This booklet in the "Understanding the Atom" series includes annotated bibliographies for children (grade level indicated) and adults. Over 100 basic books on atomic energy and closely related subjects are alphabetized by title and an author index. A list of publisher addresses are included. A brief introduction to library usage is given. The booklet is illustrated with photographs of nuclear physicists, research installations and some applications of nuclear power. (AL)
The Understanding the Atom Series

Nuclear energy is playing a vital role in the life of every man, woman, and child in the United States today. In the years ahead it will affect increasingly all the peoples of the earth. It is essential that all Americans gain an understanding of this vital force if they are to discharge thoughtfully their responsibilities as citizens and if they are to realize fully the myriad benefits that nuclear energy offers them.

The United States Atomic Energy Commission provides this booklet to help you achieve such understanding.

Edward J. Brunenkant
Director
Division of Technical Information

UNITED STATES ATOMIC ENERGY COMMISSION

Dr. Glenn T. Seaborg, Chairman
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Dr. Clarence E. Larson
# Books on Atomic Energy for Adults and Children

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United States Atomic Energy Commission  
Division of Technical Information  
Library of Congress Catalog Card Number: 77-602521  
1969
The San Onofre Nuclear Generating Station near San Clemente, California, has a net electrical capacity of 430,000 kilowatts and began commercial operation in 1967.
Introduction

This booklet contains two lists of atomic energy books—one for students and one for adults. The student list has grade annotations. The lists are not all-inclusive but comprise selected basic books on atomic energy and closely related subjects.

Those books marked OP (out of print) can in most cases be obtained through libraries.

The books are alphabetized by title, and an author index begins on page 39. A list of publishers' addresses begins on page 45.

This booklet is one of the Understanding the Atom series; others are listed on the inside back cover, along with information on how to obtain them. Each of the other booklets contains a list of references specifically related to its subject matter, including books, reports, articles, and motion pictures; the references on the pages that follow do not duplicate those in the other booklets, except for a few titles of a general nature.

The SNAP-3A generator (white ball at bottom), attached to a satellite to provide energy for the satellite's transmitters, was the first use of atomic power in space. Launched in 1961 with a design life of 5 years, SNAP-3A is still operating. (SNAP is an acronym for Systems for Nuclear Auxiliary Power.)
How to Obtain Information in a Library

Persons seeking information on nuclear energy can find many other sources in public or school libraries. The library card catalogue contains an alphabetical list of books filed by author’s last name, title, and subject. Each card will have a call number in one corner. This number is usually derived from the Dewey Decimal System, which classifies books in the following way:

000 General Works
100 Philosophy
200 Religion
300 Social Sciences; Sociology
400 Linguistics
500 Pure Science
600 Applied Sciences
700 Arts and Recreation
800 Literature
900 History

Books on nuclear physics would be found in the 530 group, which is the physics classification.

The Subject Guide to Books in Print, revised annually, is a good supplement to the card catalogue. This guide is especially helpful since its headings are broken down. For example, under Atomic Energy, one finds subheadings such as Dictionaries, Economic Aspects, History, International Control, etc.

Encyclopedias provide a good starting point in an information search. The Encyclopedia Americana has 8 text pages under Atomic Energy in addition to a glossary, cross references, and bibliography.

The Reader’s Guide to Periodical Literature, issued monthly, lists articles by subject and author from 126 periodicals. (Titles are given only for works of fiction.)

Periodicals such as Science, Scientific American, Science Digest, Popular Science, and Science News are often sources of nuclear energy articles. The first two issue indexes.

Good general guides to information are:


The following bibliographies are also useful:


The AAAS Science Book List for Young Adults. Compiled under the direction of Hilary J. Deason. 1964. 250 pp. AAAS, $3.50 (hardback); $2.50 (paperback). OP.

