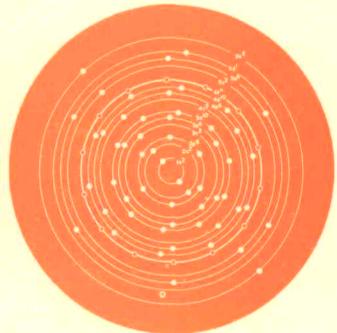
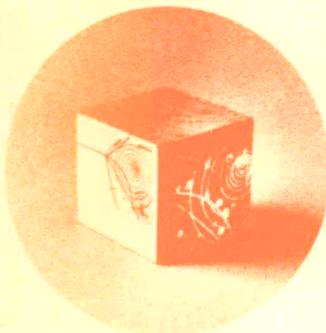
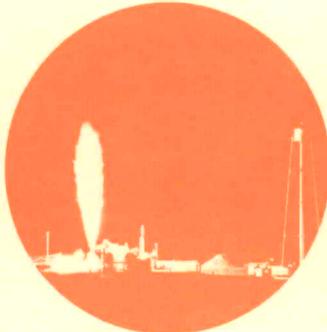


# Index to the Understanding the Atom Series

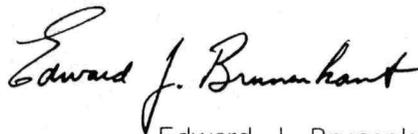
U.S. ATOMIC ENERGY COMMISSION Division of Technical Information



## 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  
James T. Ramey  
Wilfrid E. Johnson  
Dr. Theos J. Thompson  
Dr. Clarence E. Larson

# Index to the Understanding the Atom Series

## INTRODUCTION

The U. S. Atomic Energy Commission publishes the Understanding the Atom Series of educational booklets for high school science students and their teachers. This series explains many aspects of nuclear science including its history and applications. These booklets are described on page 30.

Because these 51 booklets cover such a variety of scientific fields, this index was prepared to help the reader find quickly those booklets that contain the information he needs.

The booklets are identified by a lettered code in the index. On the next two pages are lists of the booklets in alphabetical order by title and by code.

Information on obtaining these booklets and other educational materials is on page 30.

