Luncheon at Smithsonian for Mrs. Elena Ceausescu, Wife of Nicolae Ceausescu of Romania, 4/13/78

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LUNCHEON - Thursday, April 13, 1978 - National Museum of History & Technology

Table 1
Dr. Arthur H. Purcell
Mrs. Sanford D. Greenberg
Mrs. Arthur H. Purcell
Mrs. William W. Funderburk
Mrs. Napoleon Fodor
Mrs. Donnie Radcliffe
Dr. William W. Funderburk
Mrs. Lynn E. Weaver
Mr. Pat Munroe
Mrs. Ymelda Dixon

Table 2
Rep. Jack Brooks
Sister Anne Pierotti
Dr. Bernard S. Finn
Miss Joy Billington
Mrs. Jack Brooks
Mrs. Ion Besteliu
Mrs. Wynant D. Vanderpool, Jr.
Mr. Daniel Melnick
Ms. Mary Hoyt
Mr. Ion Besteliu

Table 3
Miss Barbara M. Watson
Mr. Wynant D. Vanderpool, Jr.
Mrs. John C. Coman
Dr. Robert W. Cairns
Mrs. Maureen Santini
Mrs. Robert W. Cairns
Dr. Jon B. Eklund
Mrs. Mircea Raceanu
Mr. John C. Coman
Mrs. Maria Nicolae

Table 4
Dr. Eloise E. Clark
Mrs. Donnel Jeffrey Carter
Mr. Milton F. Rosenthal
Mrs. Aurel Gheorghe
Mr. Barbu Niculescu
Mrs. Milton Rosenthal
Mrs. David Allan Bromley
Miss Helen Thomas
Dr. David Allan Bromley
Mrs. Aurel Florea

Table 5
MRS. CARTER
Dr. Lynn E. Weaver
Mrs. Elena Ceausescu
Mr. Michael Collins
Mrs. Melvin Calvin
Mr. Silvio Bedini
Mrs. Michael Collins
Dr. Melvin Calvin
Mrs. Ion Datcu
H. E. Ion Datcu

Table 6
Mrs. Evan S. Dobelle
Mr. Jack Coopersmith
Ms. Susan Watters
Mrs. Gheorghe Ionita
Ms. Karen DeWitt
Mrs. Winston Willoughby
Dr. Vijaya L. Melnick
Mrs. Jack Coopersmith
Mrs. Richard D. Barrett
Mr. Richard D. Barrett

THE WHITE HOUSE

WASHINGTON

MEMORANDUM FOR MRS. CARTER

FROM GRETCHEN POSTON *GP*

DATE: 11 April 1978

SUBJECT: LUNCHEON - MRS CEAUSESCU
Museum of History and Technology
13 April 1978 Noon

SCENARIO

11:55 A.M. MRS. CARTER departs South Grounds en route Constitution and 14th Streets.

11:57 A.M. Mrs. Ceausescu departs Blair House en route Constitution and 14th Streets.

NOON Guests arrive Museum at Constitution Avenue entrance and are escorted to Reception Suite by Social Aides.

(Admit Cards/Access List at entrance to Suite.)

Wine and juice served as guests mingle.

MRS. CARTER arrives Reception Suite via back entrance.

12:02 P.M. Mrs. Ceausescu arrives Reception Suite via back entrance.

MRS. CARTER and Mrs. Ceausescu move to opposite side of room (in alcove area under painting) for receiving line.

12:15 P.M. Guests are seated for luncheon.

Six tables seating 10 each. Menu attached.

Luncheon is served.

1:10 P.M. Coffee is served.

MRS. CARTER welcomes and introduces:

Michael Collins: Under-Secretary of the Smithsonian Institution
Dr. Bernard Finn: Curator of Atom-Smasher Exhibit.
Dr. Jon Eklund: Curator of Chemistry; Museum of History and Technology

Continued

1:15 P.M. Luncheon concludes.

1:18 P.M. FIRST LADIES are escorted from Reception Suite to Atom Smasher Exhibit (cordoned-off area in lobby for group). Dr. Finn explains exhibit to group during walk-through.

Exhibit closed to tourists at 1:00 P.M.

PRESS PHOTO SESSION - Press are prepositions at the exhibit and move ahead of First Ladies.

Guests are escorted to general exhibit outside of atom smashers and begin walk-through 5-6 minutes behind Group A.

1:35 P.M. FIRST LADIES proceed to Arts and Sciences Exhibit - explanation by Dr. Eklund.

1:45 P.M. FIRST LADIES and guests meet at Sphere to say good-by.

NOTE: Guests do not see Arts and Sciences Exhibit and should be waiting at Sphere for departure.

1:48 P.M. FIRST LADIES proceed to reception room and to motorcades.

2:00 P.M. All guests depart Museum.

NOTE: FIRST LADIES will be escorted by Michael Collins, Dr. Finn, and interpreter.

Dobelle
Mrs. [redacted] will act as hostess for guests through exhibits. Silvio Bednini, Deputy Director of Museum, will lead this group.

LUNCHEON AT THE NATIONAL MUSEUM

OF HISTORY AND TECHNOLOGY

April 11, 1978

Lunch in the Reception Suite at the Museum (First Floor) - Furnishings

Room is furnished with antiques which are gifts from dealers, private collectors, and antiques on loan from the White House.

There is a particularly handsome sideboard in mahogany veneer with gray-white marble top. It is of New York origin (1830-1835) and was exhibited in the Newark Museum in 1963 in a show called "Classical America 1815-1845. There are also 19th century Italian baroque benches, American Empire style chairs, and a tall Case Clock circa 1800 in the Empire style. The three-section mahogany cabinet, again Empire style, in the entrance foyer dates from 1825-1830 and is American made.

Mr. Michael Collins

Undersecretary-elect of the Smithsonian Institution and Director of the Air and Space Museum will represent Secretary Dillon Ripley. He was an astronaut on the Apollo 11 mission which made the first landing on the moon. He was the command module pilot in July, 1969.

Dr. Jon Eklund

Curator of Chemistry at the Museum. He has a BS degree in Biophysics and Molecular Biology from Yale, an M.A. from Wesleyan University in Physics, and received his Ph.D. in History of Science and Medicine from Yale. He has been with the Museum for the last 10½ years. A publication is "The Incomplete Chemist" - which is in its second printing and is an essay on 18th Century chemists. Guide for Art and Science.

Dr. Bernard Finn

Curator for the Division of Electricity and Modern Physics at the Museum. His undergraduate degree is in engineering from Cornell, and his Ph.D. from the University of Wisconsin in the History of Science. He has been with the Museum for 15 years. A recent publication was a cooperative work done with a National Science Foundation grant, entitled, "A Retrospective in Technology Assessment of Submarine Telegraphy." Dr. Finn will guide the tour of the Atom Smashers.

EXHIBITS AT THE MUSEUM

The Atom Smasher Exhibit

A substantial portion of the history of physics in the 20th Century can be written in terms of the machines shown in this exhibit. They are particle accelerators — atom smashers — which were built for the purpose of hurling elementary particles at the atom, probing its secrets. As higher and higher energies have been achieved, more and more information has been uncovered and the physicists have been increasingly challenged in their power of explanation.

The Art and Science Exhibit

Although most of the objects in the exhibit are the sort one would expect to see in an art exhibit, the subject of the exhibit is science. Specifically we are concerned with the intermediate levels of the structure of matter. This is where the paths of the artists and scientists have crossed most naturally and most often. The message is simple: time and again very subtle properties of matter have been discovered and exploited by the artist and craftsman long before rigorous science even took notice of these properties, much less explained them.