PHOTO CREDITS

Frontispiece, Southern California Edison Company; 4, Stanford University; 8, U. S. Navy; 11, Brookhaven National Laboratory; 12, Westinghouse Electric Corporation; 15, Argonne National Laboratory; 16, Willard F. Libby; 19, Martin-Marietta Company; 20, National Rocket Development Station; 25, Argonne National Laboratory; 26, Lawrence Radiation Laboratory; 27, Lottie Jacob; 28 (top) Mary E. Weeks, Chemistry and Physics; 28 (center) Lawrence Radiation Laboratory; 29, General Atomic Division, General Dynamics Corporation.
An aerial view of the 2-mile electron accelerator at Stanford University in California, and the experimental buildings and other facilities required for the scientists, engineers, and other workers, who study the fundamental nature of matter.
Books for Children

Explains the most common types of accelerators, the history of their development and the way in which each type contributes to nuclear physics. Grades 9-12.

Principles and concepts of atomic science are defined. Included are the electrical nature of matter, the discovery of the electron and the nucleus, the meaning of quantum mechanics, wave theory of the atom, the nature of chemical bonding, the uncertainty principle, gas laws and ideal gases, and the geometry of molecules. Grades 10-12.

A picture book of peaceful applications of atomic energy. Each application is illustrated by one or more photographs and described in a brief paragraph. Grades 4-8.

Describes the nature and structure of the atom and presents many safe home experiments, such as producing and controlling an electron beam, photographing alpha tracks, observing scintillations, making a reactor model, and constructing a Van de Graaff generator. Grades 8-12.

A lavishly illustrated history of nuclear submarines. William Anderson was the captain of the Nautilus, the first atomic submarine. Grades 4-8.
A simple book for young children.
Grades 1-3.

The construction and operation of the NS Savannah are explained in simple language. Good photographs and a glossary are included.
Grades 7-11.

A simply written history of nuclear energy with special sections on nuclear power and isotopes.
Grades 4-6.

An elementary introduction to nuclear energy principles.
Grades 3-6.

Describes applications of atomic energy in agriculture, industry, and medicine. Radioactivity and its control and the effect of bomb tests on the weather are also examined.
Grades 7-11.

A nontechnical presentation of atoms and the laws governing their behavior.
Grades 7-9.
The NS Savannah, the first cargo-passenger ship to be driven by nuclear power, slides down the ways at launching ceremonies in Camden, New Jersey, in 1959.
The USS Nautilus, the first atomic submarine, is escorted into New York harbor after her voyage under the arctic ice cap in 1958.
A popular account of atomic theory tracing various scientific discoveries that culminated in the final isolation of the atom.
Grades 7-9.

A comprehensive and interesting discussion of the elements.
Grades 8-12.

This interesting biography includes a brief, but very helpful, pronouncing gazetteer of the German, Swiss, and Dutch names in the text.
Grades 7-10.

A well-illustrated history of the chemistry of the elements.
Grades 9-12.

An historical survey of the discovery of the elements.
Grades 7-9.

How transuranium elements were discovered, their position in the periodic table, and predictions of further discoveries.
Grades 6-9.

A biography of the man who built the first reactor.
Grades 5-8.

A manual of 54 experiments that demonstrate the fundamentals and some of the applications of nuclear energy.
Grades 8-12.


This well-written and well-illustrated book gives directions for conducting experiments and building with ordinary materials an assortment of nuclear devices.
Grades 5-8.


The theory of radioisotopes and how they are used in laboratories, hospitals, and on farms.
Grades 7-10.


The life and accomplishments of a great scientist.
Grades 7-12.


This sumptuously illustrated history provides an informative explanation of nuclear physics in addition to comprehensive coverage of the bomb's development and use.
Grades 5-9.


This comprehensive, well-written text explains nuclear energy and its applications.
Grades 7-10.
The striking effect of radiation in preserving foods is demonstrated above. The bottom potato was exposed to 20,000 rads of gamma radiation; the top one was not treated. Both were stored for 16 months and then this picture was taken. The irradiated potato was still firm, fresh-looking, edible, and had no sprouts.
The lights of downtown Pittsburgh. The Shippingport Atomic Power Station, the first full-scale, nuclear-electric station built exclusively for civilian needs, provides electricity for the homes and factories of the greater Pittsburgh area. The station began commercial operation in 1957.
This story of nuclear energy and its applications is supplemented by a biographical section on nuclear physicists, a glossary of terms, and a bibliography.
Grades 7-9.