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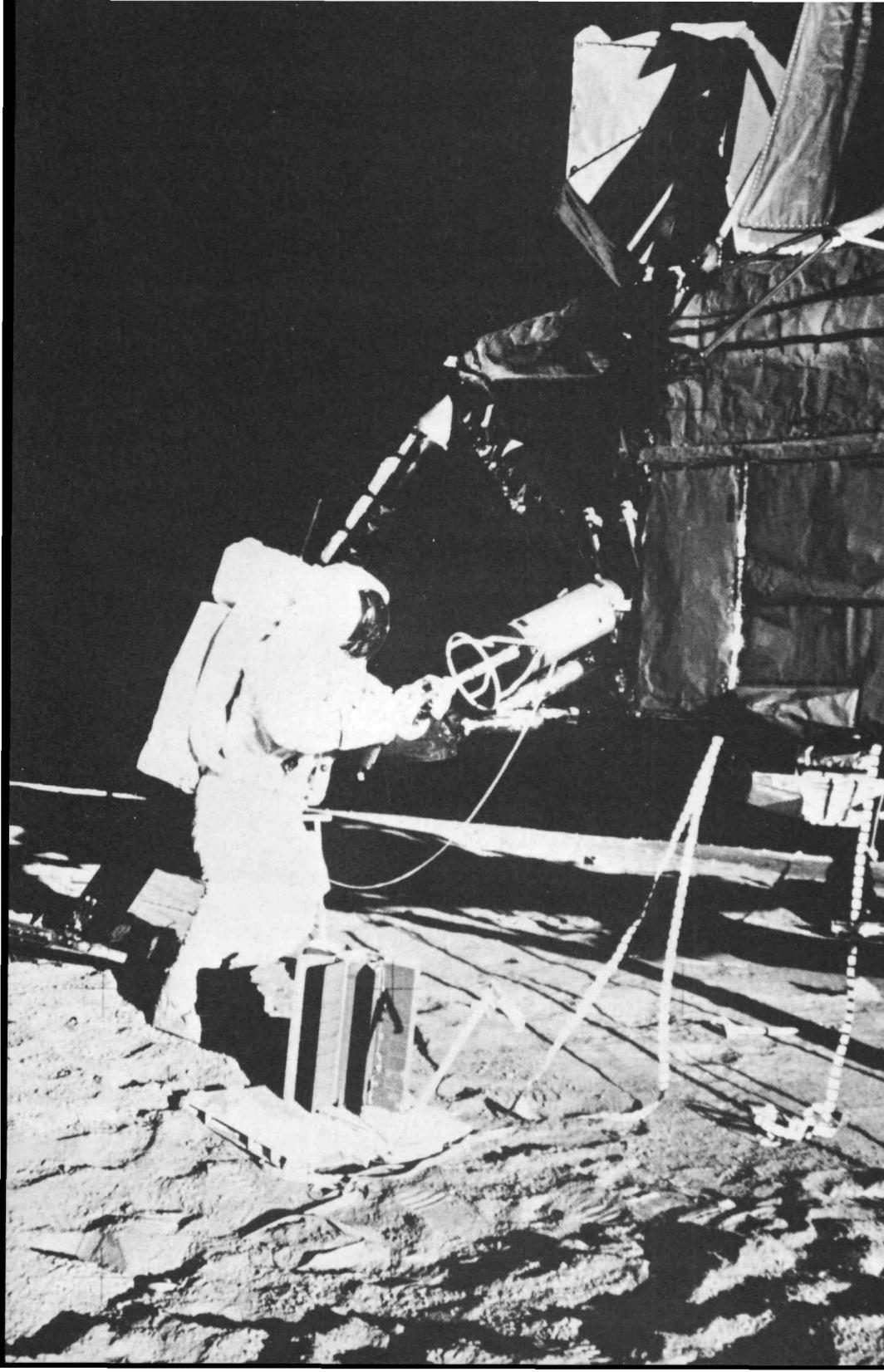
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## Abbreviation Listing by Title

ACCELERATORS	ACC
ANIMALS IN ATOMIC RESEARCH	AAR
THE ATOM AND THE OCEAN	AAO
ATOMIC FUEL	ATF
ATOMIC POWER SAFETY	APS
ATOMS AT THE SCIENCE FAIR, EXHIBITING	
NUCLEAR PROJECTS	ASF
ATOMS IN AGRICULTURE	AIA
ATOMS, NATURE, AND MAN	ANM
BOOKS ON ATOMIC ENERGY FOR ADULTS AND CHILDREN	BAE
CAREERS IN ATOMIC ENERGY	CAE
THE CHEMISTRY OF THE NOBLE GASES	CNG
COMPUTERS	COM
CONTROLLED NUCLEAR FUSION	CNF
CRYOGENICS	CRY
DIRECT CONVERSION OF ENERGY	DCE
THE ELUSIVE NEUTRINO	ELN
FALLOUT FROM NUCLEAR TESTS	FNT
THE FIRST REACTOR	FRE
FOOD PRESERVATION BY IRRADIATION	FPI
THE GENETIC EFFECTS OF RADIATION	GER
LASERS	LAS
MICROSTRUCTURE OF MATTER	MSM
THE NATURAL RADIATION ENVIRONMENT	NRE
NEUTRON ACTIVATION ANALYSIS	NAA
NONDESTRUCTIVE TESTING	NDT
NUCLEAR CLOCKS	NCL
NUCLEAR ENERGY FOR DESALTING	NED
NUCLEAR POWER AND THE ENVIRONMENT	NPE
NUCLEAR POWER AND MERCHANT SHIPPING	NPS
NUCLEAR POWER PLANTS	NPP
NUCLEAR PROPULSION FOR SPACE	NPR
NUCLEAR REACTORS	NRC
NUCLEAR TERMS, A GLOSSARY	NTG
OUR ATOMIC WORLD, THE STORY OF ATOMIC ENERGY	OAW
PLOWSHARE	PSH
PLUTONIUM	PLU
POWER FROM RADIOISOTOPES	PFR
POWER REACTORS IN SMALL PACKAGES	PRP
RADIOACTIVE WASTES	RAW
RADIOISOTOPES AND LIFE PROCESSES	RLP
RADIOISOTOPES IN INDUSTRY	RII
RADIOISOTOPES IN MEDICINE	RIM
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RESEARCH REACTORS	RER
SNAP: NUCLEAR SPACE REACTORS	SNP
SOURCES OF NUCLEAR FUEL	SNF
SPACE RADIATION	SPR
SPECTROSCOPY	SPC
SYNTHETIC TRANSURANIUM ELEMENTS	STE
WHOLE BODY COUNTERS	WBC
YOUR BODY AND RADIATION	YBR