LUNCHEON - Thursday, April 13, 1978 at 12:00 noon

National Museum of History and Technology
Presidential Suite

Mrs. Carter

Mrs. Elena Ceausescu
Wife of the President of the Socialist Republic of Romania
Mrs. Maria Nicolae
Wife of the Romanian Ambassador to the United States
His Excellency Ion Datcu and Mrs. Datcu
Permanent Representative of Romania to the United Nations
Mrs. Gheorghe Ionita
Wife of the Counselor of the Embassy
Mrs. Aurel Florea
Wife of the Counselor of the Embassy
Mrs. Napoleon Fodor
Wife of the Counselor of the Embassy
Mr. and Mrs. Ion Besteliu
Counselor, Embassy of Romania
Mrs. Mircea Raceanu
Wife of the Counselor of the Embassy
Mrs. Aurel Gheorghe
Wife of the Counselor of the Romanian Mission to the United Nations

Representative and Mrs. Jack Brooks (Texas)
Hon. Barbara M. Watson
Administrator, Bureau of Security and Consular Affairs, Dept. of State
Mrs. Evan S. Dobelle
Wife of the Chief of Protocol
Ms. Mary F. Hoyt
Press Secretary to the First Lady
Hon. and Mrs. Michael Collins - Under Secretary-elect of Smithsonian Institution
Director, National Air and Space Museum (Former astronaut -Apollo 11)
Dr. Eloise E. Clark
Deputy Assistant Director, National ScienceFoundation
Mr. Silvio Bedini
Deputy Director, National Museum of History and Technology
Dr. Jon B. Eklund
Curator, History of Chemistry, National Museum of History and Technology
Dr. Bernard S. Finn
Curator, Division of Electrity and Modern Physics, National Museum of History and Technology

Mr. and Mrs. Richard D. Barrett (Pamela)
Washington, D. C.- He is Georgetown attorney; [illegible]
Ms. Joy Billington
The Washington Star
Dr. and Mrs. David Allan Bromley (Scientists & Engineers for Carter)
Professor, Yale University, New Haven, Connecticut
Dr. and Mrs. Robert W. Cairns (currently a consultant)
Past Executive Director, American Chemical Society, Washington, D. C.
Dr. and Mrs. Melvin Calvin (State Department suggested)
Professor of Chemistry, University of California at Berkeley
Mrs. Donnel Jeffrey Carter
Mr. and Mrs. John C. Coman (State Department suggested)
President, Union & League of Romanian Societies of America, Inc., Cleveland, Ohio
Mr. and Mrs. Jack Coopersmith (Mr.: Real estate developer; Mrs.: Political fund-raiser)
Potomac, Maryland
Ms. Karen DeWitt
New York Times
Mrs. Ymelda Dixon
Guest of Mr. Pat Munroe
Dr. and Mrs. William W. Funderburk
Washington, D. C. (Dr.: Surgeon; Mrs.: Arts/Political fund-raiser - "Fund-rais of the Year", 1978

Mrs. Sanford D. Greenberg (early supporters/ husband investor/involved w/ Demo. polit
Washington, D. C.
Dr. Vijaya L. Melnick and Mr. Daniel Melnick (Scientists & Engineers for Carter)
Mrs--Professor of Biology at the University of the District of Columbia
Mr. Pat Munroe (Munroe News Service)
Potomac, Maryland
Mr. Barbu Niculescu (State Department suggested)
Chairman and President, The American-Romanian Cultural Foundation, Inc., New York, N.Y.
Sister Anne Pierotti (Scientists & Engineers for Carter)
Sisters of Mercy, Greenville, Pennsylvania; Mbr. of the Bd., Legal Body of the Citizens Energy Project
Dr. and Mrs. Arthur H. Purcell (Chmn., Scientists & Engineers for Carter)
Washington, D. C.
Mrs. Donnie Radcliffe
The Washington Post
Mr. and Mrs. Milton F. Rosenthal (Was at dinner last night - your table)
Chairman, Romanian-U.S. Economic Council and Chairman, Engelhard Minerals and Chemicals Corporation, New York, N.Y.
Ms. Maureen Santini
Associated Press
Miss Helen Thomas
United Press International
Mr. and Mrs. Wynant D. Vanderpool, Jr.
Washington, D. C. (early supporters, Washington Democrats)
Ms. Susan Watters
Women's Wear Daily
Dr. and Mrs. Lynn E. Weaver (Scientists & Engineers for Carter)
Director, School of Nuclear Engineering, Georgia Institute of Technology, Atlanta, Georgia
Mrs. Winston Willoughby (Old Washington/Democratic family; involved with fund-raising for Howard University & particularly cancer project)
Washington, D. C.

MEMORANDUM

THE WHITE HOUSE

WASHINGTON

April 13, 1978

TO: MRS. CARTER

FROM: GRETCHEN POSTON

SUBJ: MRS. CEAUSESCU LUNCHEON

Attached is an identified luncheon guest list and background information on the exhibit and the Smithsonian suite where the luncheon will be held.

The following will be at the head table with you:

MRS. CARTER

<u>Dr. Lynn E. Weaver</u>
Was with Scientists & Engineers for Carter; He is Director of School of Nuclear Engineering, Georgia Institute of Technology, Atlanta

<u>Mrs. Elena Ceausescu</u>

<u>Mr. Michael Collins</u>
New Undersecretary-elect of the Smithsonian Institution and Director of the Air and Space Museum. Will represent Secretary Ripley who has a previous speaking engagement out of Washington. Collins was an astronaut on the Apollo 11 mission which made the first landing on the moon. He was the command module pilot in July, 1969.

<u>Mrs. Melvin Calvin</u>

<u>Mr. Silvio Bedini</u>
Deputy Director, National Museum of History and Technology

<u>Mrs. Michael Collins</u>

<u>Dr. Melvin Calvin</u>
Professor of Chemistry, University of California at Berkeley (State Dept.)

<u>Mrs. Ion Datcu</u>

<u>H. E. Ion Datcu</u>
Permanent Representative of Romania to the United Nations

NEWS
from the Office of Public Affairs
Smithsonian Institution
Washington, D.C. 20560

Telephone: (202) 381-5911

For Immediate Release

Contacts: Geraldine Sanderson
(202) 381-6586
Richard Friedman
(202) 381-5911

* *
PRESS PREVIEW: Feb. 13, 1978 from 2-4 p.m.
For parking or special arrangements, call
Geraldine Sanderson at (202) 381-6586.
* *

"ASPECTS OF ART AND SCIENCE" OPENS FREBRUARY 14, 1978

AT MUSEUM OF HISTORY AND TECHNOLOGY

For centuries, artists and artisans have led the way in creating new uses for materials found in nature. This inquisitiveness in turn has provided a continuing stimulus for technological discovery long before the sciences were formalized as we know them.

"Aspects of Art and Science," a new exhibit opening at the Smithsonian's National Museum of History and Technology on February 14, brings together seventy-one objects from major museums in America and Britain to dramatically illustrate the collaboration between art and science that has existed for thousands of years in many different cultures.

The exhibit, which continues through August 30, is a joint effort between Professor Cyril Stanley Smith, the distinguished historian and metallurgist of the Massachusetts Institute of Technology, and Dr. Jon Eklund, Curator of Chemistry at the Museum of History and Technology. It was planned to coincide with the annual meeting of the American Association for the Advancement of Science in Washington, D.C. (February 12 to February 17).

"Aspects of Art and Science" illustrates Dr. Smith's view that "Before formalized science existed to explain and exploit the properties of materials, discovery was motivated by a generalized curiosity about the world." According to his essay in the accompanying catalogue, "...this exhibit shows that the qualities and nature of the materials to which the artist responded sensually are inherently the same as the properties and structures that are measured and explained by the scientist."

The exhibit presents a variety of both masterpieces of great beauty and craftsmanship and workaday objects to show how potters, metalsmiths, and sculptors from ancient times applied the principles of physics and chemistry to the objects they fashioned with their eyes, hands, and tools, without fully understanding the changes taking place. What mattered was that the end result be pleasing or useful.