A nuclear reactor provides power for the "atomic energy town" of the title. A good explanation of how and why a nuclear power plant works is followed by descriptions of other peaceful uses of nuclear energy. A glossary, reference list, and a list of projects are appended.
Grades 3-6.

Atomic energy history is told through the work of pioneer scientists from Thales to present-day researchers.
Grades 7-9.

An exploration of the structure of matter.
Grades 2-6.

Mr. Tomkins Explores the Atom. George Gamow. 1945. 97 pp. Cambridge, $2.95.
The author uses the comic adventures of a fictional character to explain nuclear energy. Mr. Tomkins discovers molecular motion, the intricacies of the electron, and the principles of the cyclotron in his search for the perfect gambling system.
Grades 7-9.

A substantial and interesting account of neutron physics.
Grades 7-9.

An exciting, suspenseful, and humorous biography of one of the pioneers in atomic energy. Includes a glossary and references.
Grades 8-12.

An historical account of the noble gases, which, until 1962, could not be made to combine chemically with each other or with other elements.
Grades 8-12.


A nonmathematical textbook written for high school students. The basic science of the nucleus is stressed.
Grades 10-12.

Our Friend the Atom. Heinz Haber. 1957. 165 pp. Golden Press, $4.95 (hardback) OP; Dell, $0.35 (paperback).

Atomic history and theory are presented and dramatically illustrated, using the old fairy tale of the Fisherman and the Genie as an introduction.
Grades 7-9.


The birth of atomic energy, early experiments to harness it, its present uses, and its fabulous future.
Grades 4-6.


A well-illustrated, nontechnical introduction to atomic energy for high school science students. Includes a useful glossary.
Grades 9-12.

The Questioners: Physicists and the Quantum Theory. Barbara Lovett Cline. 1965. 274 pp. Crowell, $5.00; New American Library, $0.75 (paperback) with the title Men Who Made a New Physics: Physicists and the Quantum Theory.

An exceptionally well-delineated and personable account of the development of the quantum theory by physicists in the first quarter of this century.
Grades 9-12.
Crystals of xenon tetrafluoride created in the experiment that first combined one of the noble gases with another element in 1962.
The age of this 1000-year-old linen wrapping from the Dead Sea Scroll containing the Book of Isaiah was determined with the isotope, carbon-14.

This 9000-year-old rope sandal, one of a pair of 300 pairs found in an eastern Oregon cave, was also dated with carbon-14.
Fifty-one experiments for the enrichment of high school courses in biology, chemistry, and physics.
Grades 8-12.

The broad spectrum of radioisotope use is presented—ranging from determining the age of the Dead Sea Scrolls to locating a brain tumor.
Grades 7-10.

A stimulating nonmathematical account of the classic early experiments that advanced knowledge about atomic particles.
Grades 9-12.

Historical survey of nuclear physics beginning with Roentgen’s discovery of X rays and concluding with the discoveries of the rare elements.
Grades 10-12.

Andrade was one of Rutherford’s assistants at the University of Manchester when he conducted his investigations of radioactivity that won him the Nobel Prize in 1908.
Grades 10-12.

This outstanding history of nuclear research from Roentgen to Fermi is dramatically presented. The uncertainty of the unknown, the accidental discovery and the often lengthy and tedious research are woven into a fascinating tale. The international aspect of science is revealed in this story of scientists from around the world who pooled their knowledge and experience to unlock “the secrets of the mysterious rays”.
Grades 4-8.

This introduction to nuclear energy includes science projects and experiments.
Grades 9-12.


This popular narrative concerns development of the first sustained nuclear chain reaction and of the subsequent developments to use atomic energy in war, research, and industry.
Grades 8-12.