## Abbreviation Listing by Code

AAO	THE ATOM AND THE OCEAN
AAR	ANIMALS IN ATOMIC RESEARCH
ACC	ACCELERATORS
AIA	ATOMS IN AGRICULTURE
ANM	ATOMS, NATURE, AND MAN
APS	ATOMIC POWER SAFETY
ASF	ATOMS AT THE SCIENCE FAIR, EXHIBITING NUCLEAR PROJECTS
ATF	ATOMIC FUEL
BAE	BOOKS ON ATOMIC ENERGY FOR ADULTS AND CHILDREN
CAE	CAREERS IN ATOMIC ENERGY
CNF	CONTROLLED NUCLEAR FUSION
CNG	THE CHEMISTRY OF THE NOBLE GASES
COM	COMPUTERS
CRY	CRYOGENICS
DCE	DIRECT CONVERSION OF ENERGY
ELN	THE ELUSIVE NEUTRINO
FNT	FALLOUT FROM NUCLEAR TESTS
FPI	FOOD PRESERVATION BY IRRADIATION
FRE	THE FIRST REACTOR
GER	THE GENETIC EFFECTS OF RADIATION
LAS	LASERS
MSM	MICROSTRUCTURE OF MATTER
NAA	NEUTRON ACTIVATION ANALYSIS
NCL	NUCLEAR CLOCKS
NDT	NONDESTRUCTIVE TESTING
NED	NUCLEAR ENERGY FOR DESALTING
NPE	NUCLEAR POWER AND THE ENVIRONMENT
NPP	NUCLEAR POWER PLANTS
NPR	NUCLEAR PROPULSION FOR SPACE
NPS	NUCLEAR POWER AND MERCHANT SHIPPING
NRC	NUCLEAR REACTORS
NRE	THE NATURAL RADIATION ENVIRONMENT
NTG	NUCLEAR TERMS, A GLOSSARY
OAW	OUR ATOMIC WORLD, THE STORY OF ATOMIC ENERGY
PFR	POWER FROM RADIOISOTOPES
PLU	PLUTONIUM
PRP	POWER REACTORS IN SMALL PACKAGES
PSH	PLOWSHARE
RAW	RADIOACTIVE WASTES
REA	RARE EARTHS, THE FRATERNAL FIFTEEN
RER	RESEARCH REACTORS
RII	RADIOISOTOPES IN INDUSTRY
RIM	RADIOISOTOPES IN MEDICINE
RLP	RADIOISOTOPES AND LIFE PROCESSES
SNF	SOURCES OF NUCLEAR FUEL
SNP	SNAP: NUCLEAR SPACE REACTORS
SPC	SPECTROSCOPY
SPR	SPACE RADIATION
STE	SYNTHETIC TRANSURANIUM ELEMENTS
WBC	WHOLE BODY COUNTERS
YBR	YOUR BODY AND RADIATION



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# UNDERSTANDING THE ATOM SERIES

## English Editions

On the following pages each Understanding the Atom Series booklet is described and listed by subject category. The booklets are classified as advanced (A) or easy (E).

