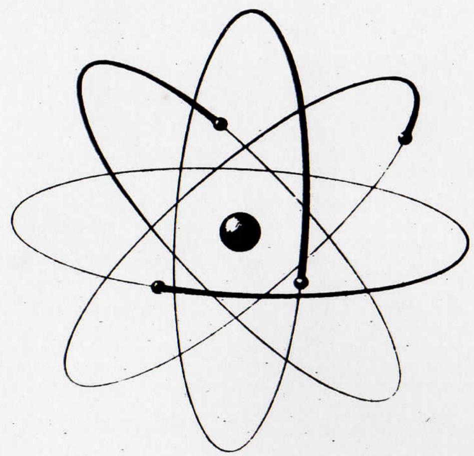
THE ATOMIC AGE



PHILATELIC TRIBUTES

to The World Wide Crusade

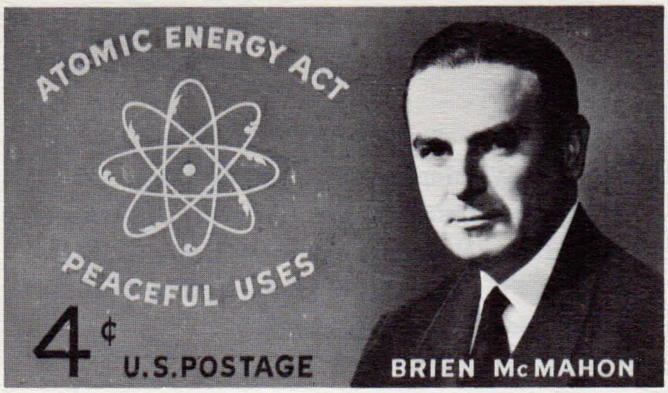
for The Peaceful Use of The Atom

UNITED STATES—JULY 28, 1955

UNITED NATIONS—FEBRUARY 10, 1958

UNITED STATES—JULY 28, 1962

THE ATOMIC AGE



Senator Brien McMahon, Father of American Nuclear Policy

PHILATELIC TRIBUTES

to The World Wide Crusade for The Peaceful Use of The Atom

UNITED STATES—JULY 28, 1955

UNITED NATIONS—FEBRUARY 10, 1958

UNITED STATES—JULY 28, 1962

ATOMS FOR PEACE

3¢ Deep Blue   Scott No. 1070
Issued at Washington, D. C., July 28, 1955
Designed by George R. Cox, Technical Illustrator,
Brookhaven National Laboratory, Upton, L. I., N. Y.
Electric Eye Perforated 11 x 10½, in Panes of 50.
Authorized Printing—120,000,000

At the ceremony held on the White House lawn, July 28, 1955, marking the issuance of the Atoms for Peace *stamp, Mr. Arthur E. Summerfield, Postmaster General, had this to say:*

"The Post Office Department is highly honoured in having this ceremony here at the White House, with the President of the United States and so many distinguished guests in attendance.

"Traditionally the postage stamps of a nation are pictorial representations of its glories. They serve as reminders to the citizenry of great men and women who have gone on before, and accomplishments that have made the nation great.

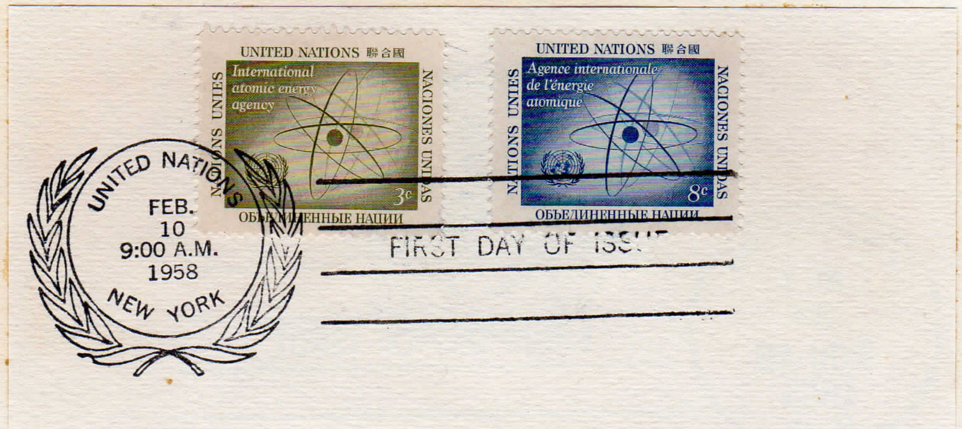
"But, this stamp is different. It is unique—it does not deal with the past. It is concerned rather with the future. It doesn't deal with material achievement – it commemorates an ideal. It doesn't proclaim purely nationalistic glories—it expresses a hope for all the world. 'To find a way by which inventiveness of man shall be consecrated to his life.' (A quotation from President Eisenhower's address before the General Assembly of the United Nations, December 8, 1953.)

"This stamp is an ambassador of good will and of hope. It is truly a symbol of our highest aspirations, carrying the rallying cry of a great crusade for permanent peace which has so long eluded mankind. It is in this spirit that we dedicate this *Atoms for Peace* stamp here today."

Arthur E. Summerfield

POSTMASTER GENERAL

INTERNATIONAL ATOMIC ENERGY AGENCY



3¢ Green—Scott No. 59
8¢ Blue—Scott No. 60
Issued at New York, February 10, 1958
Designed by Robert Perrot of France, member of U. N. Graphic Presentation Unit

Steel engraved by The American Bank Note Co.
Each pane of fifty stamps carries four marginal inscriptions: "Atomic Energy 1958" on the 3¢, "Energie Atomique 1958" on the 8¢.
Authorized Printing: 3¢-5,000,000, 8¢-4,000,000.

The proposal to establish an International Atomic Energy Agency was made by the President of The United States, Dwight D. Eisenhower, when he addressed the General Assembly of The United Nations on the 8th December, 1953. The statute providing for the establishment of the Agency came into force on the 29th July, 1957. Excerpts from the President's Address:

"The atomic age has moved forward at such a pace that every citizen of the world should have some comprehension of its significance. My recital of atomic danger and power is necessarily stated in United States terms. I need not tell this Assembly, however, that the subject is global, not merely national in character."

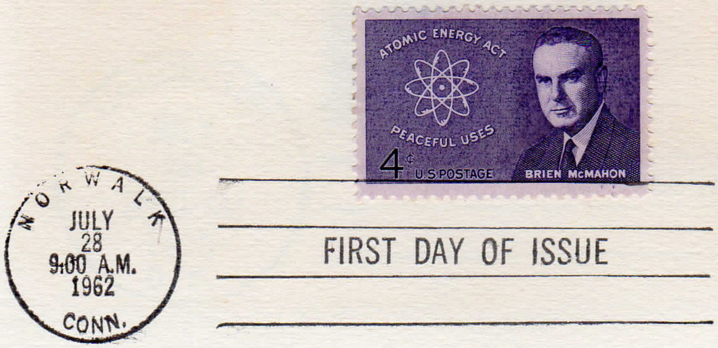
"On July 16, 1945, the United States set off the world's first atomic test explosion. Atomic bombs today are more than 25 times as powerful as the weapons with which the atomic age dawned. Hydrogen weapons are in the range of millions of tons of TNT equivalent. The dread secret and the fearful engines of atomic might are not ours alone."

"My country's purpose is to help us move out of this dark chamber of horrors into the light—to find a way by which the minds of men, the hopes of men, the souls of men everywhere, can move forward toward peace and happiness and well-being. It is not enough just to take this weapon out of the hands of soldiers. It must be put into the hands of those who will know how to adapt it to the arts of peace."