An interesting and well-illustrated account of atomic energy from Democritus through the development of SNAP reactors. Anderson was captain of the first atomic submarine, the Nautilus.
Grades 7-12.


This detailed biography, illustrated with line drawings, historical photographs and papers, is a fine addition to Watts' "Immortals of Science" Series.
Grades 5-8.


Dr. Frisch presents a history of nuclear energy research and provides experiments for the reader. He gives a personal account of the pioneering work in which he and Lise Meitner explained the splitting of uranium and introduced the term "nuclear fission".
Grades 9-12.


This book provides a history of and an introduction to nuclear energy. About half of the text covers current peaceful applications while the other half is devoted to explanations of atomic energy principles and history.
Grades 7-9.
Above is the first nuclear-powered weather buoy located in the center of the Gulf of Mexico. This weather station, part of the U.S. Navy's NOMAD system, is on a barge 10 feet x 20 feet, and is anchored in 12,000 feet of water. On the right, engineers prepare to install the SNAP-7D generator. (NOMAD is an acronym for Navy Oceanographic Meteorological Automatic Device.)
Model of an advanced NERVA rocket engine that will produce 60,000 to 70,000 pounds of thrust and approximately 1500 megawatts of power. (NERVA is an acronym for Nuclear Engine for Rocket Vehicle Application.)
Books for Adults


This text, couched in a question and answer form, provides a simple explanation of nuclear energy and its applications.


Scientific and philosophic concepts concerning the physics, chemistry, and physiology of matter from the beginning of scientific research are presented eloquently.


A popular-level discussion of nuclear structure and the applications of nuclear energy.


A one-volume encyclopedia prepared for nonspecialists. The entries, arranged alphabetically, range from simple explanation to treatment in depth.


This source book combines the features of a dictionary and an encyclopedia. It is designed to be of value to the medical and biological professions and as a quick reference work for researchers, teachers, administrators, and students. Its alphabetically arranged entries vary from concise definitions to journal-length articles.


A complete account of the wartime project that developed the first nuclear weapons and of the considerations that prompted their use.


This collection of addresses and articles is a valuable contribution to the philosophy of atomic physics.
A personal narrative of the research that led to the release of atomic energy on a useful scale by a scientist who played a principal part in the atomic bomb project during World War II.

A comprehensive history of the development of atomic energy in the United States from the transfer of the government's atomic energy program to the AEC on January 1, 1947, until the end of 1952.

This book, which can be understood by anyone who has had a high school physics course, presents atomic theory development from Dalton through Bohr. It achieves a good balance between popular treatments and highly technical works without slighting the technical aspects.

A nontechnical introduction to atomic energy applications, including nuclear power and radioisotope use.

Atoms in the Family: My Life with Enrico Fermi. Laura Fermi. 1954. 267 pp. Chicago, $5.00 (hardback); $1.95 (paperback).
Laura Fermi writes about her husband, Enrico Fermi, the physicist who led the group that built the first nuclear reactor.

An account of Newton's formulation of classical physics that includes the historical events leading to this master stroke.

Seven physics immortals—Archimedes, Galileo, Pascal, Newton, Huygens, Von Helmholtz, and Einstein—tell the stories of their discoveries.

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Laura and Enrico Fermi. In 1942 Fermi led the team of scientists who built the first nuclear reactor, a model of which is shown below.
This "hall of mirrors" helps physicists photograph tracks of nuclear particles passing through spark chambers. The dotted lines in the mirrors are particle tracks. Analysis of these tracks enables scientists to gather new information on the behavior and structure of matter.

A popular-level, well-illustrated book describing Camp Century, a scientific research station directed toward opening the polar regions for human use. This army base, constructed under the ice 800 miles from the North Pole, used a nuclear reactor to provide power, heat, and light.


This excellent collection of essays, book reviews, and profiles originally appeared in The New Yorker. Several of the outstanding ones include "A Question of Parity: T. D. Lee and C. N. Yang", "I am this Whole World: Erwin Schroedinger", and "Einstein and Bohr: A Debate".