Librarians may obtain free a complete set of the booklets. Teachers may obtain free one category of booklets. These requests should be made on school or library stationery. All others may generally obtain free, single copies of up to three titles of their choice. Those wishing to obtain larger quantities may purchase them if stocks are available. Orders for booklets and inquiries on prices and availability should be sent to the address on page 33.

## Physics

- ACCELERATORS** Machines for exploring the structure of the atom. (A)  
**CONTROLLED NUCLEAR FUSION** Research on a vast source of power for the future. (A)  
**DIRECT CONVERSION OF ENERGY** Producing electricity without generators. (A)  
**THE ELUSIVE NEUTRINO** Discovery of and research involving this important elementary particle of matter. (A)  
**LASERS** Atomic light phenomena in research and industry. (A)  
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**NUCLEAR PROPULSION FOR SPACE** How nuclear rockets will propel space vehicles. (A)  
**PLOWSHARE** Peaceful uses of nuclear explosives. (A)  
**POWER FROM RADIOISOTOPES** Long-lived compact generators of electric power for remote, unattended locations. (A)  
**SPACE RADIATION** Radiations from beyond our atmosphere. (A)  
**SPECTROSCOPY** Element analysis using the optical spectrum. (A)

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- THE CHEMISTRY OF THE NOBLE GASES** Research that led to the startling ability of these six gases to form compounds. (A)  
**CRYOGENICS, THE UNCOMMON COLD** Low-temperature research and its applications. (A)  
**NEUTRON ACTIVATION ANALYSIS** Identifying traces of elements by their "atomic fingerprints". (A)  
**NUCLEAR CLOCKS** How nuclear energy is used to measure the age of early man and his artifacts and ancient geological formations. (A)  
**PLUTONIUM** How it was discovered and how it is used. (A)

- RADIOISOTOPES IN INDUSTRY** A survey of numerous applications. (A)
- RARE EARTHS, THE FRATERNAL FIFTEEN** Their history, structure, properties, and uses. (A)
- SYNTHETIC TRANSURANIUM ELEMENTS** How eleven new elements were created by man and how they are used. (A)

## Biology

- ANIMALS IN ATOMIC RESEARCH** Use of laboratory animals for medical research. Includes rules for humane use of animals by secondary school students and science club members. (E)
- ATOMS IN AGRICULTURE** Developing new plants, growing better crops, and controlling pests. (E)
- FOOD PRESERVATION BY IRRADIATION** Developments and future prospects. (A)
- THE GENETIC EFFECTS OF RADIATION** How radiation affects reproductive cells and succeeding generations. (A)
- RADIOISOTOPES AND LIFE PROCESSES** How radioisotopes are used in biological research. (A)
- RADIOISOTOPES IN MEDICINE** Their uses in the diagnosis and treatment of disease. (A)
- WHOLE BODY COUNTERS** A device that measures the radiation in a human or animal. (A)
- YOUR BODY AND RADIATION** Ionizing radiation effects on living tissues. (A)

## Nuclear Reactors

- ATOMIC FUEL** Fabrication and uses. (A)
- ATOMIC POWER SAFETY** Devices and design for safe operation of nuclear power plants. (E)
- THE FIRST REACTOR** Dramatic story of the first controlled chain reaction. (E)
- NUCLEAR ENERGY FOR DESALTING** Nuclear power plants that will produce fresh water from seawater. (E)
- NUCLEAR POWER PLANTS** How and where they are used today to generate electricity; their operation, economics, and future. (E)
- NUCLEAR POWER AND MERCHANT SHIPPING** Describes the nuclear powered ship, the N. S. *Savannah*, and the future of nuclear shipping. (E)
- NUCLEAR REACTORS** A broad survey of types and uses. (E)
- POWER REACTORS IN SMALL PACKAGES** Compact nuclear reactors for remote locations. (A)
- RADIOACTIVE WASTES** Disposal of wastes generated in the nuclear industry. (A)
- RESEARCH REACTORS** Types and uses. (A)
- SNAP—NUCLEAR SPACE REACTORS** How small reactors are used to power equipment in space vehicles. (A)
- SOURCES OF NUCLEAR FUEL** Mining, milling, and refining of the nuclear industry's raw materials. (E)