"To hasten the day when the fear of the atom will disappear from the minds of the people and governments, there are certain steps which can be taken now. I therefore propose that the governments principally involved begin now to make joint contributions of normal uranium and fissionable materials to an International Atomic Energy Agency set up under the aegis of the United Nations. The important responsibility of this Agency would be to devise methods whereby this fissionable material would be allocated to serve the peaceful pursuits of mankind—to apply atomic energy to the needs of agriculture, medicine and other peaceful activities. A special purpose would be to provide abundant electrical energy in the power-starved areas of the world."

"The United States pledges its determination 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."

THE ATOMIC ENERGY ACT–SENATOR BRIEN McMAHON



4¢ Purple. Scott No. 1200
Issued at Norwalk, Connecticut,
July 28, 1962.
Designed by Victor S. McCloskey Jr.

Photograph by Glogau of Washington, D.C.
Engraved by Richard M. Bower.
Lettering and Numeral by Howard F. Sharpless.
Authorized printing 120,000,000. Panes of 50.

In a joint announcement, July 6th, Postmaster General J. Edward Day and Senator Thomas J. Dodd of Connecticut, who had advocated that the stamp be issued in tribute to "The Father of American Nuclear Policy," had this to say:

"The stamp honours the late Connecticut Senator for his role in opening the way to peaceful uses of atomic energy. Senator McMahon waged what was virtually a one-man crusade to create the Atomic Energy Commission, with a law that made possible the non-military use of the atom.

"Passage of the McMahon Act in 1946 set the pattern for U.S. policy in the Atomic Age. Atomic Energy had been under rigid military controls until the Act set up a commission of civilians with the power to share nuclear information for medical and industrial research, and for the production of atomic power. Indirectly, the law also affected world attitudes and led to creation within the United Nations of the International Atomic Energy Agency, which is dedicated to peaceful use of the atom.

"There is a storybook aura behind the passage of the McMahon Act. Perhaps the most important legislation of this generation—what to do with the atom?—was to be guided by a 42-year-old, then relatively unknown Senator, serving his first year of office! But, over the months, Senator McMahon, through study, began to qualify himself as a lay expert on nuclear problems. He took training courses at the U.S. Bureau of Standards, better to understand the new horizon of the Atomic Age.

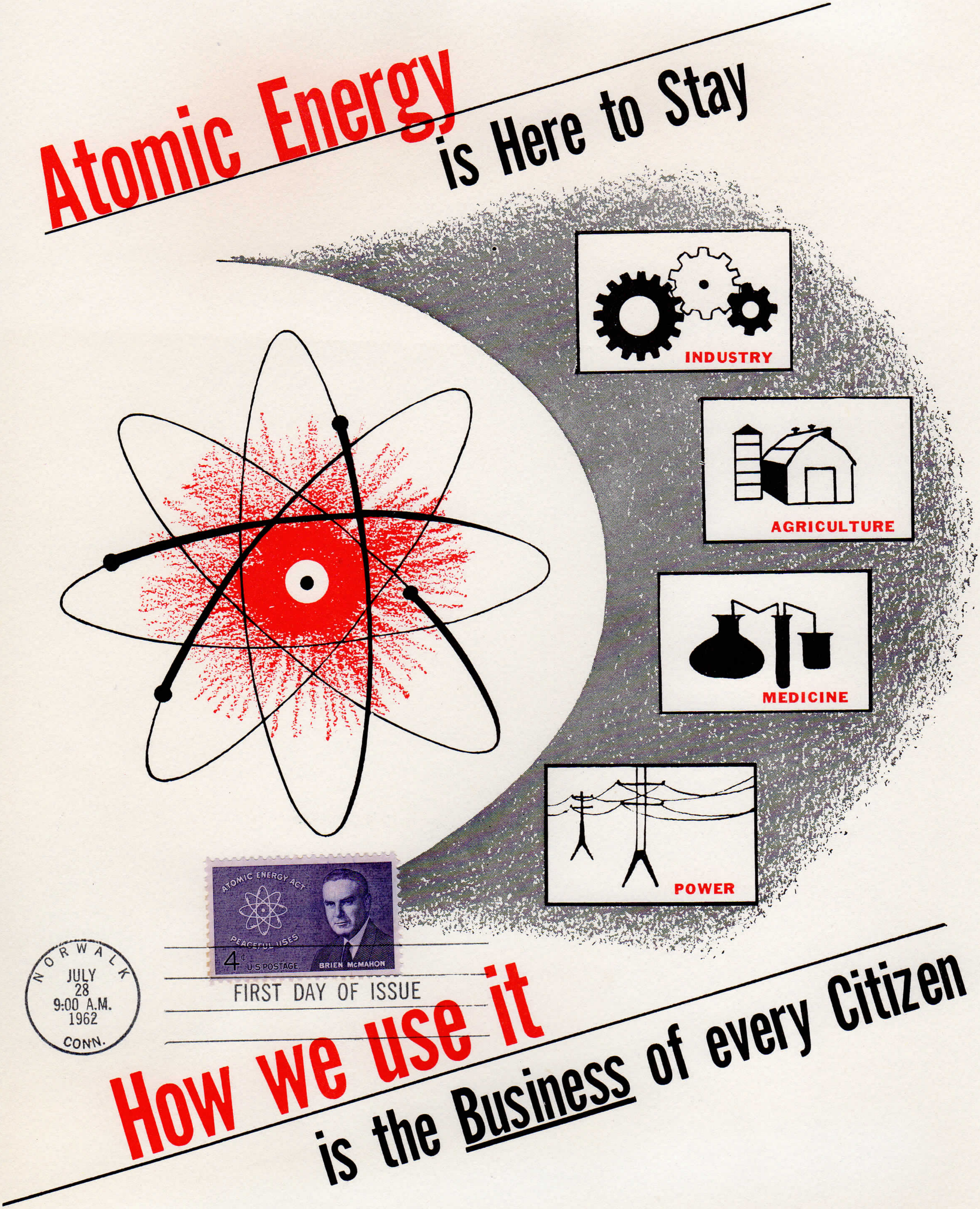
"Senator McMahon had one ally in his campaign—the Federation of Atomic Scientists. In Washington, D.C., a city of well-financed lobbies with political know-how, the Scientists were unique. They were poor as church mice, and from the fifth floor headquarters of a shabby, walkup office building, they ground out news releases, and to Congressmen, wrote letters that seemed politically naïve.

"What the Scientists lacked in petitioning techniques, they made up in sense of purpose. They knew that they had created an awesome thing, and they believed, along with Senator McMahon, that military control of the atom would deny peaceful uses of this new gift from science.

"At the onset, there was widespread opposition in Congress to Senator McMahon's bill. During an early phase of the developing legislation, one of his proposals was voted down in Committee 11 to 1. But Senator McMahon stuck doggedly to his guns, and gradually brought Congress around to his way of thinking. President Truman signed the Act, Aug. 1, 1946.

"Senator McMahon served in the Senate from 1945 until his death, at 48 of cancer, in 1952. President Truman said in eulogy: 'Senator McMahon was one of the first to see the fantastic possibility for good in the wise use of atomic power. As he conceived it, the miracle of the release of atomic power was intended for man's everlasting benefit—not his destruction."

Senator Brien McMahon was born at Norwalk, Connecticut, October 6, 1903; died at Washington, D.C., July 28, 1952.


Atomic Energy
is Here to Stay
INDUSTRY
AGRICULTURE
MEDICINE
POWER
ATOMIC ENERGY ACT
PEACEFUL USES
4¢ U.S. POSTAGE
BRIEN McMAHON
NORWALK
JULY
28
9:00 A.M.
1962
CONN.
FIRST DAY OF ISSUE
How we use it
is the Business of every Citizen

UNITED NATIONS **NATIONS UNIES**

New York

A plenary meeting of the Eighth Session of the United Nations General Assembly. At the rostrum, the President of the United States of America, Dwight D. Eisenhower, is seen addressing the meeting (December 8, 1953). Presiding is Mme. V. Pandit, President of the General Assembly. The Secretary-General, Mr. Dag Hammarskjold, is seated on her right, and Mr. Andrew Cordier, his Executive Assistant, is on her left.

