GENERAL SCIENCE

Building a Peaceful World

To benefit all mankind, it is important not only to understand the problems of nuclear power, but it is essential to train nuclear scientists in the developing countries.

Excerpts from the statement by U Thant, Secretary General of the United Nations, at the Third United Nations International Conference on the Peaceful Uses of Atomic Energy, Geneva.

➤ STATESMANSHIP and science join hands in the United Nations not only in seeking to prevent war and in re-directing human energies toward peaceful pursuits in general. They must, and do, join too in the positive task of building a world in which the growing needs of all countries may be met through constructive and co-operative endeavours.

Statesmanship and science under the auspices of the United Nations thus unite in the vast adventure of collaboration for economic and social development to which so many of the most challenging efforts of the UN family of organizations are now devoted.

This is the concerted effort against poverty, against hunger and disease, against illiteracy and want. This is the struggle that should absorb the energies of the world in a relentless quest toward the achievement of social decency and justice for all.

A historic step, of particular interest to participants in this conference, was taken just over a year ago. I refer to the treaty banning nuclear weapons tests in the atmosphere, in outer space and under water, that was signed in Moscow at a ceremony I was privileged to attend.

The unlimited potential significance of diverting efforts and resources from weapons testing to the peaceful applications of atomic energy is the very foundation of your presence and your work here.

Nuclear power is a key issue for the long-term development of over half the world. If per capita consumption of electricity in the developing areas in one day is to compare with that now found in the major industrialized nations, the amount of additional power required will be so vast as to dwarf even the earth's immense reserves of fossil fuels and hydroelectric power.

Surely, in the long run it is, as far as we can see today, only nuclear power—including perhaps power developed from fusion—that can fill these immense requirements.

In this realm, you have indeed come a long way, and I am confident that a fuller understanding of the problems involved will emerge from this conference.

When the first conference on the Peaceful Uses of the Atom gathered here in 1955, the world's first nuclear power station had been operating for only a year. Owing to fears of an impending fossil fuel shortage, a forced development of nuclear power was anticipated.

The second conference in 1958 was more fully aware of the vast technical and economic difficulties involved in translating this dream to reality. That conference, moreover, coincided with the discovery of additional conventional fuel resources, which in a sense mitigated the urgency of the problem by eliminating, for the time being, the fear of immediate serious shortages.

In the long run, however, the problem of sources of energy remains as basic for economic development as ever, and over

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GENERAL SCIENCE

Age of Nuclear Power

Excerpts from statement at Geneva by Dr. Glenn T. Seaborg, head of the U.S. Delegation to The Third United Nations International Conference on the Peaceful Uses of Atomic Energy.

The age of nuclear power has now begun. With particular reference to the situation in the United States, the principal points I would like to make are these:

1. The operating experience we have had with more than a dozen prototype and demonstration nuclear power plants of several different types and in sizes up to approximately 200 megawatts has been excellent.

2. Projections of the cost of power from water-cooled plants in sizes of 500-to-600 megawatts which can now be purchased on a firm-price basis with performance warranties indicate that nuclear power is now in a position to offer competition for an appreciable share—perhaps as much as half—of the new steam-electric capacity to be added to the U. S. utility network in the decade or so ahead.

3. We in the U. S. Atomic Energy Commission have revised upward the projection of nuclear power plant construction we made less than two years ago. At that time we estimated that some 40,000 megawatts of nuclear capacity would be in operation in the United States by 1980. Our new figure for 1980 will be about 70,000 megawatts.

4. Major changes have just been made in the U. S. Atomic Energy Statute to permit, and in due course require, private ownership of the basic fuel materials used and produced in nuclear power plants. The new Statute, known as the Private Ownership of Special Nuclear Materials Act, essentially completes the transition that began a decade ago when the first steps were taken to convert what was then a Government nuclear power project into an independent nuclear power industry.

LEADERS OF U.S. ATOMIC DELEGATION AT GENEVA — Before a plenary session convenes, Dr. Glenn T. Seaborg, Chairman of U.S. Atomic Energy Commission and head of the U.S. Delegation (center) confers with Capt. Edward R. Gardner, executive director of the U.S. Delegation (leaning over) and Dr. Donald F. Hornig, President Johnson's Special Assistant for Science and Technology (right front).

Peaceful World

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the past six years the advances achieved by you and your colleagues to solve it have been steady.