Among the treasures included in the exhibit is the magnificent gold Lion Rhyton or drinking vessel from 5th century B.C. Persia, considered by many to be one of the greatest objects of its kind in the Western World. It will only be in the exhibit for three weeks, until March 7, so Washingtonians may want to take advantage of this opportunity to see it. Annealing, soldering and etching are but a few of the steps required to produce this superb object which has been lent by the Metropolitan Museum of Art. A gold pre-Hittite Ewer, dated 2100 B.C., which demonstrates some of the same principles, will replace the Rhyton. The Ewer is also from the Metropolitan Museum and will remain until the close of the exhibit.

Another rare artifact is one of the finest etched shells of the Hohokam Indians (1200 A.D.) ever found. By using fruit juice acids and pine resin, they created a primitive image of a horned toad centuries before the etching technique was known in Europe.

Other outstanding pieces include an original Rembrandt etching plate from the 17th century and a kalliroscope sculpture by Paul Matisse.

"Aspects of Art and Science" is grouped into seven sections which illustrate the wide diversity of materials and techniques used. The section on metals includes a golden drinking cup, a 12th century bronze vessel, a 13th century Japanese sword, a 17th century German copper cup and a 16th century armor breastplate.

A section on glass includes a blue faience Egyptian Ankh from the 18th Dynasty, glass inlay pieces from ancient Egypt, a mold-blown glass vase from ancient Rome (2nd century A.D.), German Matrass or green glass from the 18th century, a clear topaz and a modern amorphous semiconductor given by RCA Laboratories. The objects show how glass began as a glazing compound and quickly became one of the basic tools of science. Clear glass became the foundation for modern optics and the amorphous semiconductor represents the newest method for economically generating electricity from the sun.

Porcelains from China and Japan in the exhibit illustrate the high standards for hardness, color and clarity which were established in the East in the 16th and 17th centuries. European craftsmen sought to imitate and improve on the oriental porcelain and they eventually created their own soft paste and hard paste ware a century later. This quest for finer and finer porcelains led to the discovery of new materials such as kaolin and feldspar and still later provided a stimulus for the study of analytical chemistry.

A case on non-metallic materials includes a Greek vase (500 B.C.) with an incomplete frieze design on the lid to show how the artisan etched his design into the ceramic glaze. In this same section one finds a 16th century stained glass window from the Walters Art Gallery, a 12th century A.D. Korean Celadon bowl, an 1869 billiard ball, an 18th century Japanese lacquer box, and a 15th century Peruvian textile.

Whether it deals with 18th century textiles, illustrated manuscripts, or finely etched swords, the exhibit shows how the creation of these objects contributed in some way to main-line science.

The exhibition, sponsored jointly by the Smithsonian Institution and the American Association for Advancement of Science, illustrates the concepts of Professor Cyril Stanley Smith and was made possible by a grant from PPG Industries, Inc.

Designers of the exhibit were Staples and Charles, Inc.

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Photographs and catalogues available from Geraldine Sanderson, Information Officer, (202) 381-6586.

HIGHLIGHTS FROM "THE ASPECTS OF ART AND SCIENCE" EXHIBIT

OPENING AT MUSEUM OF HISTORY AND TECHNOLOGY - FEBRUARY 14, 1978

I. THE ARTIST'S USE OF THE PROPERTIES OF METALLIC MATERIALS

-- GOLD RHYTON: Cup ending in protome of a lion, from 5th century B.C. (Achaemenian) On loan from The Metropolitan Museum of Art, New York City and on view in the exhibit only until March 7, 1978.

-- CEREMONIAL BRONZE VESSEL: Chinese type Fang-Ting; ca. 12th century B.C., Shang Dynasty. On loan from the Fogg Museum, Harvard University.

-- JAPANESE SWORD (Nippon-To): By Suyemitzu; 13th century. From the collections of the Smithsonian's Museum of Natural History.

-- SWORD GUARD (Tsuba): Japanese; mid-19th century A.D., Tokugawa Period. On loan from The Metropolitan Museum of Art, New York City.

-- COPPER CUP: German, Herrengrund Ware; ca. 1700 A.D.

-- ARMOR BREASTPLATE: Italian, steel; 16th century A.D. On loan from the John Woodman Higgins Armory, Worcester, Mass.

II. THE ARTIST'S USE OF THE PROPERTIES OF NON-METALLIC MATERIALS

-- GREEK VASE (Lekythos): Red and Black; Attic; ca. 500 B.C. On loan from the Museum of Fine Arts, Boston.

-- STAINED GLASS WINDOW: German; early 16th century. On loan from the Walters Art Gallery, Baltimore.

-- BEADS: Glass and glazed ceramic; Near East, period of Roman domination. From the collections of the Smithsonian's Museum of History and Technology.

-- CELADON BOWL: Korean; 11th-12th century A.D., Koryu Period. On loan from the Museum of Fine Arts, Boston.

-- "OIL-SPOT" TEMMOKU BOWL: Chinese; ca. 12th century A.D., Sung Dynasty. On loan from the Fogg Museum, Harvard University.

-- BILLIARD BALL: Celluloid surface, made by John Wesley Hyatt; ca. 1869 A.D. Gift of the Celanese Corp. to the collections of the Smithsonian's Museum of History and Technology.

-- MEDALLION: Parkesine, by Alexander Parkes; ca. 1865 A.D. On loan from The Science Museum, London.

-- LACQUER BOX: Japanese; late 18th century A.D. On loan from the Museum of Fine Arts, Boston.

-- PERUVIAN TEXTILES: Double cloth, Inca; 1300-1500 A.D., Precolumbian. From the collections of the Smithsonian's Museum of History and Technology.

III. ORIENTAL CERAMICS AND EUROPEAN SCIENCE

-- PORCELAIN VASE: Chinese, Sang-de-boeuf; 1700 A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- PORCELAIN SUGAR BOWL: French, St. Cloud, soft paste; ca. 1700 A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- PORCELAIN TEAPOT: German, Meissen, hard paste; ca. 17th century A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- TWO PORCELAIN CUPS: 1. Japanese; 1700-1725 A.D., 2. German, Meissen; 1730-1740. From the collections of the Smithsonian's Museum of History and Technology.

-- THE PORTLAND VASE: English, by Josiah Wedgwood; ca. 1795. On loan from Drs. Harold and Caroline Brown.

-- PYROMETER: By Josiah Wedgwood; ca. 1780. On loan from the Science Museum, London.

-- CRUCIBLE WITH FUSED BASALT: From an experiment by Sir James Hall; ca. 1790. On loan from the Science Museum, London.

-- Rene Antoine de Reaumur, "Idee generale des differentes manieres dont on peut fair la porcelaine," Memoires de Mathematique et de Physique de l'Academie Royale des Sciences; Paris, 1727.

-- Johann Heinrich Pott, Chymische Untersuchungen Lithogeognosia. 2nd ed. Berlin: 1757. From the Dibner Library Collection of the Smithsonian's Museum of History and Technology.

-- James Hutton, Theory of the Earth, with Proofs and Illustrations. Edinburgh: 1795. 2 vols. From the Dibner Library Collection of the Smithsonian's Museum of History and Technology.

IV. GLASS FROM BLUE FAIENCE TO AMORPHOUS SEMICONDUCTORS

-- ANKH: Egyptian, blue faience; 1425-1417 B.C. (18th Dynasty); Provenance: Thebes, Valley of the Kings, Tomb of Ththmose IV. On loan from The Metropolitan Museum of Art, New York City.

-- GLASS INLAY PIECES: Egyptian; various dynasties from 1570 to 332 B.C. On loan from The Metropolitan Museum of Art, New York City.

-- GLASS AMPHORA: Egyptian; ca. 1500 B.C. From the collections of the Smithsonian's Museum of History and Technology.

-- MOLD-BLOWN GLASS EWER: 2nd century, period of Roman Domination; From the collections of the Smithsonian's Museum of History and Technology.