This discussion of the development of 20th century physics is designed for both scientists and laymen who are interested in modern physics as a chapter in the history of human thought. Mathematics is kept to a minimum.


This dictionary of terms also contains brief biographies of important research scientists in this field and descriptions of organizations that sponsor atomic research.


These definitions and explanations, given in nontechnical language as much as possible, form an admirable guide to terms used in nuclear science.

Day of Trinity. Lansing Lamont. 1965. 333 pp. Atheneum, $6.95; New American Library, $0.75 (paperback).

A lively narrative by a Time correspondent focuses on the Los Alamos scientists who developed the nuclear device that was detonated at the Trinity site near Alamogordo, New Mexico, on July 16, 1945. This was the world's first nuclear explosion.

This semi-technical book describes the experimental and conceptual developments that led to the discovery of the electron.


This book, which describes the role of the government in science education and information, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Many photographs.


A brilliant biography that reveals the richness of Einstein's life and work and the tremendous impact he made upon physics.


These researches won for Millikan the Nobel Prize for Physics in 1923. An introduction by an associate of the author puts the discoveries in perspective.


An account of the basic properties of particles and the experimental techniques used to study them.


Dr. Yang was a co-winner of the Nobel Prize along with Dr. Tsung Dao Lee for suggesting the experiments that led to the downfall of the conservation of parity principle. Here he provides a general outline for laymen of the history of elementary particle research during the last 60 years.


Traces the steps from the mechanical view of the universe held by the classical physicists through subsequent developments that led to quantum mechanics.
Albert Einstein in 1905, the year he postulated his Special Theory of Relativity.
John Dalton

A well-illustrated and interesting account of desalination today with
a section on nuclear energy applications.

Genetics in the Atomic Age. (2nd edition). Charlotte Auer-
A popular-level, well-written study of genetics and the effects of
radiation.

The German Atomic Bomb: The History of Nuclear Research in Nazi
The German nuclear research program during the Second World
War.

The Heart of the Atom: The Structure of the Atomic
(hardback); $1.25 (paperback).
Describes all aspects of this "atomic heart": its structure, motion,
radiation, and large-scale application.

Inside the Nucleus. Irving Adler. 1963. 192 pp. Day, $4.95 (hard-
bback); New American Library, $0.60 (paperback).
An explanation of the structure of the atom and the amazing
discoveries in recent years about its nucleus.

An Introduction to Physical Science: The World of Atoms. (2nd
This textbook was written for college humanities students.

$3.75.
Isotope use in industry, science, medicine, and agriculture is
discussed in nontechnical language.

J. J. Thomson: Discoverer of the Electron. George Thom-
This biography, written by J. J. Thomson's son, describes his
research at the famed Cavendish Laboratory in Cambridge, England.
A biography for the general reader and the high school science student. Dalton is famous for his development of chemical combinations based on atomic theory. This provided the basis for modern structural theories of chemistry.

Manhattan Project. Stephane Groueff. 1967. 372 pp. Little, $6.95 (hardback); Bantam, $1.25 (paperback).
A very complete account of all branches of the wartime Manhattan Project, which culminated in the construction of the first atomic bomb.

Man-made Transuranium Elements. Glenn T. Seaborg. 1963. 120 pp. Prentice-Hall, $4.95 (hardback); $1.50 (paperback).
The discovery, properties, and applications of elements heavier than uranium are considered in this book, which is designed as an introduction to the subject.

These essays on physics, which include the author's Nobel Prize speech, were written by one of the pioneers in quantum mechanics.

A history of atomic pioneers and their work. American wartime development of the nuclear weapon and subsequent accomplishments of the peaceful atom are also discussed.

One of the original members of the AEC, later its Chairman, recalls his experiences in a lifetime of public service.

The achievements of the Manhattan Project, the formulation of national and international policy on atomic energy, and the legislative origins of the AEC.
The tank of this solar neutrino detector, located 4850 feet underground in the Homestake Gold Mine at Lead, South Dakota, contains 100,000 gallons of perchloroethylene.
The Neutrino: Ghost Particle of the Atom. Isaac Asimov. 1966. 223 pp. Doubleday, $4.95 (hardback); Dell, $1.95 (paperback).

