PHYSICS

Mr. Atoms for Peace

Niels Bohr of Denmark is the first recipient of the $75,000 Atoms for Peace Award. A unanimous choice, Dr. Bohr is considered the world's greatest living theoretical physicist.

By HOWARD SIMONS

➤ ON TUESDAY, Oct. 24, 1957, Niels Henrik David Bohr of Denmark will receive a $75,000 Atoms for Peace Award in Washington, D. C.

He will be the first man in the world to be so honored.

The 72-year-old atomic scientist and Nobel Prize-winner was the unanimous choice for the first of ten such Awards to be given to "those persons anywhere in the world who have made the greatest contributions to the peaceful uses of atomic energy."

When he was only 28 years old Dr. Bohr opened a new era in atomic science. Today, this giant of the tiny atom is considered to be the world's greatest living theoretical scientist.

The year was 1913. Dr. Bohr, who had earned the doctorate in physics only two years before at the University of Copenhagen, was working with Ernest Rutherford at the University of Manchester in England. Prof. Rutherford (later to become Lord Rutherford) had just established that the atom had a dense nucleus with positive charge which occupies only a small portion of the atom, and that, surrounding this dense nucleus, there are electrons of negative charge in sufficient number to balance its positive charge. But this picture of the atom was not complete.

Bohr's Model of the Atom

In a series of papers that more than startled leading scientists, young Niels Bohr filled in the gaps and did more. He portrayed the atom as a sort of solar system in which the sun is represented by a nucleus of positive electricity and the planets by particles of negative electricity revolving around it at high speed. This is still the picture that most older persons see when they think of an atom.

But Bohr's theories did much more than just sketch a portrait of the atom. He also offered an explanation for radiation phenomena by postulating that the electrons moving around the nucleus are confined to restricted orbits.

This concept of the atom, together with Rutherford's contributions, were the beginnings of modern atomic physics and have led man to his present world of atomic bombs and atomic energy.

These theories also laid the foundations for the science of spectroscopy—the taking of electronic fingerprints.

Together with his 1913 theories and later papers, Dr. Bohr clarified the basic principles of quantum mechanics.

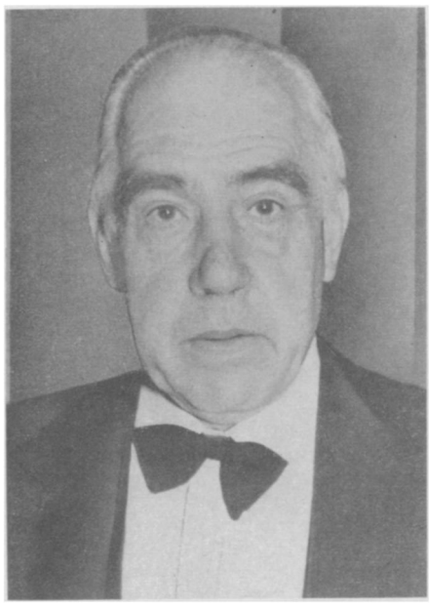
In 1922, at the age of 37, Niels Bohr was awarded the Nobel Prize for physics. At that time, he was the youngest scientist ever to receive a Nobel Prize.

While this great Danish scientist was working out theoretical principles to guide atomic physicists in their work, he was also becoming known as a great humanitarian. In 1920 the Institute for Theoretical Physics was established in Copenhagen and Dr. Bohr was made its director. A unique academy that has hosted many of the world's finest minds, the Institute has never had another director.

Physicists' School

In describing the Institute, which is synonymous with Dr. Bohr in the world of science, Dr. James R. Killian Jr., chairman of the board of directors of the Atoms for Peace Awards, had this to say:

"Its roster of distinguished fellows includes leading physicists from almost every country in the world, men who were attracted primarily by the opportunity to work with Prof. Bohr. His humanity, his goodness and wisdom—in addition to his outstanding scientific contributions—have inspired the many scholars who have been his students and colleagues to become a nucleus of international understanding and good will."



FAMOUS DANE—On Tuesday, Oct. 24, Dr. Niels Bohr of Denmark will receive the world's first Atoms for Peace Award in Washington, D. C. The $75,000 Award is being given to Dr. Bohr for his contributions to the peaceful uses of the atom.

The Institute is still functioning today, as is Dr. Bohr. In the years preceding the Second World War, the Institute became a haven for the many scientists who were forced to flee their own countries. But in 1943, even Dr. Bohr was forced to flee before the jackboots of Nazism and after escaping to Sweden hidden in a fishing boat, he was flown in the bomb-bay of a British airplane to England.

In December of 1943, Dr. Bohr landed in the United States, where he took an active part in our nation's wartime atomic energy development program.

At war's end, Dr. Bohr returned to his birthplace, Copenhagen, and to his rigorous schedule at the Institute, where once again Dr. Bohr and the Institute serve the world's atomic physicists.

The early work that earned Dr. Bohr his Nobel prize is by no means his only or even his most important contributions to man's modern intelligence of the atom. In 1936, for example, he proposed his theory of nuclear reaction which successfully interpreted the experiments of the late Dr. Enrico Fermi and others on the interaction of neutrons with nuclei.