It was at this meeting that President Eisenhower proposed the establishment of an International Atomic Energy Agency for pooling atomic materials for peaceful use. These stamps, issued today, honour this Agency which came into force July 29, 1957.

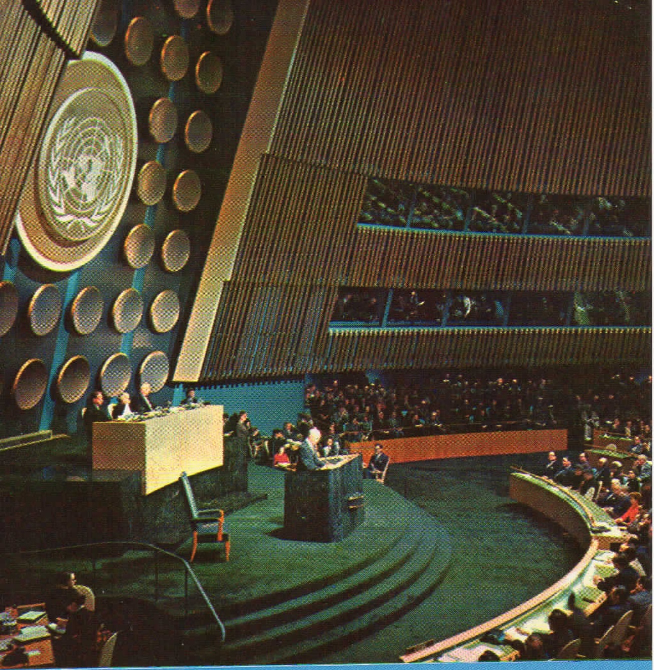
"THE UNITED STATES PLEDGES IT'S DETERMINATION TO HELP SOLVE THE FEARFUL ATOMIC DILEMMA — TO DEVOTE IT'S ENTIRE HEART AND MIND TO FIND THE WAY BY WHICH THE MIRACULOUS INVENTIVENESS OF MAN SHALL NOT BE DEDICATED TO HIS DEATH, BUT CONSECRATED TO HIS LIFE."

Official United Nations Photo (Dept. of Public Information)

UNITED NATIONS FEB 10 9-AM 1958 NEW YORK

POST CARD

FIRST DAY OF ISSUE



"Never before in history
has so much hope for so many people
been gathered together in a single organization.
Your deliberations and decisions
during these somber years
have already realized part of those hopes."

— PRESIDENT EISENHOWER

THE PETRIFIED RIVER

The Story of Uranium

THE

First Printing—1956
Second Printing—1959
Third Printing—1961

PETRIFIED RIVER

The Story of Uranium

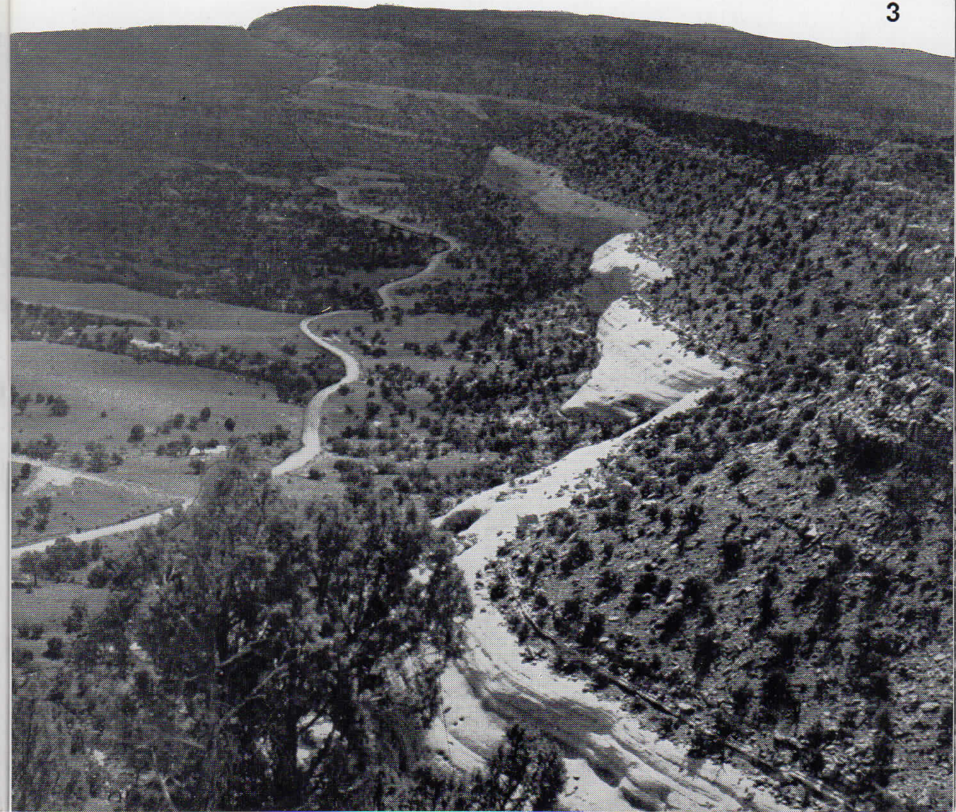
THIS BOOKLET was written to accompany the motion picture film, "The Petrified River," which was produced co-operatively by Union Carbide Corporation and the Bureau of Mines, United States Department of the Interior. Like the film, it tells how uranium was deposited far back in geologic time; about the search for this precious metal on the Colorado Plateau, and how it is mined and milled; and about some ways that the atom's energy is being put to work for the benefit of mankind.

THE GREATEST METAL HUNT IN HISTORY

JUST west of the Rockies, where Utah, Colorado, New Mexico, and Arizona come together, lies the Colorado Plateau . . . more than a hundred thousand square miles of rugged tableland. It is a colorful land, dotted with flat-topped mesas and strange rock formations.

Here and there may be found the crumbling homes of cliff dwellers who lived a thousand years ago, and piles of placer rocks and sluices from the more recent gold-rush days. Here, at the turn of the century, men searched the Plateau for radium ores.

The Colorado Plateau, where uranium is mined, is mostly a high table-land dotted with rugged flat-topped hills with steeply sloping sides.



During and after World War I, the Colorado Plateau was mined for vanadium, a metal used to strengthen steel. Early in World War II, the mining companies in the area, working closely with the Manhattan Project of the U. S. Army Engineers, redesigned plants to permit extraction of uranium. For the most part, though, it was a lonely land until 1948.

That year the United States Atomic Energy Commission, concerned over the nation's supply of uranium, decided to encourage exploration and mining of the uranium-bearing ores known to exist on the Plateau. Then began the greatest metal hunt in history.

From all over the country, people poured into the Plateau land . . . ranchers and oil men, clerks and laborers, storekeepers and businessmen. Some were professionals . . . the geologist with his years of training and the latest of scientific equipment. Others came with nothing but a yearning for adventure and a desire for quick wealth. All had one dream in common . . . to find uranium. Many failed; but some had the good fortune to strike it rich.

The prize — the uranium ore that was the object of their extensive search—lay buried here and there in the mesas . . . encrusted in the logs and stony beds of petrified rivers that flowed in an ancient age when our planet was still quite young.