## The Environment

- THE ATOM AND THE OCEAN** How atomic energy is used in oceanic research. (A)
- ATOMS, NATURE, AND MAN** How man-made radiation affects natural environment. (A)
- FALLOUT FROM NUCLEAR TESTS** Its origin, dispersion, and effects. (A)
- THE NATURAL RADIATION ENVIRONMENT** Explanation of cosmic and other radiation occurring naturally on earth. (A)
- NUCLEAR POWER AND THE ENVIRONMENT** How nuclear reactors affect the environment. (E)

## General Interest

- ATOMS AT THE SCIENCE FAIR** An exhibit guide that includes ideas for nuclear science projects. (E)
- BOOKS ON ATOMIC ENERGY FOR ADULTS AND CHILDREN** A reading list of commercially available books. (E)
- CAREERS IN ATOMIC ENERGY, PLANNING FOR SCIENTIFIC AND TECHNICAL PROFESSIONS** Opportunities in the nuclear field for young people. (E)
- COMPUTERS** How electronic brains work. (A)
- NUCLEAR TERMS, A GLOSSARY** Definitions of four hundred terms. (A)
- OUR ATOMIC WORLD, THE STORY OF ATOMIC ENERGY** A history of the development of nuclear energy. (E)

## Foreign Language Editions

The Understanding the Atom booklets that have been translated into French and Spanish are listed below. Teachers and librarians may request a free set by writing to us on school or library stationery.

All others may generally obtain free, single copies of up to three titles of their choice. Those wishing to obtain larger quantities may purchase them if stocks are available. Orders for booklets and inquiries on prices and availability should be sent to the address on page 33.

### French

- Les Accélérateurs (Accelerators)
- Le Combustible Nucléaire (Atomic Fuel)
- Les Atomes et l'Agriculture (Atoms in Agriculture)
- Conversion Directe d'Énergie (Direct Conversion of Energy)
- Analyse d'Activation par les Neutrons (Neutron Activation Analysis)
- L'Énergie Nucléaire pour la Désalinisation (Nuclear Energy for Desalting)
- Les Réacteurs Nucléaires aux États Unis (Nuclear Reactors, USA)
- Notre Monde Atomique (Our Atomic World)
- SNAP—Réacteurs Nucléaires Spatiaux (SNAP—Nuclear Space Reactors)

