

*An article a day of enduring significance, in condensed permanent booklet form*



# My Faith in the Atomic Future

*By Lewis L. Strauss*

Chairman, U. S. Atomic Energy Commission

*As told to James Monahan*

**M**ANY PEOPLE regard the atomic discoveries of recent years as part of a nightmare that disrupts the peaceful dreams of civilized man. I do not believe history will see them in that light. We have gained control over natural forces that can advance civilization, even within a single generation, to a point which man has never attained before. I believe firmly that our knowledge of the atom is intended by the Creator for the service and not the destruction of mankind.

The Atomic Energy Act of 1946 was a farsighted law. But I had certain specific reservations about it. Nuclear energy, which I believed

could change the world, was strait-jacketed in Government regulations. Research, development, patents, manufacturing and possession of fissionable materials were denied to private enterprise. Atomic energy was an absolute Government monopoly.

Atomic weapons development is necessarily a Government responsibility. But I was convinced that developments in agriculture, industry and power production would not be realized fully until the field was opened to the genius and enterprise of American industry.

Actually, the restrictions might have been relaxed sooner but for

the attitude of Soviet Russia. Beginning in 1946, when the United States held a virtual world monopoly on nuclear weapons, we proposed international control, subject to rigid inspections and enforcement, which would have limited the use of atomic energy to peaceful purposes. At that time we even offered to share our knowledge and resources with all nations.

The Soviets did everything possible to delay, confuse and destroy that plan. Actually, they were launching their own secret atomic

program. We detected their clandestine weapon test in 1949, and were at once engaged in the costly and perilous contest for supremacy in nuclear weapons. Every thinking person knows now that our present great and versatile stockpile is the major safeguard of the free world.

Meanwhile, atomic energy became associated in popular thinking with death and destruction. Yet the custodians of atomic energy under President Truman and President Eisenhower never lost sight of its benign potentials. Progress was phe-

**R**EAR ADMIRAL Strauss brings to the position of Chairman of the AEC a deep personal interest in the promise of atomic energy. In 1935-37 his mother and his father both died of incurable cancer. As a memorial, he started a project at the California Institute of Technology to pioneer in the production of cheap radioactive substitutes for radium in cancer treatment.

Early in 1939 Dr. Nils Bohr, the Danish scientist, arrived in the United States with evidence that the Hahn-Strassmann-Meitner experiments in Germany had definitely fissioned the uranium nucleus, making a chain reaction theoretically possible. To Strauss this was portentous news: it could mean the mass production of radioisotopes, cheap enough to be available to every hospital. But it also meant much more. One physicist working on the Caltech project wired Strauss: "I see enormous pos-

sibilities . . . leading unfortunately perhaps to atomic bombs." Seven months later Dr. Albert Einstein wrote the historic letter to President Roosevelt stating that the atomic bomb could be made.

During the war years Lewis Strauss was on active duty in the Navy, but the atomic future was much in his mind. In 1945 he became the Navy member of the Interdepartmental Committee on Atomic Energy. In 1946 he was appointed by President Truman to the newly authorized Atomic Energy Commission. He resigned from the AEC in 1950 to re-enter private business, but was recalled in 1953 by President Eisenhower and appointed Chairman.

On August 8, when the United Nations' world conference on the peaceful uses of atomic energy meets in Geneva, Switzerland, Admiral Strauss will lead the American delegation.

nomenal in the production of radioisotopes.\* They were produced by AEC reactors as early as 1947. They were distributed freely to institutions here and abroad, and within a few years revolutionized some areas of medical research and the diagnosis and treatment of certain diseases. Scarce, high-priced radium for the treatment of cancer was rendered virtually obsolete by radioactive cobalt and other elements which are equally effective sources of gamma rays and yet are now available to institutions at a small fraction of radium's cost.

Several different types of nuclear reactors for the generation of electrical power were designed by the AEC. But most authorities put the date of their construction in the remote future.

When I returned to the AEC as chairman in 1953 I was deeply impressed by the growing conviction in the White House and the Congress that the time had come for full-scale development of atomic energy outside the military area.

President Eisenhower, in his address to the General Assembly of the United Nations on December 8, 1953, stated: "The United States

pledges before the world its determination to help solve the fearful atomic dilemma, to devote its entire heart and mind to find the way by which the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life."

Two months later the President sent to Congress the message which resulted in the Atomic Energy Act of 1954. The new law had two great aims—to make international cooperation possible, and to enable private enterprise to develop the atom for peaceful purposes.

The progress of the past 18 months—only a moment in history—has been extraordinary. For example, the AEC announced its program to develop power-producing reactors, and invited private companies to participate. The quick response was totally unexpected. The Duquesne Light Co. is building our first full-scale nuclear-power plant at Shippingport, Pa. At least four or five others will be constructed in the near future in Massachusetts, Michigan, Nebraska, Illinois and New York.