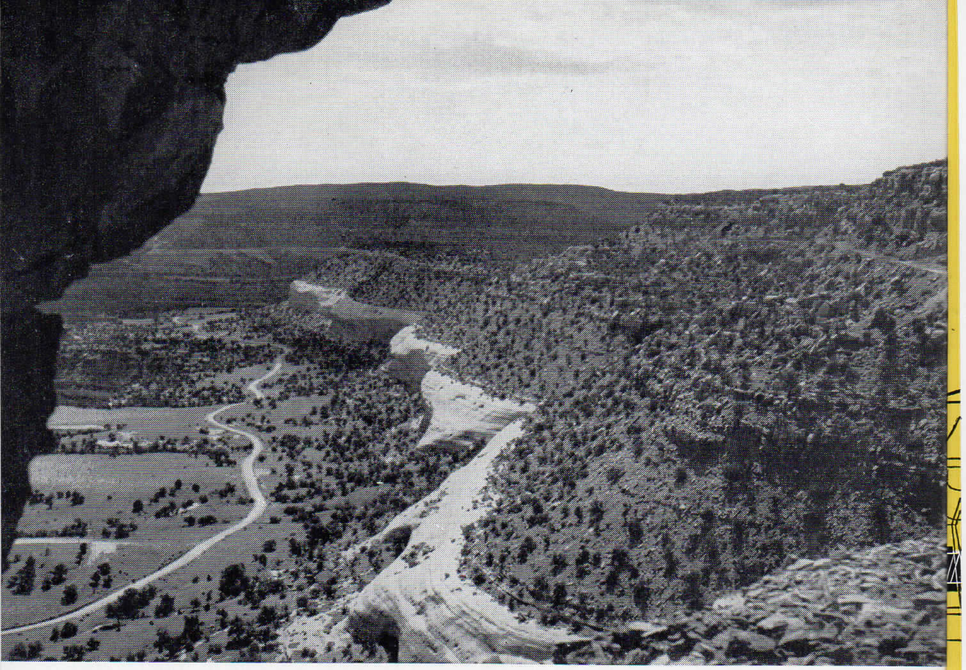
The famous French scientists, Marie and Pierre Curie, used ores found on the Colorado Plateau for their radium experiments in 1898.

Courtesy of the American Museum of Natural History

A STORY THAT BEGAN 200 MILLION YEARS AGO

THE history of the petrified rivers and the uranium that they hold began long before the Colorado Plateau and the Rocky Mountains existed. It is a story that takes us back more than 200 million years.

In that ancient age, a great inland sea covered almost the whole of the Southwest. Along its ever-changing shores lay seemingly endless wastes — sand dunes that stretched for thousands of miles.



On the walls of the mesas, you can see the horizontal formations of sandstone that were laid down ages ago by vast inland seas.

As the centuries passed, the land beneath this great sea slowly rose and the waters receded . . . leaving behind them vast salt beds. Beyond these flats were the highlands, over which the winds carried moisture-laden clouds that drenched the land with torrential rains day after day.

Rushing waters cascaded down from the highlands to the flats below, carrying with them silt and mud and gravel, which buried the sand dunes. Ultimately, a wide and gentle plain was formed and across it flowed meandering rivers.

Some geologists believe that, about this time, hot solutions were bubbling up from deep within the earth's crust . . . solutions bearing uranium and other metals. These mingled with the descending waters and as the waters flowed over the plains, decaying logs and vegetation along the way entrapped the uranium. Then, as the time went by, a burning sun dried up the rivers and left the logs to bleach on the sand. Gradually, wind-blown sands buried the logs and river beds and the uranium that they held.

Other geologists believe that the uranium came much later —that the solutions bubbled up from the earth in the same areas in which the ores are found today and then spread through fissures in the rock into the ancient river beds.

In any event, as century upon century slipped by in that unremembered time, many changes occurred. At times, ice gripped the highlands. At other times, swamps and bayous formed and provided refuge and lush pasturage for dinosaurs and other prehistoric reptiles. And with all these changes, the uranium was buried deeper and deeper.

Then suddenly the whole Southwest buckled and the earth spewed forth fire. The Rocky Mountains rose to the east and the Sierras to the west.

Once again, the land between these mountain ranges became arid . . . a land chopped into mesas and deep gorges by whining winds and rushing rivers. This is the Colorado Plateau as we see it today.

Its canyon walls reveal 200 million years of history. Preserved as sandstone are the dunes of the great inland sea, and the ancient plains lie frozen in bands of red and gray rock. There are traces, too, of the ancient winding rivers, and hidden along their petrified beds lies the uranium that the Plateau has preserved.

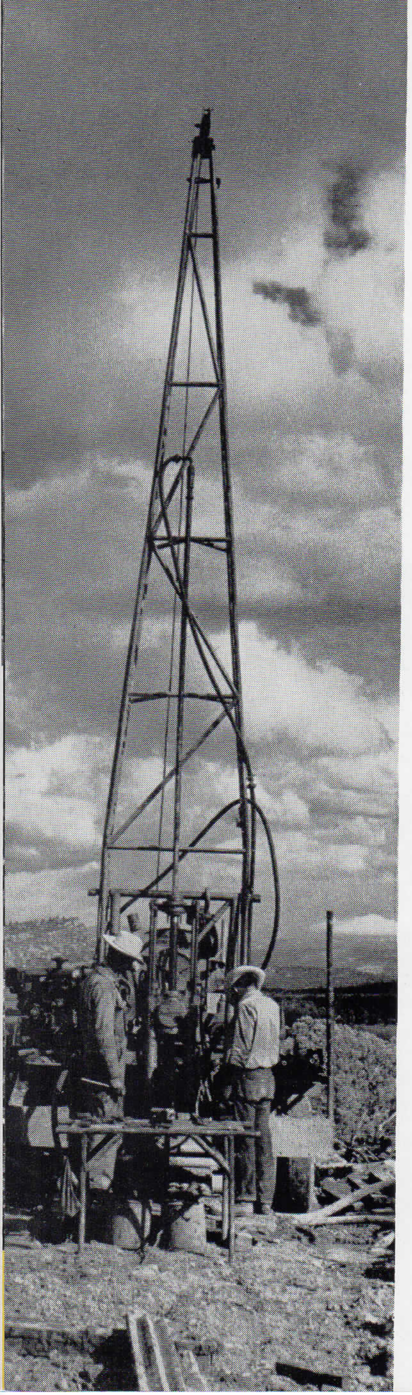
Individual prospectors and mining companies have staked hundreds of new uranium claims each year on the mesas of the Colorado Plateau.

COMBING THE MESAS FOR URANIUM ORES

FOR years, the solitary prospector has explored the Colorado Plateau for metal treasures. Lately, however, he has not been alone, for with him in the mesas have been hundreds of trained geologists and mining engineers who have been searching for the modern Klondike's prize—uranium. This organized prospecting has been said to have surpassed in scope any similar search in the history of the world.

Thousands of prospectors have been scouring every bit of the known uranium-bearing areas on the Plateau, venturing even into remote hills and canyons. They have traveled by foot, by jeep, by rugged little pick-up trucks, and by airplanes. Their tools are the Geiger counter and the scintillation counter —sensitive instruments that pick up signals from the rays emitted by uranium ores. Airborne prospectors have surveyed wide areas in just a few minutes' time.

Uranium claims are staked the same way as those for gold, copper, or any other valuable metal. First, the land is surveyed, a discovery cut is made, and then corner posts are set up to locate the claim boundaries. No claim can exceed an



area of 600 by 1500 feet. A notice is posted some place along the center line, proclaiming the discoverer's rights to whatever minerals may lie buried in the area that the prospector has staked out.