-- MATRASS ("German Green Glass"): English; late 18th century A.D. From the collections of the Smithsonian's Museum of History and Technology

-- CUT CRYSTAL: Clear topaz, brilliant cut; Contemporary. From the collections of the Smithsonian's Museum of Natural History.

— GLASS PRISMS: English; early 18th century A.D. On loan from the Whipple Museum of Science, Cambridge University, England.

-- AMORPHOUS SEMICONDUCTOR: Modern. On loan from the RCA Laboratories, Princeton, New Jersey.

— Johann Kunckel, Ars Vitraria Experimentalis. 2nd ed. Frankfurt and Leipzig: 1689.

-- Isaac Newton, Opticks. 2nd ed. London: 1728

— Jons Jacob Berzelius, The Use of the Blowpipe in Chemical Analysis. London: 1822.

-- Zachariasen, "The Atomic Arrangement in Glass," Journal of the American Chemical Society, 54, 1932.

V. ETCHING AND THE DISCOVERY OF ACIDS

-- ETCHED CARNELIAN BEADS: Harrapa culture, Chanadaro, Sind, India; late 3rd Millennium B.C. On loan from The Museum of Fine Arts, Boston.

-- ETCHED SHELL: Hohokam Indian culture; 900-1200 A.D. On loan from the Arizona State Museum, Tucson, Arizona.

-- ZOOMORPHIC PENDANT: Tumbaga alloy, Chiriqui style; Pre-Columbian. From the collections of the Smithsonian's Natural History Museum.

-- SWORD: Persian, damascus steel; 16th century A.D. On loan from The Metropolitan Museum of Art, New York City.

-- PATTERN-WELDED BLADE: French, Lorraine, iron and steel; 6th century A.D. Private Collection.

— MORION: German, etched iron; 16th century A.D. On loan from The John Woodman Higgins Armory, Worcester, Massachusetts

-- COPPER ETCHING PLATE: Original Rembrandt etching plate; 17th century. Courtesy of Robert Lee Humber family.

-- ACID BOTTLE: American; early 20th century A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- Von Stahel and Eysen, Pamphlet. Nuremburg: 1532. Private Collection.

-- Lazarus Ercker, Beschreibung: Allerfürnemisten Mineralischen Ertzt unnd Berckwercks arten. Prague: 1574. From the Dibner Library Collection of the Smithsonian's Museum of History and Technology.

-- Robert Boyle, "Reflections on the Hypothesis of Alkali and Acidim" in Experiments, Notes, &c. about the Mechanical Origine or Production of divers particular Qualities. London: 1675. From the Dibner Library Collection of the Smithsonian Museum of History and Technology.

-- Torbern Bergman, De analysi ferri. Uppsala: 1781. Private collection.

VI. COLOR AND CHEMISTRY

-- IRON OXIDE PIGMENT: Modern recreation. From the collections of the Smithsonian's Museum of History and Technology.

-- EARLY INORGANIC PIGMENTS: Verdigris; Ceruse; Vermillian: Modern versions. From the collections of the Smithsonian's National Collection of Fine Arts.

-- ILLUMINATED MANUSCRIPT LEAF: Initial "P", Italian; Antiphonarium; Florence; late 14th century A.D. On loan from the Pierpont Morgan Library, New York.

-- SILK BROCADE: French; 18th century A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- SILK DAMASK: French; 18th century A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- STAMP: The "Penny Black", English; 1840 A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- ANILINE DYES: German; 19th century A.D. From the collections of the Smithsonian's Museum of History and Technology.

-- Mappa Clavicula. 12th century A.D. On loan from the Corning Museum of Glass, Corning, New York.

-- Robert Boyle, Experiments and Considerations touching Colours. London: 1664. From the Dibner Library collection of the Smithsonian's Museum of History and Technology.

VII. TEXTURE IN ART BECOMES STRUCTURE IN SCIENCE.

-- STONE VASE: Egyptian, of porphyritic rock; Provenance: Thebes; 3200-3100 B.C., Dynasty O. On loan from the Metropolitan Museum of Art, New York.

-- EARRINGS: Roman; 2nd century A.D. From the collections of the Smithsonian's National Collection of Fine Arts.

-- JADE: Far Eastern, in the form of an axe; before 1000 A.D. Anonymous lender.

-- METEORITE FRAGMENT: From the Needles Meteorite, fine octahedrite (iron-nickel alloy), California. From the collections of the Smithsonian's Museum of Natural History.

-- NATURE PRINT: Made directly from the surface of the Elbogen Meteorite by Carl vol Schreibers, Vienna; 1813. Private Collection.

-- INSTANTANEOUS LIGHT BOX: English, tin plate, moire matallique; 19th century. On loan from the Science Museum, London.

-- SWORD GUARD (Tsuba): Iron; Makume; 19th century A.D. Private Collection.

-- CRYSTAL MODELS: English, by William Hyde Wollaston; ca. 1818. On loan from the Science Museum, London.

— PHOTOMICROGRAPHS: English, by Henry Clifton Sorby; ca. 1864. On loan from the Science Museum, London.

— ANTIMONY INGOT: Modern. From the collections of the Smithsonian's Museum of Natural History.

— BISMUTH INGOT: Modern. From the collections of the Smithsonian's Museum of Natural History.

— NATURAL CRYSTALS: From the collections of the Smithsonian's Museum of Natural History.

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An exhibition sponsored jointly by the
Smithsonian Institution
and the
American Association for the Advancement of Science
illustrating the concepts of
Cyril Stanley Smith

This exhibition could not have been produced
without the cooperation of the following individuals and institutions,
whose assistance is gratefully acknowledged:

The Arizona State Museum, Tucson, Arizona
The Armed Forces Institute of Pathology, Washington, D.C.
Drs. Harold and Caroline Brown
The Corning Museum of Glass, Corning, New York
The Fogg Museum, Harvard University, Cambridge, Massachusetts
The Robert Lee Humber Family
The John Woodman Higgins Armory, Worcester, Massachusetts
The Museum of Fine Arts, Boston
The National Collection of Fine Arts, Smithsonian Institution
The National Museum of History and Technology, Smithsonian Institution
The National Museum of Natural History, Smithsonian Institution
North Carolina Museum of Art, Raleigh, North Carolina
The Pierpont Morgan Library, New York City
The RCA Corporation
The Royal Scottish Museum, Edinburgh
The Science Museum, London
The Whipple Museum of Science, Cambridge University, England
Various Private Collections

Designed by Staples & Charles Ltd

This exhibition was made possible by a grant from
PPG Industries, Inc.

NEWS
from the Office of Public Affairs
Smithsonian Institution
Washington, D.C. 20560
Telephone: (202) 381-5911

For Immediate Release

Contacts: Geraldine Sanderson
(202) 381-6586
Richard Friedman
(202) 381-5911

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PRESS PREVIEW: Dec. 1, 1977 from 10 a.m. to 2 p.m. For parking or special arrangements, contact Geraldine Sanderson (202) 381-6586.

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"ATOM SMASHERS: FIFTY YEARS" OPENS AT MUSEUM OF HISTORY AND TECHNOLOGY

December 2, 1977

Fifty years ago it was an idea; today it is one of the largest, most sophisticated and costliest scientific enterprises.

"Atom Smashers: Fifty Years," a new exhibit opening at the Smithsonian's National Museum of History and Technology on December 2, examines the historical development of high energy particle accelerators.

This is the first exhibit in the country to bring together the machines and techniques which have made it possible to measure and understand the inner working of the atom.

Measurements with these machines have provided direct proof of the accuracy of Einstein's theory of relativity and of other fundamental laws of nature. They have also enabled man to create new and "strange" particles.

The understanding of these phenomena has made it possible to build nuclear reactors which are now generating a significant portion of the country's power and this technology may make it possible to build other types of reactors in the future. In addition, these accelerators have contributed to modern medical science, initially by the production of radioactive compounds used in cancer treatment, and more recently for precise radiation therapy.