These pioneer nuclear-power plants cannot be economically competitive with conventional plants at present. Yet the participating companies are paying about 90 percent of the total costs! This, I maintain, could only happen under free enterprise in an expanding economy.

Indeed, two or three proposed plants will be constructed *entirely* without financial help from the Government. Mr. Hudson R. Searing,

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\* An isotope is the "twin" of an element. It is chemically identical, but differs slightly in atomic weight. Radioisotopes also differ from their stable twins by giving off radiation. Some radioisotopes (radium and uranium, for example) occur in nature. Today it is possible to produce radioactive "twins" of any stable element (carbon, sodium, phosphorus, etc.) in the atomic pile or reactor.

president of one of these companies, Consolidated Edison of New York, recently told stockholders that nuclear power "is the only way we can see of bringing about lower electricity costs over the long pull."

It is pointless to speculate on how soon nuclear power will be cheaper than power produced by falling water or the burning of coal or oil. We do know that our resources of fossil fuels are limited, and that coal and oil will be needed for functions which atomic energy cannot perform. We know that there is a great disparity in electricity costs between those areas where water power, coal and oil are plentiful and regions like New England where such resources are scarce or nonexistent. We also must remember that there are many countries which are not blessed with such abundant resources as our own. So to me the present question of "economic" nuclear power is academic. I believe that it will be available before long, and that it logically will be used first where it is needed most.

Nuclear power for the propulsion of ships and aircraft will also come sooner than is generally realized. Few people have grasped the significance of the *Nautilus* and her sister submarine, the *Seawolf*. With the feasibility and safety of the marine propulsion reactor established beyond doubt, the job now is up to the designers and builders of surface vessels. The time to begin is *now*. That was the thought behind the President's recent recommendation

of a nuclear-powered merchant ship.

I am convinced that the radioactive isotopes will continue to be the wonders of the atomic age. Today, they are being used by many industries to control processes, detect flaws and test the durability or wearing quality of all sorts of materials. New uses for them are found every day.

Used as "tracers" or as radiation sources, these atomic particles can search out the innermost secrets of nature and give man greater control over his environment. For example, plant geneticists have already used radiation from isotopes to produce a new strain of rust-resistant oats, wilt-resistant tomato seedlings, and a peanut plant with 30 percent greater yield. These and similar developments will mean millions—perhaps billions—of dollars to farmers.

By incorporating small amounts of radiophosphorus in fertilizers, and then using instruments to trace the uptake from the soil through roots, stem, leaves and blossom, agricultural experts can now determine the right amount of fertilizer to use in the most economical manner, and at the proper time in the growing cycle.

For nearly a century science has tried in vain to solve the fundamental secret of photosynthesis, the process whereby nature traps solar energy in the green leaf and converts water and carbon dioxide into the sugars and starches on which all higher life subsists. Using radioactive carbon as the tracer, researchers

today seem to be on the point of solving (and perhaps duplicating) this mysterious process. If successful, that achievement might lead to the synthetic production of basic food-stuffs from simple and abundant chemicals—the solution to the world's pressing food problems.

Since 1946 the American people have spent more than 12 billion dollars on atomic energy. We will probably continue spending about two billion a year. Most of this money is invested in our stockpile of nuclear weapons, which represents the security of the free world. We have no choice but to maintain that security—until the whole world joins us in arriving at a safe solution to the “atomic dilemma.” I firmly believe that can be accomplished.

But our nuclear stockpile also represents a national resource of incalculable value. With nuclear weapons you can “beat swords into plowshares and spears into pruning hooks” even more realistically than the Scriptures envisioned. The material is immediately convertible to peaceful uses. That is what President Eisenhower had in mind when he told the United Nations that the weapon “must be put in the hands of those who know how to strip its

military casing and adapt it to the arts of peace.”

Young people have asked me if I sincerely think that we shall enjoy the benefits of the atom before the world is overtaken by the destructive power that is within man's grasp. With all my heart I can answer: Yes!

We are living in an era that seems designed to test the courage and faith of free men. Yet I do not believe that any great discovery of the atom's magnitude came from man's intelligence alone. A Higher Intelligence decided that man was ready to receive it. My faith tells me that the Creator did not intend man to evolve through the ages to this stage of civilization only now to devise something that would destroy life on this earth.

My old chief, former President Herbert Hoover, to whose Quaker convictions all warfare is revolting, listened to President Eisenhower's U. N. speech and said: “I pray it may be accepted by all the world.” We pray that Divine Providence will guide men of all nations to grasp this opportunity to “shake off the inertia imposed by fear and make positive progress toward peace.”

AN OUTSTANDING personality in the news will discuss “My Faith in the Atomic Future” on the nation's award-winning educational program, Theodore Granik's “Youth Wants to Know,” televised and broadcast by NBC, Sunday, August 7, at 2:30 p.m. EDT.