Yet even after a claim is safely registered, the prospector still does not know whether there is enough uranium to make mining worthwhile. Only by drilling deep into the silent stone of the mesa can the deposits of uranium be pin-pointed and the extent of the ore body be determined. The cuttings, or cores, obtained by drilling are examined by a geologist with a radiation counter and assayed to find out whether substantial amounts of uranium exist. These cores provide a cross section of the rock through which the drill has passed. If they show signs of strong mineralization, additional holes are sunk nearby to block out the body of ore and estimate the tonnage.

Circling the once-inaccessible mesas are hundreds of roads leading to the claim areas.

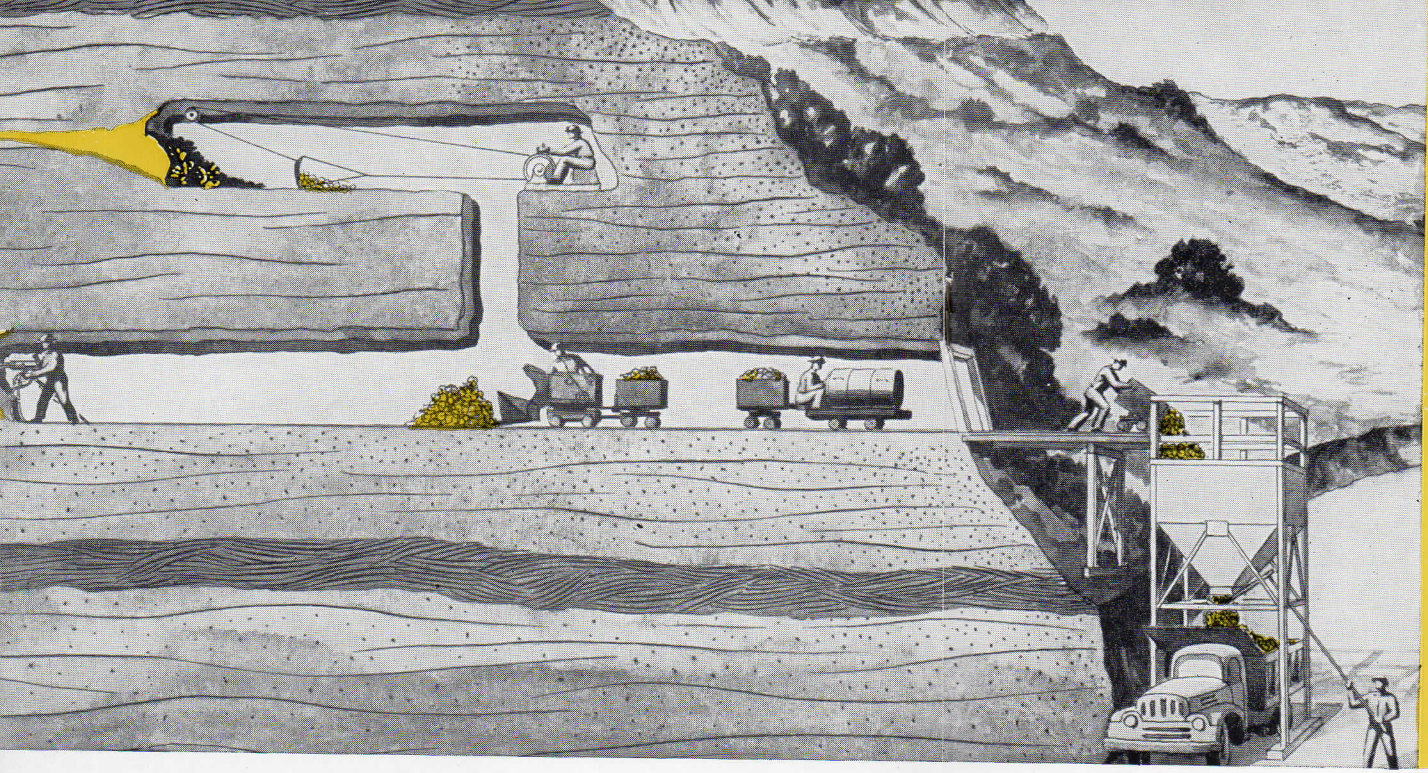
When a claim looks promising, the land is drilled to find out if there is enough uranium to make mining worthwhile.

DRILLS BITE RELENTLESSLY INTO THE HILLS

ABOUT a thousand uranium mines have honeycombed the rich underworld of the Colorado Plateau. Although several large deposits have been discovered, most of the mines are just small tunnels dug into the hills.

The miner's job is not easy. He must drill and blast through many tons of waste rock to get to the ore. In a small mine, he

Some of the uranium mines open up into caverns with bays up above.



Here is a cross section of a typical uranium mine. Many hundreds of the mines are small tunnels dug into the hills.

may use an air compressor, a jack hammer and jackleg drill, and, of course, picks and shovels. In a larger mine, he may have a big jumbo drill to pierce the ore faces, or drive diesel-powered loading and hauling equipment. Where mining is done from the surface, he may operate a gigantic electric shovel or a huge truck.

As he follows the meandering underground ore bodies, the miner occasionally comes upon evidence of the petrified river's past. Perhaps it is a log encrusted with uranium, or ripples of long-vanished waters preserved on the face of stone. He may even find traces of prehistoric plants or the footprints of a giant dinosaur that once roamed an ancient plain.

When the ore has been drilled and blasted loose with explosives, mucking machines load it into cars that will carry it out of the mine to a storage bin—ready to be sent by truck to the processing mills.

Truckers often have to forge up the sides of steep cliffs on roads sometimes no wider than the old wagon trails. Yet even on the most remote roads, several trucks may pass one another in less than five minutes' time. Those hauling ore may make two trips a day over several hundred miles of rugged terrain.

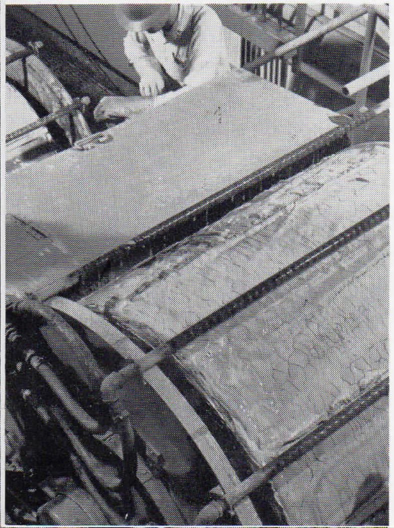
CAPTURING THE URANIUM FROM ITS ORES

A CEASELESS stream of trucks ploughs through the busy mesa country carrying uranium ore to buying stations and to about two dozen processing mills scattered throughout the Colorado Plateau.

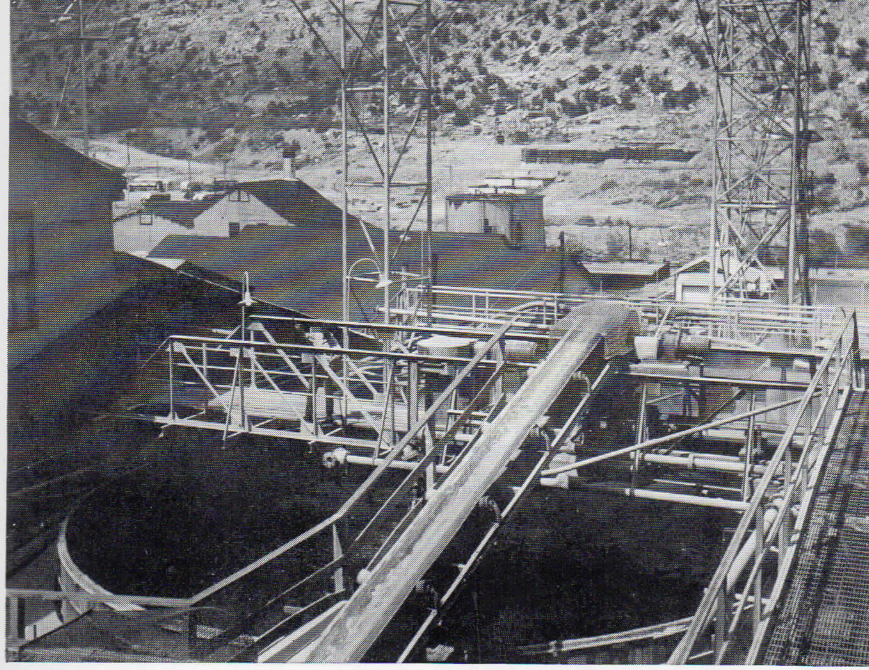
It takes careful milling and refining to recover the precious mineral from its ores. The mills must process hundreds of tons of ore daily, for each ton yields just a few pounds of uranium.