The first nuclear experiments were conducted with particles from natural radioactive materials such as radium. Measurements were difficult because of the random direction of the particles and their low intensity.

The introduction of accelerators permitted the physicist to create beams of atomic particles which were all moving in the same direction and were all of uniform energy. Once the pattern was established, the race for higher and higher energy was on, as scientists sought to make more studies of the atom's nucleus and the forces that hold it together. This race was given added impetus when the first machine crossed the energy threshold that made it possible to create a new particle, the pi meson, directly from energy.

The Atom Smashers exhibit traces the search for higher and higher energies in order to penetrate more and more fundamental levels of atomic structure.

Ideas for accelerators first appeared after the First World War. A 1923 sketch in the exhibit by a Norwegian, Rolf Wideröe, was a forerunner of the modern accelerator.

The first practical atom smasher, the exhibit notes, was built by Cockcroft and Walton in the early 1930's and produced intense beams of relatively low particles.

About the same time, Van de Graaff, using the same principle of static electricity that causes sparks on a dry day, designed a very simple machine that reached higher energies. Van de Graaff's accelerator was successful and was adapted and refined by many laboratories.

Both these machines depended on maintaining a high voltage between one point in the machine and another. The particle was accelerated by giving it an electrical charge and allowing the voltage inside the machine to accelerate it to a high speed. The acceleration was limited by the amount of voltage produced in the machine and each particle could only be accelerated one time.

The first successful machine to overcome this difficulty was the cyclotron, developed by E.O. Lawrence at the University of California, Berkeley, in the 1930's. Although the voltages in this machine were not as high, the particles were contained in a magnetic field and the voltage applied in such a way that the particles were accelerated many times instead of just once so that the total energy received was much greater than before.

The exhibit contains the centerpiece of Lawrence's "Radiation Laboratory," the 27-inch cyclotron — a sub-atomic machine gun about five times as large as its nominal caliber, which produced six-million-volt protons. Displayed in front of it are original laboratory notebooks. Atom Smashers shows that cyclotrons too have their limitations, which were being felt just as World War II broke out. After the War, the sights of the demobilized physicists rose: a billion bolts became their goal. Linear accelerators and synchrotrons were their means. Although the concept of the linear accelerators had been known for years, microwave amplifier tubes developed for radar during World War II made these machines practical. The synchrotron, on the contrary, was a novel idea which made possible the extension of Lawrence's principle of multiple acceleration to much higher energies. Exhibited is a section of the first linear accelerator of protons, built at Berkeley in 1947, and sections of the linear accelerators of electrons built at Stanford University, 1947 and 1949 — both aiming at a billion volts. The goal was not so quickly attained.

The 300-million-volt synchrotron completed at Berkeley in 1949, and exhibited with all its accoutrements, was constructed by Edwin McMillan as the embodiment of the synchrotron principle, which he conceived as the War was ending. Only in the 1950's was this followed by synchrotrons, accelerating protons, which reached above a billion volts. A 'C'-shaped section of the magnet of the first of these, the "Cosmotron" at Brookhaven National Laboratory near New York, is on display. The apexes of these two lines of development are the 2-mile-long linear accelerator at Stanford, of which a short section is exhibited, and the 500-billion-volt, 4-mile-around synchrotron at Fermi National Accelerator Laboratory near Chicago. Visitors walk through a 35-foot length of its circular tunnel outfitted with its full complement of magnets, pumps, pipes, and cables.

The show also includes a section tracing the development of detectors which are used to study the particles and the way they interact with nuclei. Early detectors simply indicated the presence or absence of high energy particles. Later machines, such as the bubble chamber and spark chamber, produced pictures of the nuclear interactions being studied so that all the particles could be observed and measured by the tracks they left.

Visitors will see an operating cathode ray tube and a demonstration of the inner workings of a cyclotron. Ball bearings will move down inclined planes and fall into tracks to simulate the motion of charged particles under the electric and magnetic forces and their rotation inside the cyclotron. Daily demonstrations of a "Frankenstein" machine used to measure pictures of tracks of atomic particles for computer analysis will also be scheduled.

Many historic photographs and artifacts will be included in this 8,000-square-foot exhibit, and in one area, visitors will hear Arthur Roberts' cyclotron songs of the 30's and 40's piped over a loudspeaker. It represents an era of enthusiastic public regard for atom smashers.

Two slide shows will provide background about these machines for the layman. One presentation, lasting about one minute, is at the exhibit entrance. The second one, at the rear of the hall, will last 10 minutes. As visitors settle into comfortable chairs, a 10-minute program will explain the atom and its parts, what these machines do, and why. Colorful logos and animated graphics will enhance the program as visitors learn about the history of these machines, the major laboratories of today, the new kinds of technology made possible by scientific advances and the applications of accelerator investigations to computers, biology, medicine, and power.

The slide program will also explain the kinds of work physicists do today and will briefly discuss the Quark theory. It will conclude with a discussion of how accelerated particles teach us more about the laws governing the universe. The slide presentation was prepared by Dr. Seymour J. Lindenbaum of Brookhaven National Laboratory and the City College of New York.

The "Atom Smashers: Fifty Years" exhibit was organized by Paul Forman, curator of Modern Physics at the Museum of History and Technology. Assisting him were Michael Meo, technician in the Department of Science and Technology, and Claudine Klose, exhibit specialist.

The exhibit was prepared as a collaboration between the Smithsonian Institution and the Department of Energy.

Exhibit designer was John Schmid of Reston, Va. Richard Virgo, chief of the museum's Design and Production staff served as the exhibit coordinator.

Many of the objects in the exhibit were donated to the Smithsonian for its permanent collection by major research laboratories around the world including: Argonne National Laboratory; Brookhaven National Laboratory; Fermi National Accelerator Laboratory; Lawrence Berkeley Laboratory; Oak Ridge National Laboratory; Stanford Linear Accelerator Center.

The exhibit, located on the museum's first floor, will continue for several years.

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Photographs are available by contacting Geraldine Sanderson (202) 381-6586.

HIGHLIGHTS OF "ATOM SMASHERS: FIFTY YEARS"

AT THE NATIONAL MUSEUM OF HISTORY AND TECHNOLOGY

Opening December 2, 1977

— Demonstration of deflection of Cathode rays. Viewers can duplicate a crucial experiment performed by J.J. Thomson of the Cavendish Laboratory at Cambridge University in 1897, which led to the discovery of the electron.

— Röntgen's optical and X-ray photos of his shotgun. Original optical and X-ray photos of shotgun taken and annotated by Röntgen in the late 1890's.

— Wideröe Notebooks. Rolf Wideröe's original notebooks describing 2 acceleration methods which he conceived in the 1920's: magnetic induction acceleration which he conceived in 1923, and linear resonance acceleration which he was the first to demonstrate experimentally.

— Van de Graaff's high voltage generator. Robert J. Van de Graaff's first successful demonstration model of his high voltage generator built at Princeton University in 1931.

— Carnegie Institution's "two-meter" accelerator. Original Van de Graaff accelerator which, in the 1930's, yielded the first data on nuclear binding forces.

— Research notebooks. Original research notebooks recording the first experimental measurements of nuclear binding forces.

— Mechanical analog of cyclotron. This device is continuously operative during visiting hours and gives the viewer an accurate analogue picture of the operation of a cyclotron. Ions, represented by ball bearings, are "pulled" by inclined planes which simulate the radio frequency electric field and are bent into circular orbits by curved tracks representing the magnetic fields.

— 27" Cyclotron. The last of a series of vacuum chambers installed in the 27" Berkeley cyclotron, a milestone in accelerator development, built by E.O. Lawrence and his associates in the 1930's. Set up with a simulation of the 74-ton magnet yoke in a reconstruction of the Berkeley Radiation Laboratory.

— Cyclotron log books. Notebooks from 1930 and 1936 recording first demonstrations of cyclotron acceleration and operation of the 27" cyclotron.

