and affords adequate protection against coccidiosis, the parasitic disease costly to poultry growers. In laboratory tests amprolium in feed has been effective against infection from three types of parasites.

Science News Letter, July 16, 1960

PSYCHOLOGY

"Horn" Thought to Play Big Role in Memory

A HORN-SHAPED segment of the brain may decide what is worthwhile remembering and help recall the information when situations demand the information.

Experiments by Dr. Ross Adey of the University of California Medical School, Los Angeles, suggest this role for the segment, the hippocampus.

One activity of this brain segment may be to "approve" an incoming message, or stimuli, for permanent deposit as a memory trace in an appropriate neural system. Furthermore the hippocampus may assist in recalling the item of information in a conditioned learning—goal-directed—situation.

Experiments showed that certain rhythmic waves from this brain segment provide a sensitive correlate of the animal's ability to engage in goal-directed performance. This involved training the animal to approach a food reward in a maze box.

When the animal responded as he had been trained, the rhythmic waves seemed to signal his correct approach to the reward. Drugs which caused the animal to forget his training for a time so that he wandered aimlessly about led to abrupt change in wave patterns. The rhythmic pattern returned when the animal again responded as it had been trained.

This rhythmic pattern from the hippocampus probably helps a person drive to work each day over a familar route. The unconscious cues that tell where to turn were probably indelibly inscribed in the brain with the help of the hippocampus. And as long as this rhythmic brain wave persists the driver will not make a wrong turn.

Science News Letter, July 16, 1960

OCEANOGRAPHY

Use of Civilians in Navy Research Urged

THE NAVY'S research ships should be manned by civilian crews, the National Research Council-National Academy of Sciences recommends in a special report.

The Committee on Oceanography, in Washington, D. C., says the use of Navy crewmen results in excessive turnover of personnel and time wasted observing "a whole host of regulations that are necessary only for combat ships."

The committee also recommends that the crew be employed by and responsible to the laboratory in charge of the ship, rather than to a part of the Department of the Navy. "This practice could reduce ship operating costs, as Navy crews are usually considerably larger than civilian crews."

Research on subsurface currents and the ocean floor will greatly increase United States submarines' effectiveness, the committee reports. Dr. Harrison Brown, professor of geochemistry at the California Institute of Technology, is chairman of the committee.

Science News Letter, July 16, 1960