At the mill, the ore is first weighed, then dumped into receiving bins. Before treatment, it is crushed and screened to small particles. Then various chemical reagents, such as salt and acid, are added to separate the valuable mineral from the other solids present. Even the settling sands are combed for any metal remaining after the leaching processes. The final result is a uranium compound in solution. Then, in long filter presses, the liquid is squeezed out—leaving behind a bright, clay-like material called "yellow cake"—the uranium concentrate that is the end product of all the labor of the Plateau.

After it dries, this uranium concentrate is packed in steel drums for delivery to the Atomic Energy Commission. It then goes on to various plants where it is converted into "feed materials" used in the final steps of producing fissionable materials at Oak Ridge, Tennessee; Paducah, Kentucky; and other installations throughout the country.



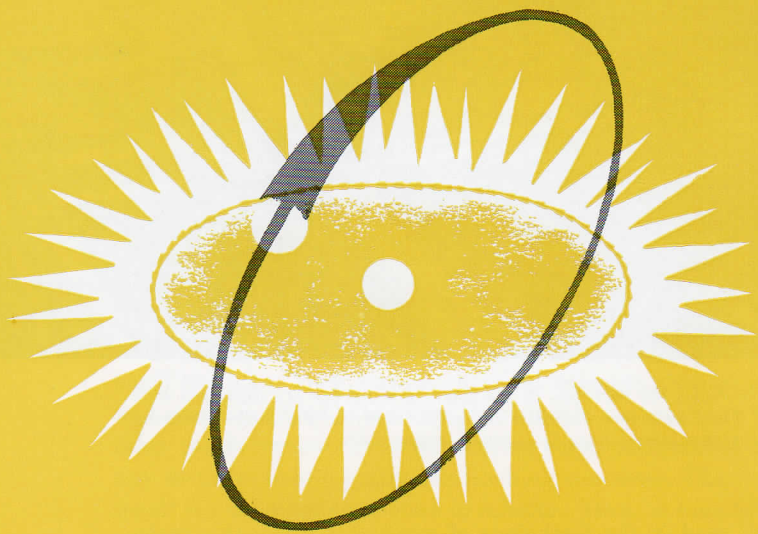
In filter presses, the liquid is squeezed out of the uranium precipitate, leaving a bright, clay-like material called "yellow cake."



At the mills, the minerals in the finely ground ore are dissolved with acid. Then in a series of vats the solids settle to the bottom, leaving the uranium concentrate in solution above them.

About 10,000 people are taking part in this uranium program on the Plateau—all contributing to an industry now valued at several hundred millions of dollars annually. It is an industry that did not exist just a few short years ago. Its success stems from a remarkable spirit of teamwork . . . teamwork between private industry and the Government in ore assaying, ore buying, the exchange of information, and all the special services that keep the complex operation going.

ENERGY THAT WAS BORN IN ANCIENT SUNS



The hydrogen atom—simplest of all.

FROM the Colorado Plateau has come a substance precious beyond imagination. For in uranium is locked tremendous energy—the same kind of energy that created our universe.

We know that there are basic elements of which all matter is composed. Many believe that these elements came from the fiery cores of ancient suns, billions of years ago.

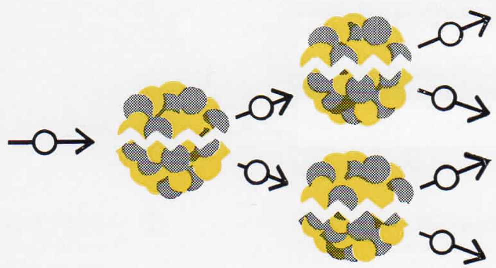
The cycle is thought to have started with hydrogen, which has the simplest atom of all. Its nucleus contains one proton, and whirling around this core is an electron.

Within suns, hydrogen atoms are believed to have fused together and neutrons joined the nucleus, forming a new element—helium. Its two protons attracted a pair of electrons. Helium, in turn, became the next heaviest element—lithium—as more particles joined its nucleus.

Thus, one by one, all the 92 elements found in nature today were forged until finally uranium, the heaviest atom of all, was created. It has a nucleus of 92 protons and nearly twice as many neutrons, held together by stellar energy which man has at last learned to control and release for his own use.

Scientists discovered that when a neutron strikes a uranium nucleus it may be absorbed. Under the strain of the added particle, the nucleus grows unstable and splits in two with a burst of energy, releasing more neutrons. In a mass of uranium, the neutrons released by one fission travel on to produce further fissions—liberating more and more energy in an intense chain reaction. It is this energy, controlled by man, that will some day light our cities, run our factories, and power our ships and planes.

Neutrons from within a uranium atom shoot out and smash other atoms, liberating more and more energy in an intense chain reaction.