In 1939, while on a visit to the United States, Dr. Bohr, together with Dr. J. A. Wheeler, identified the fissioning isotope found by Otto Hahn and Lise Meitner as U-235. This Bohr-Wheeler theory is still considered to be the basis of our understanding of the fission process.

Today, this shy and humble man who shuns both publicity and the praise of all, still pleads with the world to drive the atom it has harnessed along the path of peace.

His argument for the peaceful use of the atom is not a new idea. Neither is it a plea spoken from fear of fallout or the awesome potential of H-bomb devastation.

Cooperation for Survival

There is no better way of showing this than to quote Dr. Bohr, who made the following remarks shortly after the end of hostilities in World War II when he was home once more in Copenhagen. The time was October, 1945, when he warned:

"We have left that time far behind us when each man could pick up the nearest stone for self-defense. We have also reached that place where the security offered the citizens of a nation by collective defense arrangements is altogether inadequate. Perhaps there is no defense possible against the new powers of destruction, and it depends upon a world-wide cooperation to prevent use of the new sources of energy for purposes which do not serve humanity as a whole. However, the possibility for an international control with this purpose in view may be said to be secured by the gigantic, special character of the efforts, which

are unavoidable in manufacturing the new terrible weapon."

"Every man of science who has helped in the work to lay the foundations of the new development is ready to help in every way he sees clear to find a solution of humanity's present crisis, which will be worthy of the ideals for which science has struggled through the ages."

The Atoms for Peace Award grew out of an appeal from President Eisenhower made on July 20, 1955, at Geneva, Switzerland. It was created as a memorial to Henry and Edsel Ford. One million dollars, provided by the Ford Motor Company Fund, was authorized to be used at a rate of $100,000 a year for ten years. This, the first year, brought 75 candidates proposed by scientific bodies in 23 countries.

Science News Letter, October 19, 1957

TECHNOLOGY

Ultraviolet Lamp Kills Flu Bug at Home

➤ AN ULTRAVIOLET lamp that can be inserted in a heating or air conditioning duct and kills 80% of airborne virus and bacteria in the home has been designed and manufactured.

The lamp is particularly good for killing the flu virus and has been designed for use in homes, schools and offices, Edward G. F. Arnott, director of research for the Westinghouse lamp division, Bloomfield, N. J., has reported.

Similar type ultraviolet lamps are being used by manufacturers of polio and Asian flu vaccines to kill the active virus before making it into a vaccine.

The new type of Sterilamp produces radiation that is up to 1,000 times more effective in killing microorganisms than an equal amount of ultraviolet radiation from the sun.

Similar lamps have been used for many years in operating rooms to prevent infections during operations.

The Sterilamp tube can be installed in most homes in a few minutes and will be optional equipment with some furnaces and air conditioners next year.

Science News Letter, October 19, 1957

PUBLIC HEALTH

Too Much Tranquilizer Can Cause Convulsions

➤ LARGE DOSES of chlorpromazine, the widely used tranquilizing drug, can produce convulsions in monkeys and may do the same thing to humans.

This latest finding is reported by scientists at the U. S. Public Health Service hospital, Lexington, Ky., who warn the drug may be hazardous in the treatment of either alcoholism or epilepsy.

A number of reports have appeared suggesting the tranquilizer may have convulsant effects so it was given in large doses to four "normal" monkeys, they report.

All the monkeys developed epileptic-like seizures and three of them apparently began seeing things that did not exist.

One kept searching the floor of his cave as if he were looking for an imaginary object, and occasionally leaped backward as if afraid of something.

The amount of the drug given was admittedly large, but the same dosage had been reported in use on humans in one clinic, the scientists say.

On lower doses, no convulsions were seen, indicating that the greater the dose of chlorpromazine, the greater is the likelihood of seizures.

The current widespread use of the tranquilizer "warrants speculation" about its use in either epilepsy or the management of addict withdrawals from alcohol and barbiturates, the scientists conclude.

The study was made by Drs. Carl F. Essig and Woodrow W. Carter of the hospital's NIMH Addiction Research Center and is reported in the *Proceedings of the Society for Experimental Biology and Medicine* (Aug.-Sept.).

Science News Letter, October 19, 1957

ICHTHYOLOGY

Polluted Rivers May Be Too Hot for Fish

➤ EARLIER estimates of how hot the water in a river has to be before its fish population disappears might have to be revised, a British scientist reports.

The present limits for the temperature of polluted rivers may be too high, says A. W. Cocking, Portsmouth.

In an experiment described in *Nature* (Sept. 28), he finds that roach, a fresh water fish of the carp family, "lose condition" while some individuals die, after prolonged exposure to temperatures as much as seven degrees below the supposed maximum lethal temperature (now put at about 92 degrees Fahrenheit).

The scientist points out that there is also little relation between the temperature range necessary for good growth and reproduction and a temperature hot enough to kill. A species will eventually disappear from a waterway if the temperature is too high for it to reproduce, even though adult fish are not killed.

Science News Letter, October 19, 1957