The author traces a century-long chain of events that proved, to the surprise of scientists, that a strange little particle called the neutrino actually exists and is produced in astronomical numbers inside the sun and other stars.


This encyclopedia is designed to be of use to both scientists and others. In addition to the nuclear items, entries are included from other technical fields with which nuclear energy is interrelated.


An interesting biography of one of the pioneers in the study of the internal structure of the atom.


The history of the wartime atomic energy effort as told by its director.


This book, which surveys the U. S. progress in the development of peaceful uses of atomic power, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Many photographs.


This source book was prepared for commercial shippers, port authorities, regulation officials, construction and design engineers, writers and other interested persons. A substantial portion of the book is devoted to discussions of the NS Savannah, the first commercial nuclear ship.


This book, which describes the scope and pace of nuclear research, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Many photographs, tables, and graphs.
An elementary explanation of nuclear energy is followed by descriptions of nuclear weapons, explosions, and their effects. The last chapter deals with protection from such explosions.

A nontechnical story about the city where enriched uranium was produced for the first nuclear weapons: selection of the site, construction of the facilities, and community life.

Robert Oppenheimer's work as a scientist, teacher, and public servant is told in the personal recollections of his colleagues and friends. Illustrated.

Otto Hahn, winner of the 1944 Nobel Prize for his work in atomic fission, reviews the pioneer days in which a new science was created, and the role he played in its development.

An account of the program in controlled nuclear reactions carried out by the U. S. Atomic Energy Commission during the period 1951–1958.

Introduces the student or layman to the principles of atomic physics and biology and their interplay, with emphasis on the impact of radiation on human and animal life.

A careful popular-level discussion on the genetic effects of radiation.
Enormous machines and complex equipment, such as the giant Astron facility shown above, are required for nuclear fusion research.
The first pure californium, magnified about 70 times, was isolated in 1960. The crystals are lodged in a capillary tube.

This book, which surveys the major advances in the use of radioisotopes and radiation in medicine, agriculture, and industry, was one of the Atomic Energy Commission presentation volumes at the 1964 Geneva Conference. Well illustrated.

Relativity for the Million. Martin Gardner. 1962. 182 pp. Macmillan, $6.95; Pocket Books, $0.95.

A popular introduction to a complex subject. Well illustrated. Includes a glossary and supplemental references.


A readable encyclopedic record that surveys the field from Roentgen's time to the present.


A standard reference work, written for both scientists and the public.


A complex subject is presented in a clear and fascinating way in this beautifully written book. Philosophical as well as scientific implications of quantum mechanics are discussed. A glossary and a well-annotated reference list are included.


The development of the quantum theory presented in nontechnical language.


This book, based on lectures delivered by the author at Yale in 1957, covers the plutonium story, chemical properties of the actinide elements, nuclear properties of the transuranium elements, and future synthetic elements.
Understanding Physics. 3 volumes. Isaac Asimov. 1966. 256 pp. each. Walker, $6.50 each; New American Library, $0.95 each (paperback).

Surveys the development and growth of the physical sciences in terms that the general reader can grasp. Volume I deals with motion, sound, and heat; Volume II with light, magnetism, and electricity; Volume III with the electron, proton, and neutron.


The progress of physics from the Greek philosophers through classical physicists to Einstein, dealing with the tools of physics, methods of discovery, electricity, magnetism, light, general relativity, the puzzle of time, the birth of galaxies and planets, radioactivity, energy quanta, lasers, and many other subjects.


A brief and simple presentation of this field.


Contains the actual text of landmark documents in the history of atomic physics, each preceded by commentary that places it in the context of the discoverer's personal life and in the conditions prevailing in science and in society in his time.


This presentation elucidates the new theory of the universe based on atom-smashing experiments that reveal symmetry in the production of particles and antiparticles. This new cosmology is based on the complete symmetry between matter and antimatter.
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