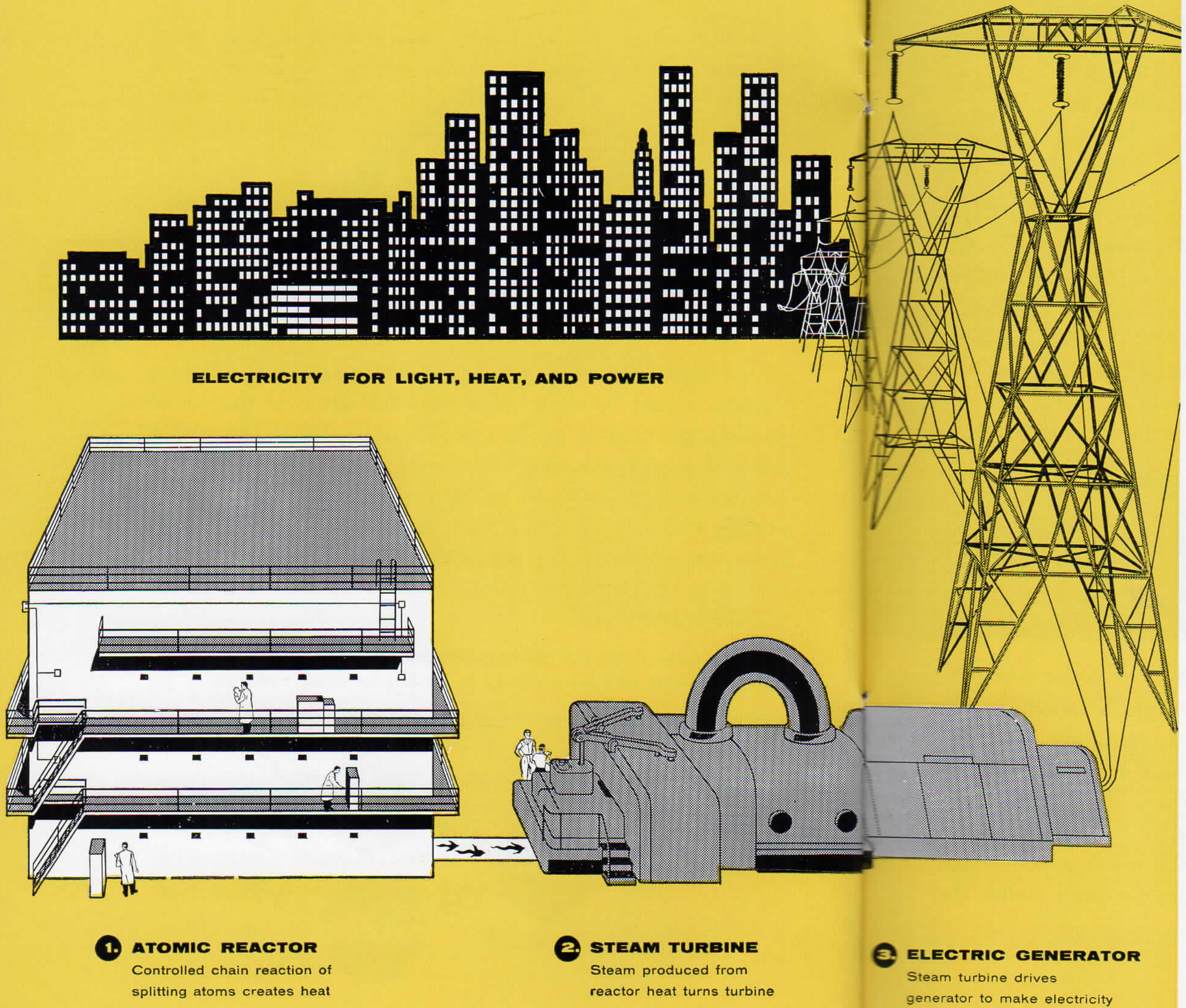


HARNESSING THE ATOM'S ENERGY

To harness the atom's energy many different kinds of nuclear reactors, or atomic furnaces, are being built. One type uses uranium slugs as fuel.

As these slugs are pushed into the reactor and the controls adjusted, the uranium atoms begin to split or fission and the chain reaction builds up—producing heat. A liquid pumped through the reactor is heated as it flows around the hot slugs. Passing over water-carrying pipes the liquid imparts its heat to the water, turning it to steam.

An atomic power reactor thus produces steam to turn a turbine to drive a generator to produce electricity. The electricity goes through transmission lines to the world of man to light his cities and lighten his labor with energy created by suns that were born and died billions of years ago.



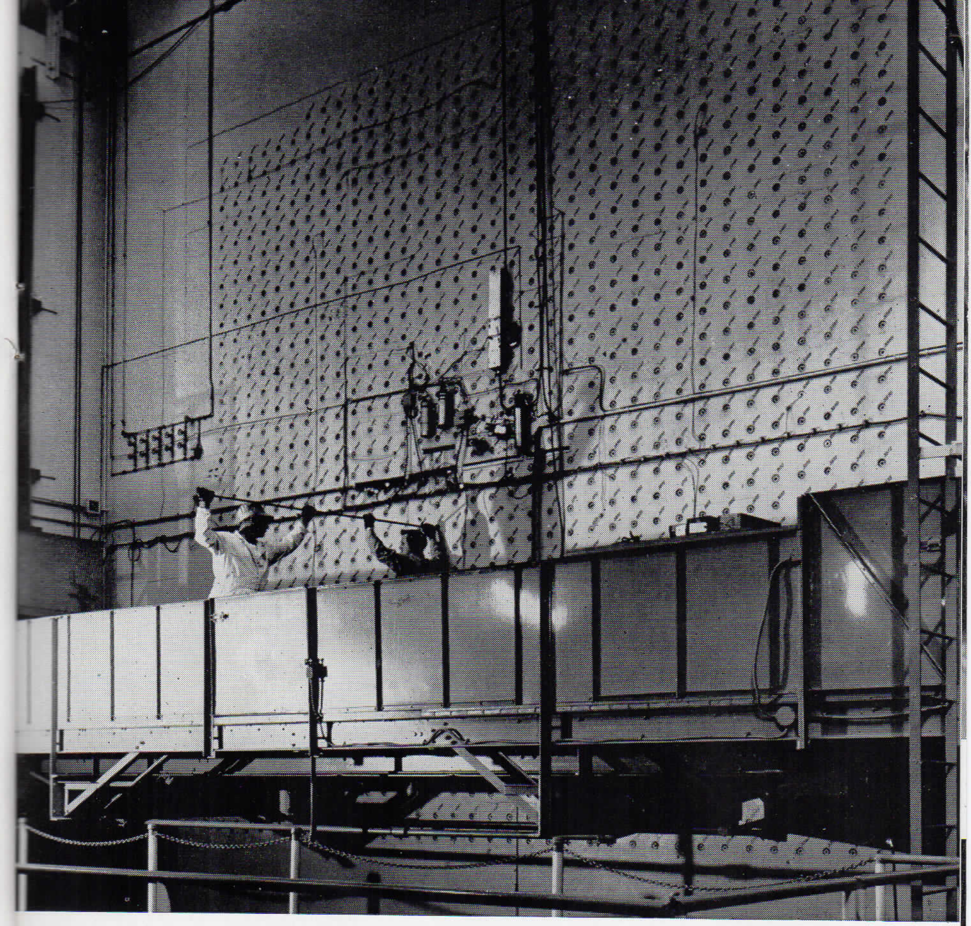
How the Atom Makes Electric Power

THE PRODUCTION OF RADIOISOTOPES

AN atomic reaction gives off both heat and radiation. Thus, when certain elements are placed in a reactor and bombarded by flying neutron "bullets," their atoms become radioactive also. In other words, they become unstable and break down or decay—emitting energy in the form of radiation or rays. These radioactive atoms are called "radioisotopes." They have proved of tremendous value in medicine, agriculture, industry, and particularly in fundamental research.

The nation's principal source of radioisotopes is the big atomic reactor at Oak Ridge National Laboratory, which has been in continuous use since 1943. This reactor is essentially a huge cube of graphite, shielded with concrete. On its face are more than 1200 openings through which uranium fuel is inserted and other additional slots in which materials to be irradiated are placed.