[continued]

— Kerst's Betatron. The first successful magnetic induction accelerator, designed and built by D.W. Kerst at the University of Illinois in 1939.

— Kerst's notebook recording construction and operation of the betatron.

— Siemens' Betatron. The second European betatron, loaned by the German firm Siemens AG of Munich.

— Alvarez Linac. The first microwave linear accelerator of protons, developed by Luis Alvarez of Berkeley in the late 1940's. This type of accelerator has been used subsequently as injector for all high energy circular accelerators.

— Hansen's rhumbatron. High-frequency cavity oscillator devised by William Hansen at Stanford University in the mid-1930's. Basic concept underlying microwave linear accelerators.

— Mark I Accelerator Sections. Two sections of Stanford's first microwave linear accelerator of electrons, 1947.

— Mark II Accelerator Sections. Two sections and klystron from the billion volt electron linear accelerator at Stanford, begun in 1949.

— SLAC Accelerator sections. Ten foot section of accelerator cavity and cutaway flystron from the 2-mile SLAC accelerator (Stanford Linear Accelerator Center); largest and most powerful of linear accelerators, built 1962-66.

— McMillan Synchrotron. This electron synchrotron, completed in 1949, is the embodiment of the principle of synchronous acceleration conceived by its designer, E.M. McMillan, in 1945. It is the most fully reconstructed of all the larger accelerators in the exhibit.

— Synchrotron and experimenter's logbooks relating to proof of existence of the π° mesons.

— "C" magnet block from Cosmotron, 1952. First proton synchrotron completed; accelerated to 3 Bev.

— Fermilab. Reconstruction of a section of the 4-mile tunnel of the world's most powerful accelerator.

— Müller "Zählrohr." A counter tube ("Geiger Counter"), 1928; one of the earliest examples of the radiation detectors constructed by Walter Müller at University of Kiel, Germany.

— Libby Counter System. Anti-coincidence "screened wall" Geiger-Müller counter system constructed in 1947 by W.F. Libby for the first radiocarbon datings.

— Zworydin electron multiplier tube. Early experimental electron multiplier tube (1934).

[continued]

— Glaser glass chambers. Early experimental bubble chambers built by Donald A. Glaser; it recorded tracks of individual particles.

— Glaser's 6" propane chamber. The first bubble chamber to be used in high energy physics research.

— Hildebrand's glass chambers. Early experimental bubble chambers built by Roger H. Hildebrand, the first bubble chamber filled with liquid hydrogen.

— Berkeley 4" "dirty" H_2 chamber. First practical liquid hydrogen bubble chamber constructed without the requirement that all liquid containment be against glass surfaces.

— Brookhaven 80" liquid hydrogen chamber. Large bubble chamber typical of the 1960's in high-energy physics research.

— "Frankenstein" measuring machine, 1957-67. First automated device for extracting the information from photographs of bubble chamber events.

— Spark Chamber responding to cosmic rays. Allows the viewer to see the trace of cosmic rays, the highly energetic charged particles which penetrate us all.

— Digital wire spark chamber spectrometer. Early use (1963-64) of spark chambers in conjunction with computer analysis to track particles and analyze the data as the experiment runs.

— Prototypes of G. Charpak's multiwire proportional chamber and drift chamber, novel electronic detectors for tracking sub-atomic particles, now extensively used in high energy experiments.

— Wire chamber, log book and Nobel Prize diplomas. Artifacts of the discovery in 1974 of an unknown long-lived sub-atomic particle, J/ψ, which opened a new world within the elementary particles.

— Intersection section of CERN Intersection Storage Rings, the largest of the colliding beam accelerators, constructed by the European Organization for Nuclear Research, Geneva, 1965-71.

— Prototype superconducting magnets from Fermilab and Brookhaven for steering particle beams in the next generation of high energy accelerators.

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For press releases and photographs contact Geraldine Sanderson (202) 381-6586.

LUNCHEON - Thursday, April 13, 1978 at 12:00 noon
National Museum of History and Technology
Presidential Suite

Mrs. Carter

Mrs. Elena Ceausescu
Wife of the President of the Socialist Republic of Romania
Mrs. Maria Nicolae
Wife of the Romanian Ambassador to the United States
His Excellency Ion Datcu and Mrs. Datcu
Permanent Representative of Romania to the United Nations
Mrs. Gheorghe Ionita
Wife of the Counselor of the Embassy
Mrs. Aurel Florea
Wife of the Counselor of the Embassy
Mrs. Napoleon Fodor
Wife of the Counselor of the Embassy
Mr. and Mrs. Ion Besteliu
Counselor, Embassy of Romania
Mrs. Mircea Raceanu
Wife of the Counselor of the Embassy
Mrs. Aurel Gheorghe
Wife of the Counselor of the Romanian Mission to the United Nations

Representative and Mrs. Jack Brooks (Texas)
Hon. Barbara M. Watson
Administrator, Bureau of Security and Consular Affairs, Dept. of State
Mrs. Evan S. Dobelle
Wife of the Chief of Protocol
Ms. Mary F. Hoyt
Press Secretary to the First Lady
Hon. and Mrs. Michael Collins
Director, National Air and Space Museum
Dr. Eloise E. Clark
Deputy Assistant Director, National ScienceFoundation
Mr. Silvio Bedini
Deputy Director, National Museum of History and Technology
Dr. Jon B. Eklund
Curator, History of Chemistry, National Museum of History and Technology
Dr. Bernard S. Finn
Curator, Division of Electrity and Modern Physics, National Museum of History and Technology

Mr. and Mrs. Richard D. Barrett
Washington, D. C.
Ms. Joy Billington
The Washington Star
Dr. and Mrs. David Allan Bromley
Professor, Yale University, New Haven, Connecticut
Dr. and Mrs. Robert W. Cairns
Past Executive Director, American Chemical Society, Washington, D. C.
Dr. and Mrs. Melvin Calvin
Professor of Chemistry, University of California at Berkeley
Mrs. Donnel Jeffrey Carter
Mr. and Mrs. John C. Coman
President, Union & League of Romanian Societies of America, Inc., Cleveland, Ohio
Mr. and Mrs. Jack Coopersmith
Potomac, Maryland
Ms. Karen DeWitt
New York Times
Mrs. Ymelda Dixon
Guest of Mr. Pat Munroe
Dr. and Mrs. William W. Funderburk
Washington, D. C.

Mrs. Sanford D. Greenberg
Washington, D. C.
Dr. Vijaya L. Melnick and Mr. Daniel Melnick
Mrs--Professor of Biology at the University of the District of Columbia
Mr. Pat Munroe
Potomac, Maryland
Mr. Barbu Niculescu
Chairman and President, The American-Romanian Cultural Foundation, Inc., New York, N. Y.
Sister Anne Pierotti
Sisters of Mercy, Greenville, Pennsylvania; Mbr. of the Bd., Legal Body of the Citizens Energy Project
Dr. and Mrs. Arthur H. Purcell
Washington, D. C.
Mrs. Donnie Radcliffe
The Washington Post
Mr. and Mrs. Milton F. Rosenthal
Chairman, Romanian-U.S. Economic Council and Chairman, Engelhard Minerals and Chemicals Corporation, New York, N. Y.
Ms. Maureen Santini
Associated Press
Miss Helen Thomas
United Press International
Mr. and Mrs. Wynant D. Vanderpool, Jr.
Washington, D. C.
Ms. Susan Watters
Women's Wear Daily
Dr. and Mrs. Lynn E. Weaver
Director, School of Nuclear Engineering, Georgia Institute of Technology, Atlanta, Georgia
Mrs. Winston Willoughby
Washington, D. C.

THE WASHINGTON POST
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THE WASHINGTON POST
B 3 Friday, April 14, 1978
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Sole and Science For a First Lady

By Donnie Radcliffe

Only when talk got around to something called aflatoxin did Rosalynn Carter begin to get the drift. Until then, she said Romania's First Lady Elena Ceausescu clearly had the edge on scientific subjects.

