

GENERAL SCIENCE

Defense and State Partners

► THE DEPARTMENTS of Defense and State will be close partners in the Kennedy Administration. Secretary of Defense Robert S. McNamara made this known at his first Pentagon news conference.

A closer daily working relationship between these two departments has been suggested to advance the goal of national security.

Arms control, nuclear disarmament and arrangements to cooperate in space exploration are some of the important problems involving the national security in which both Departments are individually involved.

Secretary McNamara and Secretary of State Dean Rusk already have set in motion a pattern of operation that would involve joint efforts and close contact at all staff levels.

The Defense Secretary also announced plans to increase the United States' military airlift transport capacity by adding 53 cargo carriers, 30 Boeing C-135 jet transports and

23 turbo-jet C-130Es by Lockheed, at a total cost of \$170 million.

Delivery of the first jets is scheduled for July of this year, four years ahead of previous plans under former President Eisenhower.

The program for SAMOS satellite will continue, Secretary McNamara said. He denied that the purpose of this Air Force satellite was limited to photo reconnaissance of military installations over foreign territory.

The SAMOS is a multi-purpose vehicle, he said, and is not at all like the U-2 high-altitude spy plane. The program for SAMOS still is in the early development stage. Some of the information expected from SAMOS and other military satellites will be of non-military scientific benefit. Such non-military information will be shared with other nations, Secretary McNamara said.

• Science News Letter, 79:102 February 18, 1961

ASTRONOMY

Comet's Head and Tail

► A COMET confusing head and tail is now roaming nearby skies.

Dr. Elizabeth Roemer, astronomer of the U.S. Naval Observatory, Flagstaff, Ariz., reported that the coma (haze around the comet's center and part of its head), which generally blends into the tail of a comet, is almost on the opposite side of the tail in Encke's comet.

This comet, which reappears near the sun every three and a third years, was observed at Flagstaff until it went too low on the horizon to study in the Northern Hemisphere.

Dr. Roemer said the displacement of the coma in relation to the tail was "a very interesting feature" seldom seen in comets. She said it could possibly be that the coma and tail merely appear to be opposite because of the angle from which the comet is viewed from earth.

The comet's tail continued to get brighter and longer during the time it was observed.

When last photographed, the tail was more than two degrees long.

Although the comet is now very close to the sun, it will reappear in March for observation in the Northern Hemisphere.

A peculiarity of Encke's comet is its "on again-off again" acceleration. It has been observed to speed up for no accountable reason and no precise calculations of the acceleration have been made so far, Dr. Roemer said.

Dr. Fred L. Whipple, director of the Smithsonian Astrophysical Observatory, Cambridge, Mass., has proposed that the comet's acceleration is due to a jet stream shooting out from its rotating center.

Dr. Roemer said she did not know whether this jet is large enough to account for the comet's acceleration, or if acceleration exists at the present time. However, she expects more knowledge of the acceleration may result from data gathered by May.

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PHYSICS

Scientists in Politics

► AN ACTIVE ROLE for scientists in aiding wise political decisions is urged by Dr. Hans A. Bethe of Cornell University, originator of the theory of how the sun is stoked automatically.

"Very frequently when a problem comes up for public discussion and Government decision, scientists have lived with it already for many years," Dr. Bethe told the American Physical Society meeting in New York in a principal address. "Some of them at least will have thought more deeply about

the political implications than the politicians who now have to make the decision."

The final decision rests with the Government officials, he said, but the voices of scientists should be attentively heard before the decision is made.

Dr. Bethe urged that informed public opinion have an influence in Government decisions. He recognized that some scientific developments must be guarded by secrecy, but scoffed at the notion that the

public cannot be made to understand the technical nature of the information.

"Actually, the essential pieces of information are usually nontechnical and could easily be understood by the public," he said.

He disagreed with scientists and laymen who hold the view that social responsibility should override all other considerations.

"They claim that if scientists had refused to work on the atomic bomb, this weapon would not exist and the world would be much better off," Dr. Bethe said. "The view is commendable, but in my opinion, Utopian. . . . It also seems to be unethical."

Once a decision is reached, it is up to the scientific community to cooperate, he said. However, the scientific community can do much in formulating wise political policies.

Other qualifications which he believed scientists can effectively offer the political sector included:

1. Analytical training. Scientists and lawyers share the ability to analyze a problem and reach a conclusion.

2. A feeling for numbers. Dr. Bethe considered this another ability placing the scientists high on the list of those who are qualified to make Government decisions.

3. International understanding. Scientists have long cooperated in a common pursuit for knowledge, and Dr. Bethe termed this "a good way to bring people from different countries together in mutual admiration and respect."

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Structure of Proton

► NEW INSIGHTS into the structure of the proton, the core of an atom of hydrogen, have been reported by Dr. Robert R. Wilson of Cornell University.

The proton has been scrutinized by the Cornell electron synchrotron which now produces an intense beam of electrons of more than 1,000 Mev (million electron volts) of energy.

In a sense, Dr. Wilson said at the American Physical Society meeting in New York, the synchrotron is being used as a microscope which allows an indirect insight into the proton.

The beam of electrons is directed onto a target containing hydrogen. This causes collisions between the electrons and protons, and the electrons become scattered. The amount of scattering can be counted and then related to the electromagnetic structure of the proton.

For instance, the researchers assume a particular model for the proton in which the charge is centered in one spot. They can compute the amount of scatter for this model, and compare the results with the actual scatter of electrons when the synchrotron is used.

The Cornell scientist has constructed a model which seems to be a fair duplication of the actual proton structure.

Dr. Wilson explained that the proton appears to have a core that contains about half the charge, and around this core is a cloud containing the rest of the charge.

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