## Spanish

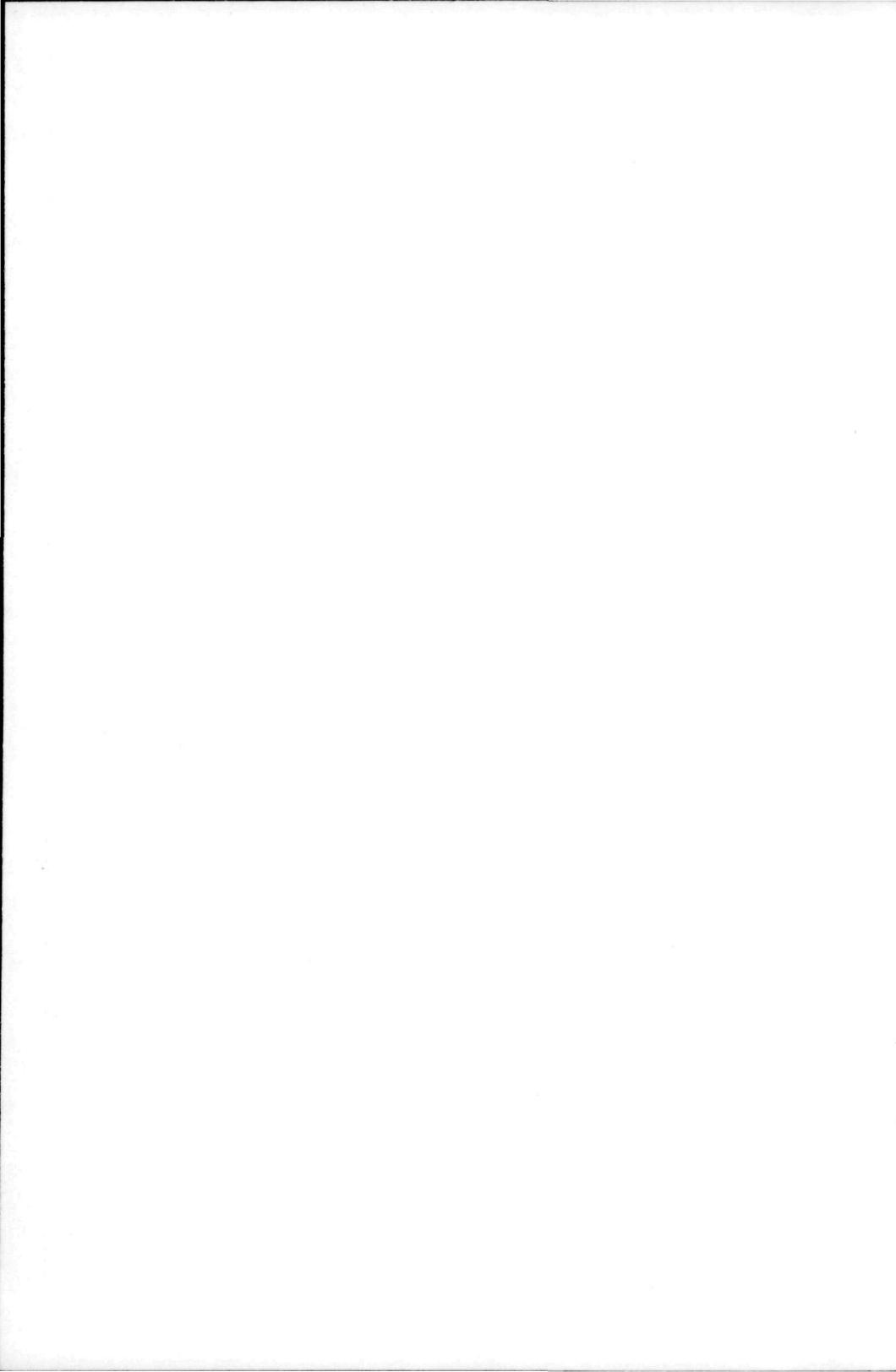
Aceleradores (Accelerators)  
Combustibles Nucleares (Atomic Fuel)  
El Atomo en la Feria Científica (Atoms at the Science Fair)  
Los Atomos y la Agricultura (Atoms in Agriculture)  
Conversión Directa de la Energía (Direct Conversion of Energy)  
Conservación de Alimentos por Irradiación (Food Preservation by Irradiation)  
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Análisis por Activación con Neutrones (Neutron Activation Analysis)  
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Nuestro Mundo Atómico (Our Atomic World)  
Plowshare  
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Plantas de Energía Nuclear (Nuclear Power Plants)  
La Radiación y el Organismo Humano (Your Body and Radiation)