Aflatoxin—a disease affecting peanuts—Mrs. Carter told luncheon guests yesterday, was something she knew quite a bit about, being the wife of a former peanut farmer who had scrutinized many a peanut for signs of it.

The lunch, at the Smithsonian's Museum of History and Technology, honored Elena Ceausescu, a distinguished academician who is director of Romania's Institute of Chemical Research, a member of the National Council of Science, Academy of Science and on the Communist Party's central and executive committees.

Drawing heavily from the scientific community for her guest list, Mrs. Carter told the group that "public awareness of science and technology was heightened with the space age."

By Charles Del Vecchio—The Washington Post

Curator of Electricity Bernard Finn, left, Elena Ceausescu, Rosalynn Carter and Smithsonian Undersecretary-elect Mike Collins.

It was, in fact, a chemist—James Smithson—who had donated his legacy to the United States for what later became the Smithsonian Institution, the Smithsonian's Undersecretary-elect Michael Collins told chemist Ceausescu.

In unscheduled remarks of her own, following a luncheon of Senegalese soup, sole Veronique, asparagus and strawberries cardinale, Elena Ceausescu called for collaboration between American and Romanian scientists.

"I would suggest that all efforts be dedicated to man and not to destroying mankind," she said through an interpreter.

Guests later toured two exhibits, the atom smasher and "Art in Science."

SMITHSONIAN LUNCHEON - MRS. CARTER'S GREETINGS

I AM SO PLEASED TO HAVE YOU HERE TODAY TO HONOR OUR DISTINGUISHED GUEST.

MRS. ELENA CHOW-SHESS-KOO REPRESENTS THE TYPE OF MODERN WOMAN WE ADMIRE SO MUCH. SHE IS THE MOTHER OF THREE, A WIFE WHO IS A TRUSTED ADVISOR OF HER HUSBAND AND, AS WE ALL KNOW, A SCIENTIST OF HIGH ESTEEM. MRS. CHOW-SHESS-KOO, WELCOME TO WASHINGTON.

chemical engineer?

I WANT TO TELL YOU WHY I CHOSE THIS PARTICULAR SPOT FOR OUR LUNCHEON TODAY.

member of Central Comm of Party
" " Executive "

micro-molecular research?

THE SMITHSONIAN INSTITUTION IS A UNIQUE INSTITUTION IN OUR COUNTRY. IT IS AN EXCITING, LIVING MUSEUM THAT ALL AMERICANS -- AND ALL WASHINGTONIANS, PARTICULARLY -- CHERISH AS A NATIONAL TREASURE. I DO NOT

THINK THAT THERE IS ANYTHING IN OUR HISTORY THAT IS NOT IN SOME WAY REPRESENTED HERE.

AND SO WHEN I HEARD THAT YOU WERE COMING TO OUR COUNTRY, I KNEW THAT I COULD TURN TO THE SMITHSONIAN TO HELP ME FIND WAYS TO EXPRESS A COMMON BOND WE SHARE: MAN'S ABIDING CURIOSITY IN THE WONDERS OF SCIENCE.

~~I ALSO WANTED TO COME TO THE SMITHSONIAN FOR MY OWN SAKE. I AM A NEW WASHINGTONIAN. AND I AM HAVING A WONDERFUL TIME LEARNING TO KNOW IT BETTER. I HAVE FOUND OUR CAPITAL CITY IS RICH IN RESOURCES -- IN PEOPLE AND IN SCIENTIFIC, EDUCATIONAL, POLITICAL AND CULTURAL INTERESTS.~~

MRS. CHOW-SHESS-KOO, MY GUESTS TODAY REPRESENT A CROSS SECTION OF THOSE INTERESTS IN THIS CITY WHICH I NOW CALL HOME. THEY ARE PEOPLE WHO HAVE LIVED HERE FOR YEARS; MEMBERS OF OUR CONGRESS; JOURNALISTS, AND, OF COURSE, THOSE IN THE science & technology SCIENTIFIC AND TECHNOLOGICAL FIELD YOU KNOW SO WELL.

Variety of people in Washington - interesting for [illegible]

things she is involved in - She is a scientist & an trusted advisor to her husband.
mother

busy, interesting &
conversations with her
Micro molecular research -
wish I knew more about your
profession -

All of our guests today Mrs.
Chowskescu are distinguished
persons in their own field —
Some members of Congress, journalists —
those involved in the fields of
science & technology. I'm glad
to have this oppor to ~~get~~ bring you
~~all~~ together & I was sure you
would be interested in knowing
our guest today.

I'm pleased that we could
meet today too here in the
Smithsonian Institution
Our host today is Michael
Collins
others

Public awareness of science
& technology was heightened
with the advent of the space
age - Pleased that Michael
astronaut could be here -
to tell us a bit more about
the program of the Smithsonian
that might be of interest
to you -
Once again

I HAVE NOT ONLY LOOKED FORWARD TO MEETING YOU, BUT TO BRINGING THEM TOGETHER.

I WISH I KNEW MORE ABOUT YOUR PROFESSION: CHEMISTRY. I ENVY YOUR UNDERSTANDING OF THIS FASCINATING FIELD, AND I CONGRATULATE YOU ON YOUR SUCCESS AS A DIRECTOR OF THE INSTITUTE OF CHEMICAL RESEARCH, YOUR MEMBERSHIP IN THE NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY, AND YOUR MEMBERSHIP IN THE ACADEMY OF THE SOCIALIST REPUBLIC OF ROMANIA.

I THINK I AM RIGHT IN SAYING THAT IN YOUR COUNTRY -- AS IN OURS -- PUBLIC AWARENESS OF SCIENCE AND TECHNOLOGY WAS HEIGHTENED WITH THE ADVENT OF THE SPACE AGE. AND SO I AM PARTICULARLY PLEASED THAT OUR HOST TODAY IS MR. MICHAEL COLLINS, WHO WAS AN ASTRONAUT AND THE COMMAND MODULE PILOT FOR AMERICA'S FIRST LANDING ON THE MOON. NOW HE IS THE DIRECTOR OF OUR AIR AND SPACE MUSEUM.

I HAVE ASKED HIM (MICHAEL, MR. COLLINS) AND DR. EKLUND, THE CURATOR OF CHEMISTRY, AND DR. FINN, THE CURATOR OF ELECTRICITY AND MODERN PHYSICS, TO TELL YOU A BIT MORE ABOUT SMITHSONIAN PROGRAMS THAT MIGHT BE OF INTEREST TO YOU. WE WANT YOU TO BE AT HOME HERE. WE WANT YOU TO TAKE BACK TO YOUR COLLEAGUES MANY IMPRESSIONS OF OUR BEAUTIFUL CAPITAL CITY AND A HEARTY INVITATION FOR ALL ROMANIANS TO VISIT OUR IMPRESSIVE SMITHSONIAN INSTITUTION.

We welcome you & Pres. C. to Washington
We are pleased to see you & to continue & promote the friendship between our 2 cos.

Welcome all of you ~~Mrs. Ceausescu &~~
~~guests~~ to the Smithsonian today
& to this luncheon.

We have a very special guest,
Mrs. Elena Ceausescu who
has come with her husband
Pres of Romania for an official
state visit.

We are pleased & delighted
to have them both in our
country.