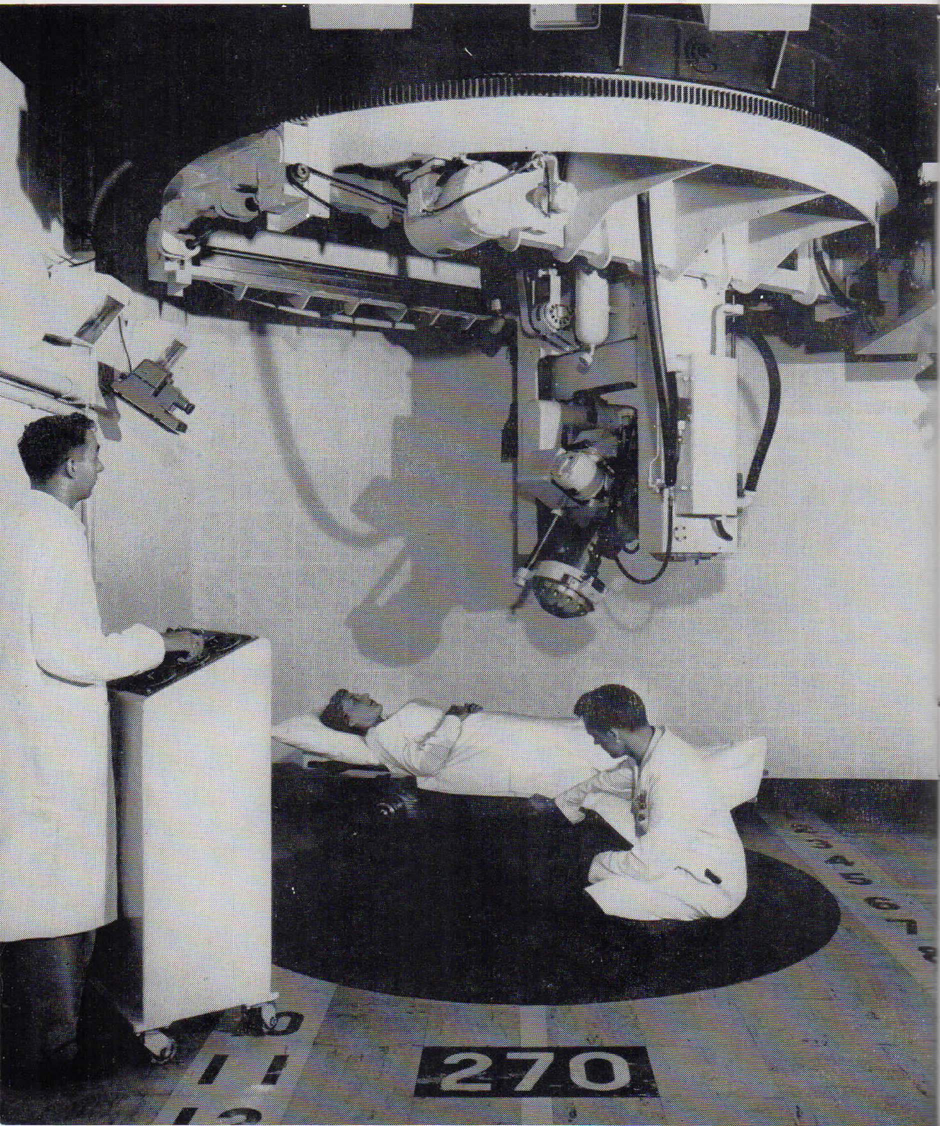
About 1000 shipments of radioisotopes a month go out from Oak Ridge National Laboratory to hospitals, industrial plants, and laboratories all over the world where they have many uses. First, however, most of them must be carefully processed and purified. They are handled by remote control, with instruments behind thick walls and heavy windows that hold back the dangerous rays. Mirrors overhead enable the

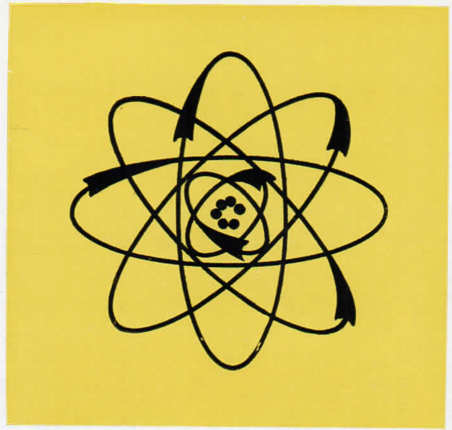


This huge atomic reactor at Oak Ridge National Laboratory, in continuous operation since 1943, is the nation's chief source of radioisotopes.

operator to see behind the walls and select radioisotopes from storage racks. Mechanical tongs move bottles, uncap them, measure out specific quantities of solutions into shipping bottles, and even seal the bottles. The tongs move on rails along the top of the barrier.

PUTTING RADIOACTIVE ATOMS TO WORK





RADIOISOTOPES have endless uses. When they are injected in minute quantities into living things, their radiation reveals the paths they take through the body. Thus radioactive iron can be followed as it is built into blood cells, or radioactive phosphorus as it leaves the soil and enters a plant to nourish it.

Radiation from isotopes also can help save lives. The rays from irradiated cobalt, cesium, and gold, for instance, are used to attack cancerous tissue. Radioactive iodine, for example, can swiftly and accurately diagnose thyroid disease. Effective diagnosis leads to early treatment.

For industry, radioisotopes are saving more than $200 million a year. They are used to measure the thickness and monitor the manufacture of many kinds of products—metals, paper, plastics, rubber, and textiles. Also, they help check the quality of products.

In medicine, the radioactive atom is proving beneficial both in diagnosing and treating disease.

A vast new field of research in which radioactivity is proving valuable is food preservation. After exposure to atomic rays, potatoes can be stored for years without sprouting. Because radiation will destroy living cells, scientists are using certain radioisotopes to kill bacteria that spoil food. Today, irradiated meat remains fresh for weeks. Tomorrow, it may last for months as fresh as the day it was packaged.

In laboratories across the land, scientists are using isotopes in the investigation of plant growth and nutrition. When absorbed by plants, radioisotopes reveal how cells use energy from the sun to build living tissues. They help researchers learn how plants absorb elements from the soil in such tiny amounts that only radiation could detect them.

Radiation also has proved useful in plant-breeding experiments. Under normal conditions, a researcher might have to wait years for a mutation to take place. However, radiation accelerates mutations, so plant-breeding experiments can now be done in a few summers. Such studies have already helped to develop new and hardier strains of food crops.

But most important of all, the radioisotopes produced by uranium are helping scientists penetrate the mystery of life itself. Probing the endless forms and variety of living things, they are coming ever closer to an understanding of the wondrous process by which cells function. They can follow radioisotopes as they are digested and built into cells and move about the body. From these studies, man has developed a whole new concept of what a dynamic and ever-changing thing a living organism is. Thus, the isotopes formed by uranium's sun-fused energy are fulfilling atomic energy's greatest promise—an understanding of the very nature of life.

Scientists measure the radioactive breath of burros in investigating one of the most basic processes of all—metabolism.

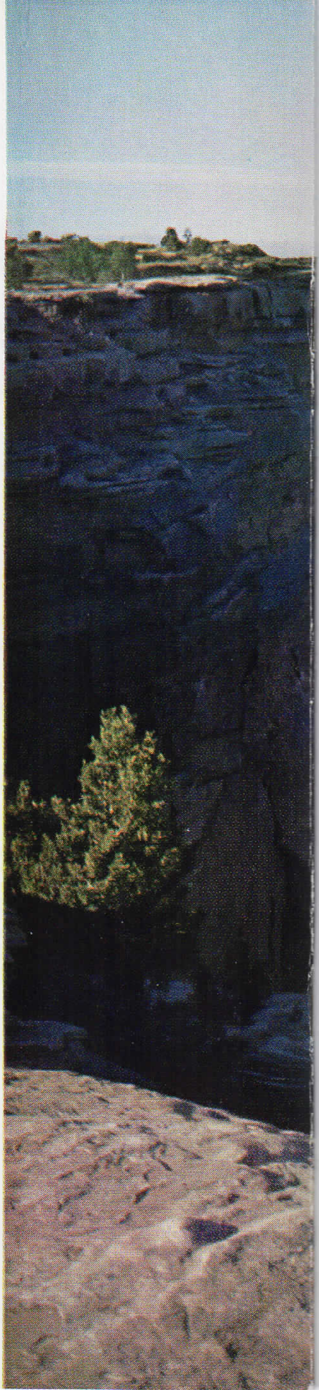
In laboratories across the land, scientists use isotopes to study the basic processes that affect life and growth.

Union Carbide Corporation and the United States Bureau of Mines express their appreciation to the United States Atomic Energy Commission for its technical assistance in the preparation and production of the film, "The Petrified River." Copies of the film may be obtained, without rental charge, from United States Bureau of Mines, Graphic Services, 4800 Forbes Avenue, Pittsburgh 13, Pa. It is 16mm., color, sound, and runs 28 minutes. (This booklet was not printed at Government expense.)

Additional copies of this booklet may be obtained by writing to:

Public Relations Department
Union Carbide Corporation
270 Park Avenue
New York 17, New York

You are invited to visit the exhibit "Atomic Energy In Action" in the new Union Carbide Building in New York.



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Printed in U.S.A.

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