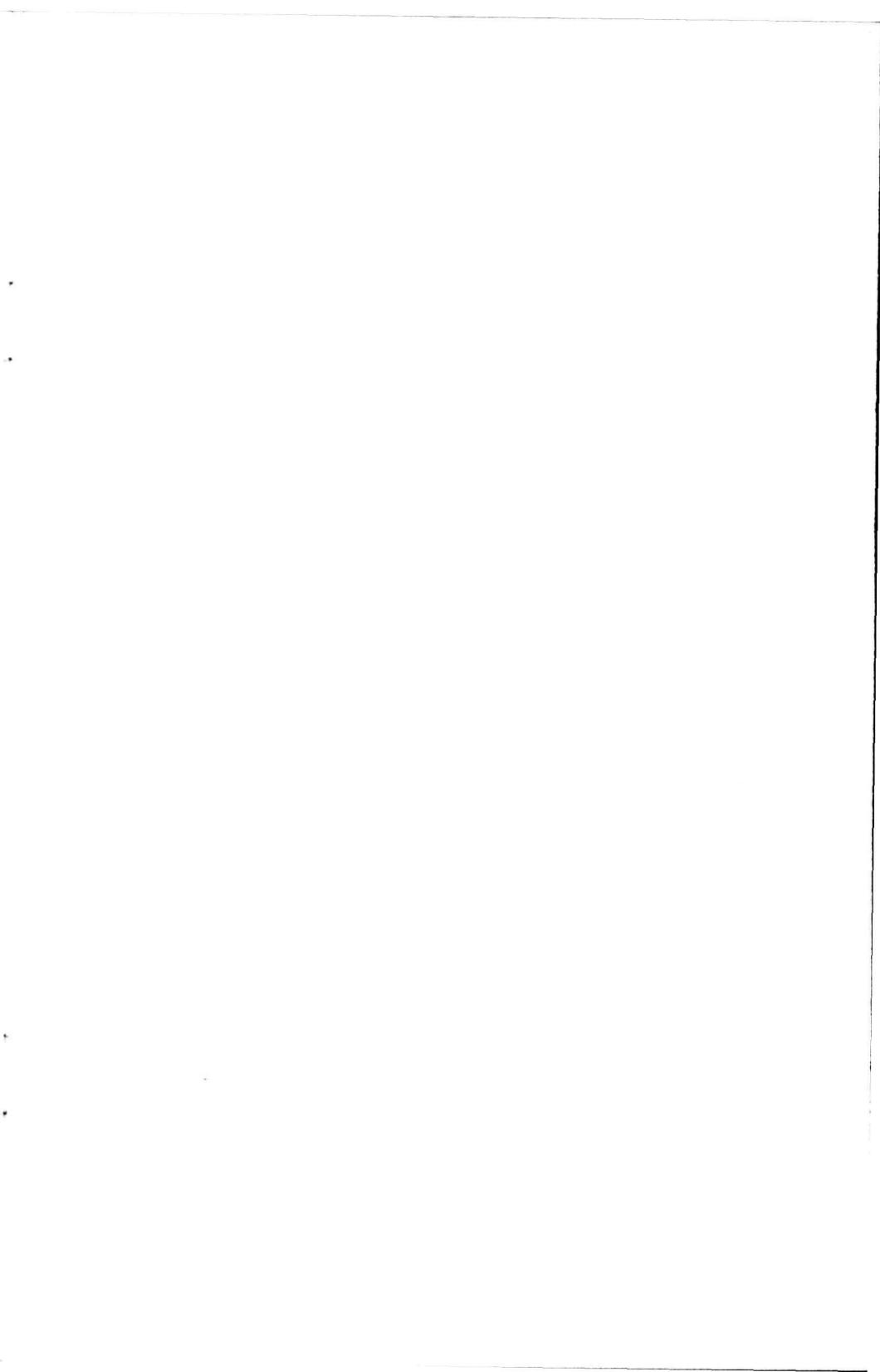
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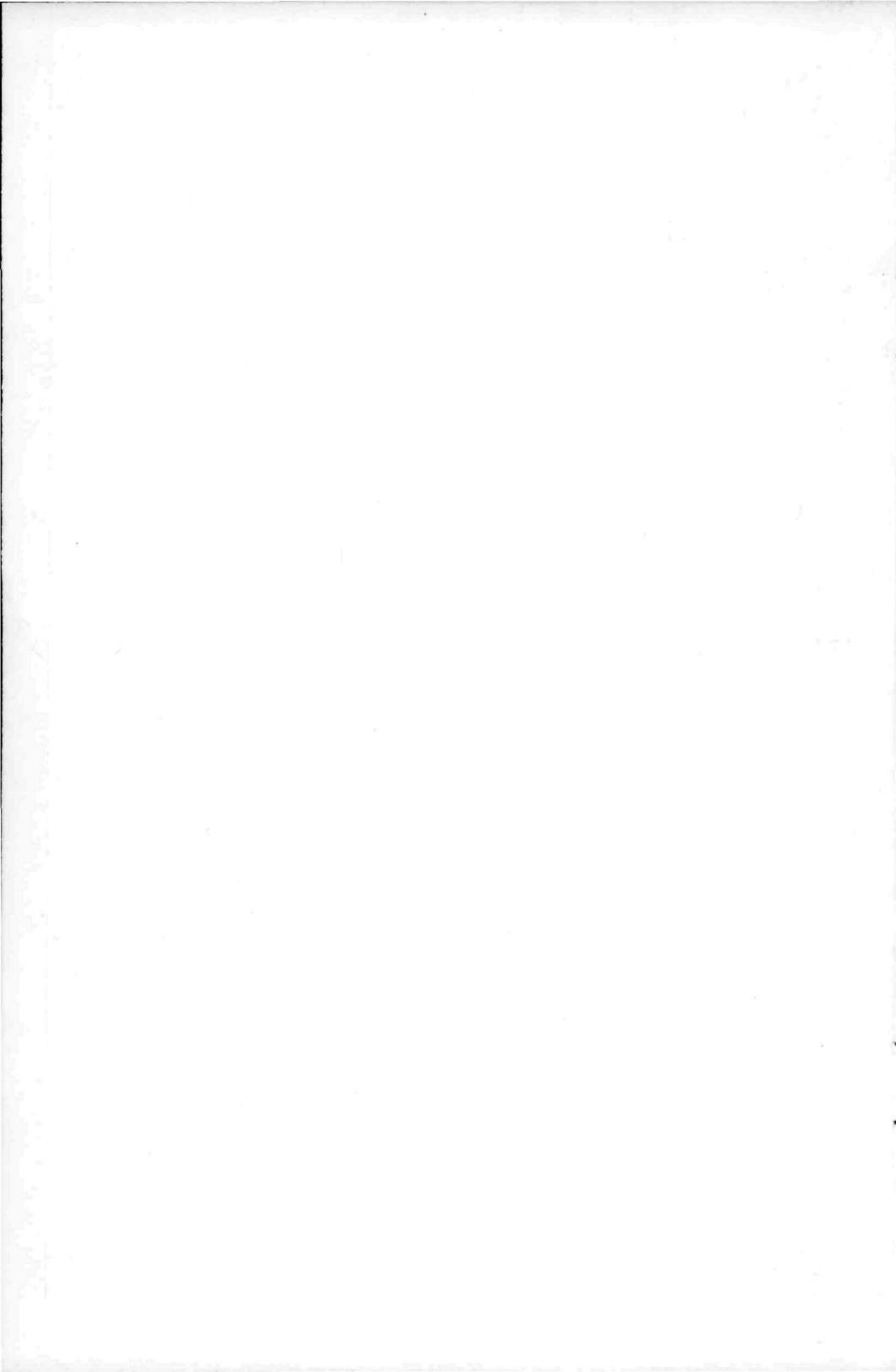
Assembled packets of educational materials are provided for high school teachers in four areas: general science, biology, chemistry, and physics. Packets have also been assembled for junior-high teachers in these areas: life, physical, and earth sciences. Included in all these packets are such items as appropriate Understanding the Atom booklets, workbooks, and line drawings that illustrate the applications of radioisotopes in the life and physical sciences.

Information on nuclear science is also available on motion picture film. The AEC has 10 film libraries in the United States from which 16-mm films may be borrowed free. The catalogue, "Classroom Films on Nuclear Science", which is free, describes more than 50 films for student audiences at the elementary, junior high, senior high, college, and university levels. Related Understanding the Atom booklets are listed in the catalog with many of the films.

Requests for educational materials should be sent to the United States Atomic Energy Commission—Technical Information, Oak Ridge, Tennessee 37830.







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	<i>Your Body and Radiation</i>

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Students and teachers who need other material on specific aspects of nuclear science, or references to other reading material, may also write to the Oak Ridge address. Requests should state the topic of interest exactly, and the use intended.

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