Mrs. C is very distinguished
and involved & busy person.
I was very impressed in
reading about her accomplishments
& the positions she holds — &
that's why I decided to invite
you all here today to the
Smithsonian to meet her -
I want to read you a list ~~some~~ of ~~the~~

"Atom Smashers: fifty years" is the product of a collaboration between the Energy Research and Development Administration, now part of the Department of Energy, and the Smithsonian Institution. Both are indebted to many individuals and institutions for the gift or loan of objects exhibited:

Luis W. Alvarez	James R. Killian
Ugo Amaldi	Herbert Kinney
Zoltan Bay	J. Eugene Kunzler
Jesse W. Beams	Leon Lederman
P. R. Bell	Willard F. Libby
Owen Chamberlain	Walter Müller
Georges Charpak	Edwin M. McMillan
Guiseppi Cocconi	W. K. H. Panofsky
John W. Coltman	Burton Richter
Ernest D. Courant	Milford D. Schultz
James W. Cronin	Emilio Segrè
Jack V. Franck	Mrs. Joseph Slepian
Murray Gell-Mann	Lewis H. Strauss
Donald A. Glaser	Gertrud Weiss Szilard
Gerson Goldhaber	Val L. Telegdi
G. Kenneth Green	S. C. C. Ting
Leland J. Haworth	Bruno Touschek
Roger H. Hildebrand	Russell H. Varian
Robert Hofstadter	Arthur R. Von Hippel
John R. Hulm	E. T. S. Walton
Robert Kenney	Rolf Wideröe
Donald W. Kerst	Clyde Wiegand

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EG&G-Ortec
General Electric Company
High Voltage Engineering
University of Illinois
Istituto Nazionale di Fisica Nucleare, Frascati
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Patent and Trademark Office, U. S. Dept. of Commerce
Princeton University
Siemens, A. G.
University of Southern California
Stanford University
Varian Associates, Inc.
Westinghouse Corp.

Essential contributions to the exhibit were made by several ERDA-funded accelerator laboratories where, in each case, one individual has borne the burden of coordination:

Argonne National Laboratory: P. Schreiner
Brookhaven National Laboratory: A. Thorndike
Fermi National Accelerator Laboratory: E. Kneip
Lawrence Berkeley Laboratory: E. J. Lofgren
Oak Ridge National Laboratory: C. D. O'Kelley
Stanford Linear Accelerator Center: C. Kruse

The Carnegie Institution Van de Graaff (Unit 4) was completed under the direction of Louis Brown; the 27-inch cyclotron (Unit 5) was reconstructed under the direction of E. J. Lofgren; the electron synchrotron (Unit 10) under the direction of Rudin Johnson; the optical analog of alternating-gradient focusing (Unit 11) was designed and constructed by Paul Brindza; the initial slide presentation, "Atom Smashing," was written by S. J. Lindenbaum; the operating spark chamber (Unit 17) was constructed under the direction of Satoshi Ozaki.

The exhibit design by John Schmid.

All this was set in train through the efforts of William B. Herrmannsfeldt while on leave from SLAC at ERDA, 1974-76, and has been kept in train through the efforts of David F. Sutter, who succeeded to the responsibility there.

Paul Forman, curator

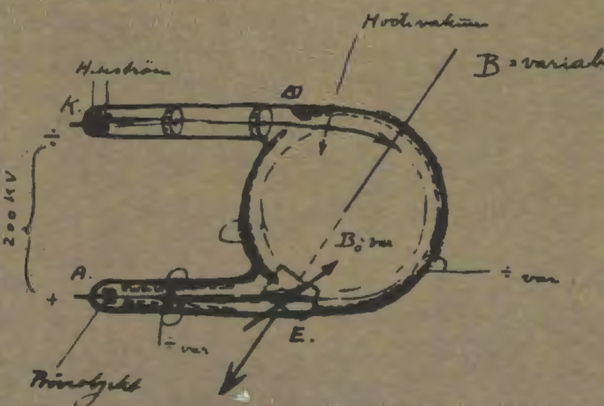
Michael Meo and Claudine Klose, curatorial assistants

Richard Virgo, coordinator design and production

Atom Smashers...

50years

National Museum of History and Technology
Smithsonian Institution



High-energy accelerators – "atom smashers" – produce high-velocity beams of sub-atomic particles. They first made possible the systematic probing and disruption of the central cores of atoms, and now, enormously increased in energy, the probing and disruption of the particles composing these atomic nuclei. They are the indispensable means for advancing the frontier of knowledge toward the infinitely small, and thus toward the fundamental and universal. The conception, construction, and operation of these machines and of the particle detectors used in conjunction with them is the subject of this exhibit.

High-energy particle accelerators – "atom smashers" – are today the largest, most sophisticated, and most costly artifacts of the scientific enterprise. They have surpassed the astronomical observatories, which for centuries – indeed, millenia – dominated the scientific landscape. Fifty years ago no such device as a particle accelerator existed, and 25 years ago none was yet so large that it could not be housed under a single roof. Today the most powerful "atom smashers" are miles across and hundreds of millions of dollars in cost. How and why have they grown to such a scale?

1 Before accelerators: the study of the discharge of electricity through gases; the discovery of x-rays and radioactivity; the Rutherford era; the neutron and nuclear physics without accelerators.

2 Beginnings: the earliest proposals for particle accelerators; the first programs to produce and utilize high voltages; the first successful atom smasher, 1932.

3 Van de Graaff's generator: his demonstration model, 1931, of the method by which he hoped to reach tens of millions of volts.

4 The first Van de Graaff accelerator: the two-meter machine at the Carnegie Institution of Washington, 1933, and the investigation of the nuclear force.

5 The cyclotron: Lawrence's idea and its realization; the 27-inch diameter cyclotron as it stood in Lawrence's Radiation Laboratory at the University of California, Berkeley, in 1936.

6 Sixty inches and thrice sixty: streamline styling comes to the accelerator laboratory; Lawrence wins a Nobel Prize and builds the "ultimate" cyclotron, 1939-40.

7 The betatron: Kerst's first magnetic induction accelerator, 1940, and the rapid following up of his success in industry and abroad.

A tom smashers in the public mind's eye: how particle accelerators for nuclear research caught and held America's imagination in the 1930s and 1940s.

8 The proton linac: Alvarez and his team at Berkeley aiming at a billion volts (BeV), 1945-47; the subsequent use of such linear accelerators as the second stage of higher energy synchrotrons and as accelerators of heavier ions.

9 The electron linac: Hansen's prewar program at Stanford University for the acceleration of electrons; the invention of the klystron microwave amplifier tube; the prosecution of the program after the Second World War, aiming at a billion volts; its culmination in the Stanford Linear Accelerator Center with a two-mile electron linac.

10 The electron synchrotron: the discovery of the principle of phase stability, 1945; its embodiment in McMillan's 330-million-volt accelerator built at Berkeley, 1945-49; using the McMillan machine to produce the neutral pi meson, 1951.

11 The proton synchrotron: Brookhaven National Laboratory and its 3-billion-volt Cosmotron, the first proton synchrotron, 1945-52; the discovery and application of the principle of strong focusing of particle beams by alternating-gradient fields, 1952.

12 The highest energy accelerator: the road to Batavia, Illinois, 1963-72; the main ring of the Fermi National Accelerator Laboratory's 500-billion-volt strong-focusing proton synchrotron.

13 Ion sources: historical development of guns, arcs, and discharge tubes to generate charged particles for the several types of accelerators.

14 Particle detectors, 1920s to 1950s: early ionization chambers and Geiger-Muller counters; the first electron multiplier tubes and scintillation detectors; the Cerenkov counter and the detection of the anti-proton: semiconductor detectors.

15 Bubble chambers: the cloud chamber and nuclear emulsions as forerunners of this track-revealing detector, the development of bubble chambers from Glaser's earliest, 1952, through the Berkeley liquid hydrogen chambers, to the Brookhaven 80-inch chamber and the discovery of the omega particle; how automated machines and electronic computers extract data from photographs of particle tracks.

16 Current developments in particle acceleration: superconductivity finds wide application; storage rings and colliding beams: Europeans again in the forefront.

17 Recent particle detectors: spark chambers, hodoscopes, multi-wire proportional chambers, drift chambers, and their integration by digital computers into "all-electronic bubble chambers;" the Nobel Prize-winning discovery of the J/ψ particle.