These advances did not take the form of a breakthrough; rather, there has been a succession of solid accomplishments which entitles us to say that the problem is fully in hand technologically and is on the verge of coming under control economically.

Among the many possible uses of nuclear power, work being done in assessing its potential use for water desalination is a subject of particular interest for the United Nations, and, indeed, it is unnecessary to emphasize the benefits of a cheap desalination process for the developing countries, many of which contain extensive arid zones, and suffer from a chronic and growing shortage of fresh water. The UN Secretariat has published a major study of this question. This conference can and must—even if only in the long run—benefit the developing countries. Yet few of these countries as yet have nuclear scientists, and it is not surprising that the representatives of developing countries here today are by no means as numerous as we should have liked to see them.

The key to this problem is, of course, training, and I can only repeat what I said in the statement delivered on my behalf at the opening session of UNCSAT: "In my view, development of certain scientific institutions and the training of at least a small number of scientists in some of the advanced disciplines is by no means a luxury for any of the new nations."

Among these disciplines I should, of course, like to see nuclear science.

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GENERAL SCIENCE

President Awards Medal Of Freedom to Thirty

➤ THIRTY DISTINGUISHED men and women received the Presidential Medal of Freedom at a White House ceremony Sept. 14.

President Johnson made the presentation in the East Room in the presence of members of the Supreme Court and the Cabinet, the leadership of the Congress, and other key executive branch officials. A White House luncheon honoring the medal recipients followed the presentation ceremony.

The gold Presidential Medal of Freedom is the highest civilian honor the President of the United States can bestow for service in peacetime. It is given to a person who has made "exceptionally meritorious contributions to the security or national interest of the United States, to world peace, to cultural or other significant public or private endeavors."

Those honored were:

Former Secretary of State Dean Acheson; Dr. Detlev Bronk, president, Rockefeller Institute for Medical Research; Aaron Copeland, composer and conductor; William de Kooning, abstract-impressionist painter; Walt Disney, motion picture producer; J. Frank Dobie, author of books on the folklore of the Southwest; Dr. Lena Edwards, obstetrician; T. S. Eliot, the poet and playwright; Alfred Lunt and Lynn Fontanne of the American stage; Dr. John W. Gardner, president, Carnegie Corporation of New York.

Also, Rev. Theodore M. Hesburgh, C.S.C., president, University of Notre Dame; Clarence L. Johnson, vice president, Lockheed Aircraft Co. and designer of the U-2 reconnaissance plane; Frederick R. Kappel, chairman of the American Telephone and Telegraph Co.; Miss Helen Keller, lecturer and author; John L. Lewis, president emeritus of the United Mine Workers;Walter Lippmann, columnist and author; Ralph E. McGill, publisher and columnist; Samuel Eliot Morison, Harvard historian; Lewis Mumford, authority on architecture and civic planning; Edward R. Murrow, veteran commentator and former USIA director.

Further, Reinhold Niebuhr, Protestant theologian; Miss Leontyne Price of the Metropolitan Opera; A. Philip Randolph, president of the Brotherhood of Sleeping Car Porters and a civil rights leader; Carl Sandburg, poet and biographer of Lincoln; John Steinbeck, novelist; Dr. Helen B. Taussig, professor of pediatrics at the Johns Hopkins University; Rep. Carl Vinson (D-Ga.); Thomas J. Watson, president of International Business Machines Corporation, and Dr. Paul Dudley White, authority on heart disease.

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TECHNOLOGY

French Solar Boiler For Industrial Power

➤ THE FRENCH GOVERNMENT is now building a solar boiler on an industrial scale that is hoped will lead to harnessing the sun's power to supply hundreds of thousands of kilowatts of electricity.

The industrial solar boiler uses a new method of heat absorption. It has been set up near the summit of the famous Notre Dame de la Garde hill overlooking Marseilles.

The Marseilles solar boiler was designed by Dr. Marcel Perrot of the University of Marseilles and secretary of the "Mediterranean Solar Co-operation" scheme.

Dr. Perrot combined his own theories on collecting solar heat with the ideas of an Italian engineer, Signor Giovanni Francia of Genoa.

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Do You Know?

The *IQ* of the average freshman medical student is now about 130.

Sounds of very great intensity with frequencies higher than any generated before —60 billion cycles per second—have been made by bombarding a sapphire crystal with light from a ruby laser.

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